


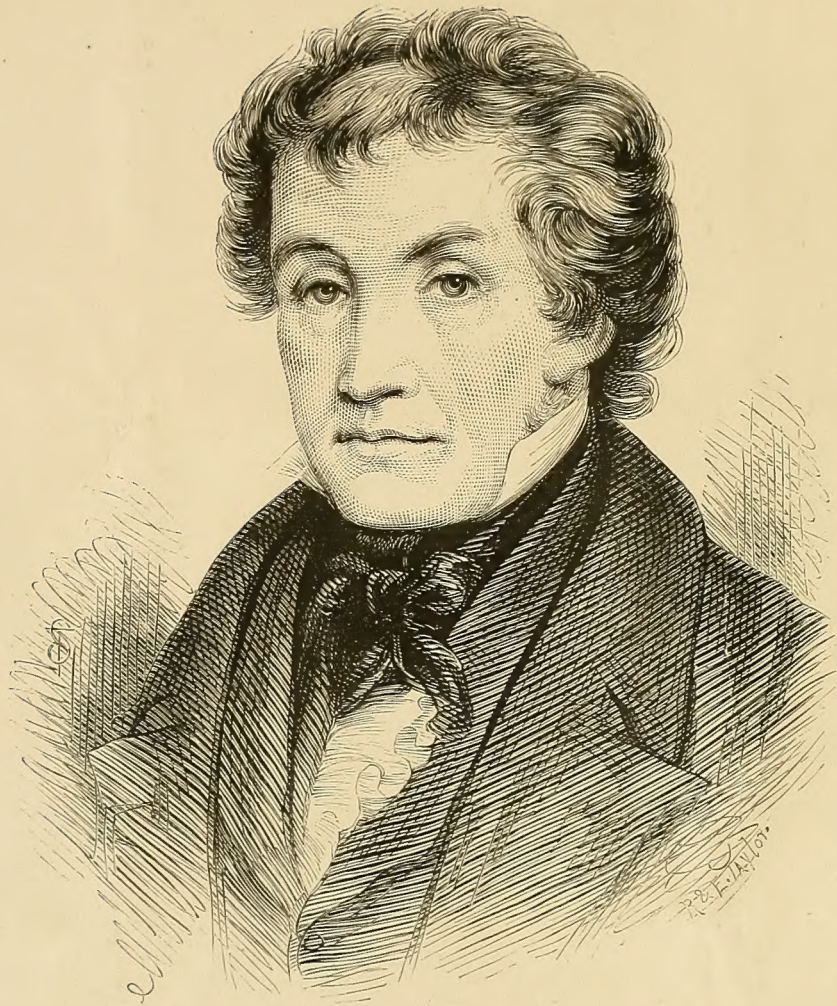




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THE



AN

ILLUSTRATED WEEKLY JOURNAL

OF

GARDENING IN ALL ITS BRANCHES.

THIS IS AN ART
WHICH DOES MEND NATURE: CHANGE IT RATHER; BUT
THE ART ITSELF IS NATURE.—Shakespeare.

FOUNDED AND CONDUCTED

BY

WILLIAM ROBINSON,

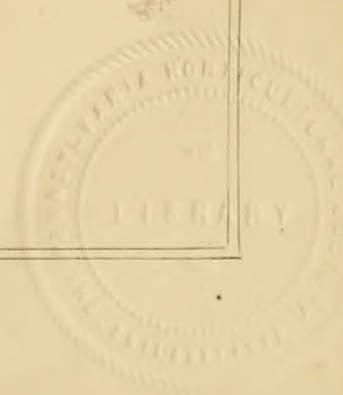
AUTHOR OF "ALPINE FLOWERS FOR ENGLISH GARDENS," "THE WILD GARDEN," ETC.

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TO THE
MEMORY OF JOHN CLAUDIUS LOUDON,

AUTHOR OF THE
"ARBORETUM BRITANNICUM,"

AND MANY OTHER WORKS WHICH HAVE TENDED TO ENNOBLE THE ART OF GARDENING,

THE FIRST VOLUME OF "THE GARDEN," IS DEDICATED BY ITS FOUNDER.

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THE GARDEN.

"This is an art,
Which does mend nature: changes it rather: but
THE ART IS NATURE."—Shakespeare.

All communications for the Editorial Department should be addressed to WILLIAM ROBINSON, THE "GARDEN" OFFICE, 37 Southampton Street, Covent Garden, London, W.C. All letters referring to Subscriptions, Advertisements, and other business matters, should be addressed to THE PUBLISHER.

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PUBLIC GARDENS.

THE PATHWAY TO NOBLE NATIONAL GARDENS.

IN large cities like London, New York, or Paris, where thousands of acres are already rescued from our mighty deserts of slate and brick, the question of how to treat them so that they may be of fullest value to the public, not only as fields of health, but as schools of delightful instruction, is one of great importance. The public parks near no large city that we have seen, represent a tithe of the beauty and interest of the vegetable kingdom of which they are capable, under the system to be presently indicated. We take into consideration, first, their vast extent; second, their variety of soil and surface; third, the large sums spent annually for their keeping. Everywhere in them we see vast surfaces almost totally neglected, or only garnished with a few common-place trees; everywhere the fullest evidence that no thought is given to the production of noble, permanent, and distinctive features. Sometimes, indeed, a favourite spot in one is embellished at great expense during the summer months with tender plants, while the remainder of its surface is usually wholly uncared for. This is something like embellishing a man fluttering in rags with a costly button-hole bouquet. But the radical fault, everywhere strikingly apparent, is monotony in regard to materials used. A number of trees become popular, and they are planted everywhere in about the same proportion. Thus, we everywhere find about the same type of vegetation; and the capabilities of our parks as grand national gardens are quite undeveloped.

The system we propose, and the one certain to give us the noblest series of public gardens the world has ever seen, is to treat all the public parks and gardens of a great city as a whole, and to establish in each a distinct type of vegetation. For example, we might devote one city park chiefly to noble deciduous trees; another, suburban one, as Richmond, to evergreen forest trees; another, to the almost countless flowering deciduous trees and shrubs that are the glory of the grove and copse in all northern and temperate countries. Or we might treat the subject geographically, and have a small square or park with British trees, and shrubs, and plants; another of European, another of American, another of Siberian, and so on. This plan does not involve the removal of other types of vegetation. On the contrary, their presence would often be necessary to contrast with those to which a park or garden might be chiefly devoted. In all our parks, therefore, the improvements suggested might be carried out without disturbing any important subjects. And, even if it were determined to devote a park wholly to the vegetation of one country, no one need doubt that the highest effects could be produced by it alone who remembers what scenes we witness in our lanes and woodlands, from even four or five kinds of native shrubs and trees. We could by the system we advocate define for each superintendent in what direction his efforts should chiefly tend; give each an entirely distinct aim, and

thereby free him from paltry rivalry with his fellows in the matter of "bedding plants," &c. He could then take up a Family, Order, or Flora, and develop its beauty and variety to the completest extent of our knowledge. In the vast expanse of our public gardens, there is not one interesting and important branch of arboriculture or horticulture which we could not develop in a way hitherto unexampled. On our botanic gardens already in existence (most of them not large enough for the proper grouping and arrangement of one single family of trees, with sufficient interspaces to permit of these being seen to advantage) the system would have the best results. It would relieve our botanic gardens of the necessity of cramming every available plant or tree into a small space, and permit of their curators devoting sole attention to the many tribes of plants which require special and continual care or renewal.

Generally our present botanic gardens give no more idea of the variety, beauty, and majesty of vegetation, than the fountain basin does of the wild tossing of a wind-tortured sea. No botanic garden in existence gives any worthy expression of the vegetation of even the cold and temperate clime vegetation of Europe alone! What do we see of the beauty and character of any one large family of trees by planting them all at regular intervals over a plot, or in the various ways we see them arranged in botanic gardens? The common way with botanic gardens is well, if we have no higher object than to procure specimens to illustrate the grammar of the nomenclature men have given plants. But if our aim be to show the inexhaustible beauty and dignity of the vegetable kingdom, we must disentangle ourselves from such small notions. And, clearly, the way to do this is to treat our vast series of gardens (both botanic gardens and parks) as a whole; stamp on each some distinguishing feature—from the smallest square with a complete collection of Ivies or Hawthorns, to the noblest park adorned with the trees of a hundred hills.

Finally, though the subject suggests other points of interest, let us consider what a noble school of instruction the parks of London, or those of any other great city, might in this way become for every planter and every garden-lover. The whole might be made a colossal experimental ground, in which every question in connection with arboriculture might be thoroughly tested. In every direction distinct types of vegetation would be met with, instead of the "universal mixture" now everywhere seen, and which so soon and so thoroughly trains the eye to take no more notice of trees or plants than of any individual railing-spike round one of our squares. The contents of no botanic garden now in existence would be worthy of mention compared with the noble results we could attain in this way. It is not, like many of the changes we long for in towns, impossible to carry out from want of means. The adoption of it would at once tend to make the expenditure of every shilling spent in our public gardens go toward a valuable result, and by it we should soon have national gardens in a far nobler sense than any hitherto in existence.

THE SMOKE POISON.

WILL nobody deliver us from the perils of smoke? Every year our cities grow vaster, and the great pall of "blacks" is ever widening! To hope to arouse public attention to the magnitude of the evil, by pointing to the thousands of plants that are always perishing from it, would be hopeless, considering that its pernicious effects on our own lives do not seem to be taken the least notice of. London and all our large cities are always under its ban; but its most detestable aspects are most apparent on those still, frosty, autumnal and winter days, which in the country are so clear and sunny. On these, there being no breeze to brush away the outpourings of the innumerable chimneys, the whole settles down in the streets like death on living men. On those days the glorious sun is darting its beams into the wide and horrid cloud, powerless to shoot a ray through its depth. Not the least curious thing about this great but avoidable plague, is that both foreigners and natives put it down to the climate.

M. Taine speaks of the woefully-depressing influences of the climate. Doubtless there are many better; but certainly the climate of London is quite as agreeable as that of Paris or northern France. The clouds of smoke make the difference. In consequence of being contented to live in a sea of the refuse of our fires, we possess the privilege of having our fairest, stillest, sunniest, winter days turned into foulest nights, in which one is stifled with vapours that would add a

new terror to the lower regions. If anybody doubts the true cause of the terrible climate of our large cities, let him walk forth at three or four o'clock in the morning into the heart of one of them,—say, Endell-street, St. Giles's, in November and December, when the fogs are at their worst. If he has any memories of the fog of the previous evening he will be surprised to see the street quite free of fog, the buildings not only visible, but perfectly clear in outline; and, strange fact for St. Giles's—the air pure! Let him sally forth again at from half-past seven to half-past eight, and he will find a change; the street is filling with a bluish foulness, the buildings losing shape. An hour later and the smoke, which we fancy would vanish, after passing up the chimney, has fallen down into the street, dimming the sight, and stinging us as we breathe it. In the more open spaces the effect is the same. When the chimneys have ceased to vomit for a few hours, the noble lines of the Thames Embankment stand out clear and bold; but a little before breakfast a new climate usually sets in. For a short time the sun is seen like a red lamp in the sky; but soon all is over, and very soon highly-civilized persons are steering themselves, as best they may, through a choking atmosphere, feeling about as happy as trout in mud, and blaming our dear climate for it all!

It is not the climate, which has bred a noble race for ages, that we should blame, but our own complacent stupidity in resting content under an evil, which, as half the population of these islands is now gathered in towns, has a hurtful effect on the whole nation.

We find in the *Times* a letter from somebody who is actually bold enough to hope that the removal of this smoke curse of ours may be a "possible reform of the distant future," and who complains of having to "leave a suburban residence a few miles from the Bank in clear autumn sunshine, and to pass through gradually-deepening gloom into the lurid, orange fog of the City, there to struggle through his work by gaslight in a state of semi-asphyxia."

Poor fellow! Will none of our statesmen consider the millions who spend their nights as well as their days in such an atmosphere, and even in much worse? For it should be understood that there are many parts of London much worse than the City, where, in consequence of the comparative absence of domestic fire-places, the air is usually much clearer than in such a neighbourhood as Lisson-grove.

It may be a difficult problem to solve, but surely there is no difficulty or no expense to which we could be put in the defeat of this smoke monster, for which we should not be abundantly repaid by its destruction. Lengthened days, or at least some of heaven's light in those we have, and undefiled air, are surely blessings, to secure which we might well submit to any inconvenience. It seems to us that if questions were brought forward in the degree of their importance, the smoke plague of our cities would be one of the first before Parliament.

Trees and Plants in Cities.—I don't know anything sweeter than this leaking in of Nature through all the cracks in the walls and floors of cities. You heap up a million tons of hewn rocks on a square mile or two of earth which was green once. The trees look down from the hill-sides and ask each other, as they stand on tiptoe, "What are these people about?" And the small herbs at their feet look up and whisper back, "We will go and see." So the small herbs pack themselves up in the least possible bundles, and wait until the wind steals to them at night and whispers, "Come with me." Then they go softly with it into the great city—one to a cleft in the pavement, one to a spout on the roof, one to a seam in the marbles over a rich gentleman's bones, and one to the grave without a stone where nothing but a man is buried—and there they grow, looking down on the generations of men from mouldy roofs, looking up from between the less-trodden pavements, looking out through iron cemetery-railings. Listen to them, when there is only a light breath stirring, and you will hear them say to each other, "Wait a while!" The words run along the telegraph of those narrow green lines that border the roads leading from the city, until they reach the slope of the hills, and the trees repeat in low murmurs to each other, "Wait a while!" By-and-by the flow of life in the streets ebbs, and the old leafy inhabitants—the smaller tribes always in front—saunter in, one by one, very careless seemingly, but very tenacious, until they swarm so that the great stones gape from each other with the crowding of their roots, and the feldspar begins to be picked out of the granite to find them food. At last the trees take up their solemn line of march, and never rest until they have encamped in the market-place. Wait long enough and you will find an old dotting oak hugging a huge worn block in its yellow underground arms; that was the corner-stone of the state-house. Oh, so patient she is, this imperturbable Nature! —OLIVER WENDELL HOLMES.

New Parks in America.—The following parks are now being or about to be formed in the United States:—Brooklyn, 500 acres; New Britain, 100 acres, Buffalo; 350 acres; Chicago (two), 500 acres, neither of which is yet commenced; and Philadelphia, 114

acres, not yet commenced. The plans for Fairmount Park, Philadelphia, have scarcely been completed yet, so that I cannot say when operations may be started there. Tomkins and Washington squares, in New York, have just been remaking. Union and Madison squares are also in course of re-construction in the same way, and I am told that the squares in Washington are to be done in a similar way soon.

New York, Sept. 28, 1871.

R. M.

Transplanting Large Trees in Paris.—Parisian horticulturists are now engaged on a transplanting experiment, on a large scale, with a view to replace the fine trees of the Champs Elysée, which war and revolution have recently destroyed. It will be the boldest attempt ever made in France in the removal of full-grown trees; and it is thought that the precautions adopted, which have necessitated a large outlay, will ensure complete success to this bold attempt to restore the pleasant groves of the Champs Elysée to their original beauty. If the result should be as expected, it will be very gratifying to see the extensive gaps among the trees of that favourite promenade satisfactorily filled up by others, in every respect equal to those destroyed.

Metropolitan Improvements.—The Metropolitan Board of Works intend to apply to Parliament for powers to effect improvements in the following localities, either by widening the existing principal thoroughfares or constructing new streets:—High-street and Lower East Smithfield, Wapping; High-street, Shore-ditch; Old-street, towards New Oxford-street; Harrow-road, and Newington-butts. It is also proposed to widen Serle-street and effect improvements near that street and Cook's-court. Parliament will be asked in the ensuing session to authorize the construction of a sub-way under the Thames, commencing at the south-west corner of the ornamental ground adjoining the Victoria Embankment, and immediately to the eastward of the Temple station of the Metropolitan District Railway, and terminating on the opposite side of the river near the junction of Princes-street with the Commercial-road.

Sea Baths for London.—A project for supplying London with sea water has been started. It is proposed by a company about to be incorporated, to bring the water from the neighbourhood of Brighton by means of nine reservoirs and ten conduits and pumping stations. The company propose, further, to construct public and other baths, and to supply sea water to any parish or place within the limits of the metropolitan district.

HARDY CACTI.

For several years past, the hardiness of *Opuntia Rafinesquii* in the climate of London and Paris has been a subject of remark, and various persons in England and in northern France have testified to its hardiness. The fact, however, that it stands and grows well in a London back-garden, and deprived to a great extent of the sun, is as much proof as we need in that respect. This hardy species resists much greater cold than we ever have in Britain, and it is probable we shall find that half a dozen or more species of cactus are quite as hardy as it. Along the line of the Pacific Railway you see cacti abundant in some places—in districts frosty and silvered with snow when I passed over them last November, and on the flanks of the Wassatch Mountains, near Salt Lake City, deeply covered with snow during the winter. It is desirable, in gathering the small mountain plants, and in sitting down on the ground, to look well for a small, poignantly prickly cactus, with round stems, which abounds there, and which communicates a peculiarly acrid sting to all soft, fleshy parts that touch it. I gathered this in company with *astragalus* and other plants we usually term alpine. In the eastern and western States of America, very cold in winter, as everybody knows, there are three hardy *opuntias*—*O. vulgaris* (the common prickly pear), which goes as far north as New England; *O. Rafinesquii*, in Wisconsin and Kentucky; and *O. missouriensis*, in Wisconsin and towards the great plains. And from what one sees along the Pacific route, it is very likely a greater number of cacti go north along the Rocky Mountains' dry plains and sierras than we find on the eastern side of the continent. It is very likely we shall some day have quite a group of dwarf hardy cacti keeping company with the houseleeks on our rock-gardens, and rivalling them in hardiness. They should be planted on the drier parts of the rock-garden, on dry sunny banks, on the edges of old walls, old bridges, ruins, &c. They will also thrive on borders, but are most appropriately placed in the positions above named.

W. R.

Obsolete Names of Plants.—Some botanists seem to consider it a meritorious act to rescue a forgotten name from oblivion, and look upon such discovery as being of almost as much benefit to science as the detection of some overlooked specific character. Such authors appear entirely to forget that names are merely arbitrary terms to represent the plants to which they belong. The rule that, when a species is already known by two or more names, the earliest given of these is to be adopted, is agreed to solely as a means of attaining unanimity in nomenclature; but the revival of an obsolete appellation by which no one knows the plant is only producing, instead of avoiding, confusion, and should be discouraged to the utmost.—B. B. SYME, in *English Botany*.

THE TWO PATHS.

Among the many original rockworks I have seen, those shown by the accompanying cuts deserve being handed down to future ages. They show some of the foolishness which "rock-works" display. The hideous wall-like arch in the Hammersmith gem was, no doubt, originally planted with rock-plants, &c., by somebody who imagined they would grow thereon. The horizontal strata beneath the bolder cliffs in the public garden example are well worthy of study. These



"Rockwork" in London public garden.

detestable examples will serve to show what childish and stupid notions of rock-gardens have up to the present time existed in gardens. If the purblind love of the picturesque is gratified by such abominations as these, how much pleasure may we not hope to



Rockwork in Villa at Hammersmith.

give when the true and simple way of making a rock-garden is generally adopted! The labour and the "genius" expended by the unfortunate persons in whose poetical brains such scenes as the preceding are conceived, and whose hands build them, would be precious if rightly directed. Are these "rockworks" suggestive of anything lovely in this world? Of all foolish things done in gardening that betray the trail of the serpent, this is the most foolish. A weary spinning away of the soul and emptying of the purse to produce something offensive to nature and man! With one cartload of stones a better effect could be produced in ten minutes than by all the



Single half-buried Stone surrounded by Alpine Plants.

rockworks of the above type yet created! Nay, with one stone as shown in the accompanying cut. Such a stone may be very appropriately seen peeping above the turf, near the lower flanks of the rock-garden, or where the ground is about to break into bolder rocks or strata. With a dozen stones, we succeed with our tiny rock-garden on the margin of a shrubbery.

The following illustration well explains our meaning: an irregularly-sloping border, with a few mossy bits of rock peeping from a swarming carpet of Sandworts, Mountain-pinks, Rock-cresses, Sedums and Saxifrages, Arabises and Aubrietias, with a little company of fern-fronds sheltered in the low fringe of shrub behind the mossy stones. This is a rock-garden which anybody could carry out, and which would offend nobody. As the first illustration is sketched in a botanic garden, it may be well to point out the exceeding impropriety of tolerating such scenes in a public garden even of the meanest sort! Granting that means were wanting for anything better, their presence is inexcusable. Absurdities of this kind should be removed! It were surely better to do nothing at all

than thus to sow the seeds of vicious taste in the minds of visitors to our public gardens. In some of our public and private gardens want



Rock-garden on margin of shrubbery.

of means is given as an excuse for the presence of the hideous pock-marked-potato-pit-like masses of rockwork that disfigure them. The plan now recommended is as much less expensive than these, as it is less offensive!

WALL PLANTS.

SOME plants, like the wall Linaria, the Wallflower, and Snapdragon, are so fond of old walls that we see them everywhere thereon, but there is generally no adequate notion of the great number of plants that will thrive on walls. I have no doubt whatever that at least 400 species of cultivated rock and alpine plants would thrive well on old walls and ruins if sown thereon. Nor must it be supposed that a moist district is necessary, for the Pansy shown in the accompanying cut grew on a very dry brick wall at Kew—the brick wall behind the narrow border for herbaceous plants. It sprung forth at a foot or so below a coping, which prevented it from getting much or any rain, and one would scarcely have expected a Pansy to have existed in such a position. It not only did so, but flowered well and continuously. No doubt the seed fell in the chink by chance. Those who



Pansy on dry brick wall.

possess old brick or other kinds of old walls would do well to sow on them the seeds of various rock and alpine plants, and also where there are mossy chinks, with a slight deposit of mould, to insert small plants in autumn. The silvery Saxifrages would do well planted thus, while they might also be sown with almost the certainty of success. Leaving out the few common wall plants mentioned at the beginning of this note, the following are among the most likely to succeed of plants easy to obtain: *Corydalis lutea*, *Arabis arvensis*, and *A. petraea*, *Draba* in great variety, *Ionopsidium acaule*, *Rosula odorata*, *Gypsophila* in variety, *Poa Saxifraga*, *Dianthus caryophyllus*, and *D. petraeus*, *Lychnis alpina*, *Arenaria balearica* (moist sides of walls), *Sedum* in great variety, *Scutellaria* in great variety, *Saxifraga* in great variety, particularly the silvery or *Alba* section, *Bellium* in variety, *Campanula* small kinds in variety, *Eriogonum alpinum*. All the above may be sown in August or September, or in spring. This short list is confined to small plants. Among larger ones the common *Centranthus ruber* (Red Valerian) and its varieties do quite as well on old walls or ruins as the Wallflower, the Stock, or the Snapdragon; but these are not well fitted for association with the dwarf alpine plants, however attractive on high walls, old bridges, ruins, &c.

W. R.

EXHIBITIONS.

FLORAL DECORATIONS.

ALTHOUGH the present generation is not so wasteful of time as were the Athenians of eighteen centuries ago, yet the desire for novelty seems not to have decreased in the interval. The fashion of our times exhibits an insatiable longing for the opportunity of seeing "some new thing," rather than of talking or hearing about it. The Greeks were gossips and chatterboxes, while we are sightseers. Now, if flower shows are to continue to be attractive, the necessity for novelty must be a more grave consideration with their managers than it has been of late. People will not go to see the same thing over and over again.

Horticultural exhibitions, in their widest meaning, are displays of garden products of all kinds. Now garden products may be divided into two distinct classes, viz., the useful and the ornamental, the necessary and the luxurious, the eatable and the uneatable. Of these two divisions, that which concerns the mouth is unquestionably of more vital importance than that which pleases the eyes only. Yet, as visitors go to these exhibitions to see and not to taste, it follows that, in order to render them attractive and self-supporting, those branches of horticulture which affect the inner man must not have so much prominence given to them as those branches which interest the organs of sight and smell. Hence it is that partiality for particular branches of horticulture induces people to prefer calling such exhibitions "flower shows." And here I would like to refer to the ridiculous plan which some societies have of calling themselves "horticultural and floricultural," as if floriculture were not included in horticulture.

But to return to the attractive portions of a flower show. There appears to me to be many novelties which might advantageously be introduced, and particularly as regards the application of plants and flowers to decorative purposes. Up to the present time the metropolitan societies have not gone beyond offering prizes for groupings of plants, as if in conservatories, and of flowers, &c., for dining-tables, boudoir-tables, and bouquets; and in all the schedules that I have seen, the explanations of what the prizes were offered for, and of what restrictions were placed on the exhibitors, have been far from satisfactory; and hence, to a great extent, the dissatisfaction in many cases with the award of the judges, as well as the diversities in the opinions of the different judges; for it is not an uncommon thing for the same exhibitors to compete at different shows with the same display, and for one to be successful at one show and at the other to be "nowhere," while at the following show this decision is reversed.

Take, for example, prizes offered for the decoration of a dinner-table. In order that competitors may be placed upon equal terms, detailed information respecting the following questions should appear in the schedule:—The size of the table should be fixed; the number of diners should be stated; the question of its being a dinner by daylight or after dark should be settled; if after dark, whether the table is to be lighted from the walls or ceiling, or whether by lights placed on the table, and thus constituting, and being considered as, a part of the decorations; whether fruit is necessary, optional, or prohibited; whether growing plants (which it would be better to designate as "plants with roots," as distinguished from what is commonly understood by the expression, "cut flowers") are necessary, optional, or prohibited; whether any dishes are to go on the table, or the dinner is to be served *à la Russe*; whether the exhibitor is, or is not, required to leave space (fifteen inches) round the margin of the table for the plates and glasses; whether a supply of plates, knives, forks, spoons, decanters, curaffes, ice-dishes, and wine-glasses, is required or prohibited; whether the exhibitor is expected to provide a table-cloth, and if so, of what size; what time will be allowed for arranging; whether the exhibitor will be allowed or forbidden to use any vases or other objects for ornament, which are not required for the flowers or fruit; and last, not least, let it be made perfectly clear that the prizes are not offered for the best arranged dinner-table, but for the best arrangement of garden-products suitable for the decoration of a dinner-table. The occasion upon which such a display is permitted is one specially set apart for the advancement of gardening in all its branches; it is not a fine art exhibition, but a horticultural one. Hence the arrangement and grouping of the flowers, foliage, and fruit ought always to have primary consideration; and on no account should any deficiencies in this matter be considered to have been made up for by the beauty of Elkington's stands and Copeland's dessert-plates, or Phillips's glass arches and plateaux.

This may appear to be an unnecessarily long list of doubts to be cleared up before competitors can start on equal terms; but it will only be thought so by those who have not paid much attention to the subject. All gardeners know how constantly the wording of schedules is misunderstood and differently interpreted, even in the

matter of exhibiting half-a-dozen plants; the gardening periodicals afford frequent evidence of complaints under this heading. If the managers of flower shows, and framers of schedules, are liable to cloudiness and foginess in such simple matters, it is the less to be wondered at that their "specifications," in the more recently-introduced branch of floral decorations, are not so intelligible and explicit as they ought to be. Many a man with an eye for form can without difficulty pick out the best-shaped horse at a fair, when he would be at a loss to know how to explain to a friend all the reasons which had operated in leading him to the conclusion at which he had arrived; and he would probably look considerably aghast if some enthusiastic appreciator of his correct judgment were to suggest to him that he should "write a book about it." And I must confess that those parts of schedules affecting "table decorations," which have come under my notice, have too often impressed me with the belief either that the framers could not clearly express themselves, or else that they did not understand what they were writing about.

And now a word or two about certain novelties, which I think might well be introduced at flower shows. Floral decorations may, conveniently for my present purpose, be divided under the three headings of "personal," "domestic," and "ecclesiastical."

Commencing with *personal* decorations, and giving, as in duty bound, *place aux dames*, let me mention wreaths and sprays for the hair amongst the first objects for which competition might be invited. Sprays are also sometimes worn upon dresses at evening parties. The demand for head-dresses in Covent Garden is very large. So also is the demand for coat-flowers, also called button-holes. Of these a stand containing a dozen, if nicely arranged, would well merit a prize, and much competition might be expected for stands of these.

Turning next to *domestic* decorations, the following subjects suggest themselves:—Sideboards in a dining-room, buffets or standing supper-tables, doorways, grates and mantelpieces, the end of a room for an orchestra; each of these might be suitable subjects for prizes. So also might be a portion of one of the series of long tables used at public dinners, arranged (as they so rarely are now) so that every one may see the "gentleman who is speaking."

Upon decorations *ecclesiastical* I must touch but very briefly, merely mentioning that competitions for fonts, doorways, arches, screens, scrolls, crosses, &c., if decorated with natural flowers, could not take place in a more suitable and appropriate place than at a flower show.

W. T.

THE GARDEN IN THE HOUSE.

CULTURE OF PLANTS IN ROOMS, DOUBLE WINDOWS, &c.

IN country or in town there is no more interesting amusement than the culture of plants indoors! And if so now, how much more will it be when we have in dwelling-houses the large number of plants that may be well grown therein! We have as yet but a very imperfect knowledge of the number of species that will thrive in the dry air of rooms; there are probably thousands of the natives of hot and arid countries which will do so. Comparatively few have as yet been tried. The present is the first of a series of excellent articles from the German of Dr. Regel, of St. Petersburg, where the indoor culture of plants is carried to a degree and with a success of which we have no adequate notion in this country. This culture is as yet in its infancy in this country and on the Continent, though it is far better understood in some parts of the Continent than with us.

Before we proceed to more special instructions concerning the culture of plants in rooms, we shall first make some general observations on those places or parts of dwelling-houses which can either be used for the cultivation of plants or which may be adorned by them in a tasteful and durable manner. Everyone who wishes to occupy himself with this mode of culture, whether the means at his disposal be great or small, should be careful not to select windows which face the north, as in such a case it is absolutely vain to expect that the attempt will be attended with any permanent or satisfactory results. The best aspect is a south one, where the sun has free access during the entire day, as rooms are the better adapted for this mode of culture in proportion to the length of time they remain under the influence of the solar rays. In towns suitable houses are seldom to be obtained; but where a choice can be made, one should be selected which faces the south, east, or west, so that at least for some part of the day the sun, even when he is nearest the horizon in winter, may shine freely upon it. The longer he can do so the better adapted the house will be for room culture. An excess of solar light can be regulated by means of shading, &c., while a deficiency of it cannot be supplied by any means whatever. Whoever desires to convert a room into a sort of winter-garden, by means of suitable ornamental plants, should choose for this purpose a corner room

which has windows on both sides, and is more or less exposed on both sides to the sun. The larger and higher the windows, and the lighter the room, the more favourable will it be for the culture of plants. Light-coloured paper, or light colouring on the walls, is also advantageous in this respect. Dwelling-rooms, which are generally warmer and more dusty, are less suitable for this kind of culture, and for decoration with evergreen stove-plants, than reception-rooms, the temperature of which in winter averages from 55 deg. to 60 deg. Fahr. However, some kind of vegetation will be found to thrive in almost every kind of apartment, and in those that are kept dry we may have numbers of Mesembryanthemums and other succulents, if nought else. Corridors and frost-proof chambers, which are more useful for wintering greenhouse plants, should be light and sunny, and should moreover be furnished with thermometers, so that their temperature may be known. During continuous cold weather they should be heated just to the degree which will exclude frost. Care should also be taken to guard against the admission of cold draughts when opening the doors in frosty weather. In very severe climates double doors will be necessary. By not attending to these last two particulars, entire collections of in-door plants are often lost in a short time.

(To be continued.)

THE FLOWER GARDEN.

NOTES MADE IN "THE TIME OF ROSES."

By S. REYNOLDS HOLE.

EVERYBODY knows that, no long time ago, a public notice was set up by one of the stewards upon an Irish course, warning the world, that if the horses were not punctually at the post, the races would proceed without them; but only some of us know that, in the season by courtesy called summer of 1871, we rosarians, who race for the Queen's Plates, that is, for the silver cups of Her Majesty the Queen of Flowers, have been rose-showing without our roses. We have been racing on our hacks, and just as the spectators were thronging from the ground, our beautiful thorough-breds came upon the scene.

I mean that, with some few exceptions in our southern and western shires, the best flowers have bloomed on our trees after the wars of the roses were lost and won. A severe winter, followed by an ungenial spring, so crippled the weak and kept back the strong, that in our midland and northern districts hardly a rose appeared in its integrity before the second week in July; and in the flowers brought to our exhibitions from a milder climate, there was seen only here and there in its full development the grace and glory of the rose. Once checked in its growth, once chilled by vernal frost, no bud ever reaches perfect roshood. It may produce an attractive flower; but in size, or symmetry, or colour, or foliage, there will be defect. The bloom which Cælebs cuts for his betrothed, and Benedict for his bride, the rose which is four inches in diameter, and has not a petal sullied or out of place, has known no sickness nor stay. And so it has happened that we have gone abroad to the shows with our first roses more or less discoloured and deformed, and have surveyed at home an abundance of perfect flowers. The hay which we have taken to market was in quantity small and in quality coarse, but the "edish" has been magnificent.

Rose-growers of England, who live at home at ease, you have not, I can assure you, an adequate appreciation of the anxieties of those who go forth with their blooms in boxes. For two or three days before a rose-show, the exhibitor is "roving for ever from flower to flower" (gay pastime for bees, and butterflies, and lithe young lovers of the rose, but trying to parties who are rising fifty, and weighing sixteen stone), wondering which will be ready, and which will not; now shading to retard, now blowing to educe, a bloom; collecting and culling his moss; arranging his boxes; writing names upon cards; and, on the eve of the exhibition, cutting his roses. See him! with a flower in his right hand, and a flower in his left hand, and a flower held between his teeth, and with his two eyes vainly essaying to gloat on twenty others at once—see him, with the last night's ink upon his fingers, and last night's beard upon his chin, for he has risen at three in the morning, and come out much as he rose—see him, tearing backwards and forwards, to and fro, as though he had backed

himself to fill a thousand boxes in a thousand hours—see him, now standing in cold despair before that *Charles Lefebvre*, which yesterday was a miracle, but now returns his dejected stare with an "eye" about the size of a sixpence, and now flushed with a smile, roseate, as he sees for the first time a glorious *Pierre Notting*, pendent in purple beauty beneath its liberal leaves.

And then the journey: the horrible apprehension which always postpones itself until you are three miles from home, that you have left something, you know not what, behind; the agonising possibility of being too late for the train; the stone deafness of guards and porters to your shrieks of "keep level," and their constant appearance at either end of your boxes, in the position of persons playing see-saw; the cabman, who does not seem quite sure as to his route, and the horse who does not seem quite sure as to his footing; the unpacking, the jostling, the staging; the well-meant but maddening queries of the bystanders flocking around, "Is'n't that Marie Beauman too far gone?" and "Haven't you got a better *Maréchal Niel*?" Then, finally, "the waiting for the verdict"—not always Solomon's, not always just and wise.

Wherefore, remembering these solitudes, I was glad to rest in my bower, and surveying thence my roses thankfully, now invite you, my reader, to share my thoughts.

First, in my annual astonishment and admiration at the supreme beauty of the rose—in my wonderment why this flower should hold such an excellence above all flowers as we find in no other genus or species of created things. There prevails, by unanimous assent, no such superiority among the nations, in the animate or inanimate world. We English are fully convinced that we are the cream of creation; but the verdict must be "Not proven," so long as the neighbours fail to see our close affinity to the cheese. Æsop and others have crowned the lion king. There is to my eyes more of majestic dignity in the horse, more of beauty in the antlered monarch of the waste, greater powers of administration in the subtle wisdom of the fox. Nor have I observed any recognition of royalty in the behaviour of the other animals before the so-called king of beasts; but have noted, on the contrary, in the menagerie of Wombwell a levity of conduct, more especially striking in the deportment of the monkeys, which no subjects could have exhibited around and before the throne. The diamond, you say, outshines all other gems: there are some who love the emerald and the opal more. But we are all at one, florists or not, as to the Royal Supremacy of the Rose. I will make no comparisons. No true gardener compares one flower with another, loving all too well to disparage any; but while he finds in each, from a *Myosotis* to a *Magnolia*, enough and more than enough of beauty to exhaust his power of appreciation, he will tell you that their Queen is the Rose. We are loyal to a man. We may and do differ as to the Belle of the Court; whether *Lalia* or *Dipladenia*, *Almanaca* or *Leont*, *Stephanotis* or *Eucharis*, *Erica* or *Hydangeo*, *Lily* or *Viola*, be fairest of the fair ladies-in-waiting, but we have no dissension in whose hand to place the sceptre.

(To be continued.)

The American Sweet Water-Lily (*Nymphæa odorata*).

—These pleasant hills are not of the monotonous if rich prairie. These English-like hedgerows that border good winding-roads have little in common with those of Western Canada, where you can never go anywhere but in a painfully straight line. These pretty villages have not the primly meanness of the young American town, but a grateful, home-like look, and have little gardens and large trees. These quiet village-greens instantly remind one of the pleasantest parts of a small island on the other side of the Atlantic. Such were my thoughts last autumn as a manly-looking young fellow (as he sat by me and talked I could scarcely realise his belonging to a people with another name) drove me, by pleasant rolling woods and large, silvery, pine-fringed lakes, to Mr. Hunniwell's charming place at Wellesley, Massachusetts. New England indeed, but very like Old England, with the exception perhaps of the golden rods and asters, that make such an effective mixture of blue and gold in the copses and by the roadsides. Suddenly we came to a lake, that shone like steel under the clear Indian summer sun, and ran far back to slopes and bays, guarded by hosts of funeral-looking pines. Here and there on its bosom, far and near, were dotted beautiful large water-lilies, white as snow, like fairy white-winged ships alone or in little fleets, each surrounded by a

flotilla of green boats. The English water-lily? No, but very like it. It is the sweet American water-lily, so like *Nymphaea alba* that in the distance one thinks it our own queenly water-lily. *Nymphaea odorata* differs from our own white water-lily in being sweet-scented, and in having narrower petals, but the flower is quite as fine, or finer, measuring as much as five inches and a half across, and the leaves large and handsome. I know no plant more worth our attention, more worthy of a place beside our own water-lily, or of naturalisation in our ornamental waters.—*Field*.

Dipsacus laciniatus.—The subject of our illustration is a biennial plant, a native of Europe and Siberia, as easily raised as the common fullers' teasel, and a very effective plant, quite distinct in aspect, too, from the things usually seen in our flower-gardens. It is useful for grouping with the freer-growing plants like the castor oils, &c., or for filling up vacancies in groups of hardy perennials with fine foliage, or for placing a few feet within the margin of a shrubbery or mass of American plants. The treatment given to a half hardy annual will suit this *Dipsacus* perfectly, and it may be



Dipsacus laciniatus.

placed out with the earliest bedding plants. It is hardy enough, but as it is only an annual or biennial, its hardiness does not save us the trouble of raising it annually; so it may as well be raised with the half hardy bedding plants and the like. The foliage is usually fuller and larger halfway up the stem than is represented in our illustration. It is one of the most valuable and easily raised of the hardy plants frequently, but not happily, termed sub-tropical. The plant figured was sketched in Hyde Park this year.

The Wild-Garden.—When on a botanising excursion in the west of Ireland lately, I looked in at Rockingham, near Boyle, where some matters relating to the wild-garden pleased me much. Adjoining the garden, there is a low fence wall, built with brick. It is a kind of sunk fence, one face of the wall only appearing, the other being covered with earth, in consequence of the ground inside being considerably higher, which causes the side seen to be always damp. From one end to the other, it was densely covered with *Asplenium Trichomanes*, which had fronds upwards of a foot in length in many instances. The effect produced by such a mass of this elegant fern,

growing with such luxuriance under the circumstances described, seemed to me almost magical. The tops and portions of the faces of the garden walls were covered with masses of *Grammitis Ceterach* in many places, which, the gardener stated, they had constantly to eradicate, in order to keep the trees clear of it. Another pretty and partly natural object attracted my attention in the domain of Rockingham, namely, a bridge built over an arm of the great lake there, with water-worn limestone, which abounds in that neighbourhood. The ends of the slabs of stones were only hammered square, so as to make them fit firmly together; both faces were left in their curious, undulating, natural state; besides, the parapets and coping were of the same material. This bridge, covered with a beautiful drapery of ferns, and with the natural projections of the stones appearing at intervals among them, had a very picturesque and pleasing effect, such as I believe could easily be imitated in the making of artificial bridges in wild-garden scenery; hence one of the reasons I made a note of it. When at Sligo, I visited the domain of the late Right Hon. John Wynne, who was himself a good Irish botanist, as well as a lover of horticulture. I found he had been in the habit of introducing many American and other ornamental bog-loving plants through his extensive and naturally-beautiful domain. I have never before seen such plants as *Gaultheria Shallon*, *G. procumbens*, the *Pernettyas*, &c., growing in so natural a condition among the low heath and mosses as they do there. I expected to find *Epigaea repens* had also been tried, but could see no trace of it, though I have no doubt that that lovely plant would do as well there as it does in the Canadian forests.

Glasnevin.

D. MOORE.

PLANTING HARDY ORCHIDS, CHOICE ALPINE PLANTS, &c.

THERE is a mischievous or rather murderous way of planting almost every kind of small plant, which is particularly regrettable in the case of hardy orchids, which have roots easily injured, and of all rare hardy plants. I refer to the making of a hole for the plant, and after a little soil has been shaken over the roots, pressing heavily with the fingers over the roots and near the neck of the unfortunate subject. What is meant will be understood from fig. 2, if the reader assumes there is a little soil between the fingers and the roots. Where the roots are not all broken off in this way, many of them are mutilated; or



those near the collar of the plant are thrust deeper into the earth. Not unfrequently plants perish from this cause. The right way is, after preparing the ground, to make it firm and level, and then make a little cut or trench, as in fig. 1. The side of this trench should be firm and smooth, and the plant placed against it, the roots spread out, and the neck of the plant just at the proper level, as in fig. 1. Then a good deal of the fine earth of the little trench is to be thrown against the roots, and as much lateral pressure applied as may be necessary to make the whole quite firm. Once the subject is carefully planted, as much surface-pressure as you like may be given. In this way not a fibre of the most fragile plant will be injured. This, of course, only applies to subjects not planted with balls, and, without balls, is the best way to plant.—W. R.

Ivy Borders.—Well aware of the many positions in which these may be used with the best result, we had no idea till lately of the capital effect they produce when used as margins to beds on grass lawns. In this case one would have thought the verdant carpet of turf sufficient, and so it is, if the subjects fill the bed properly and come flush to the margin; but, with the bare earth more conspicuous than the bedding-plants, as is so often the case early in the summer, the belt of fresh ivy, rising as it does several inches above the level of the earth, effects the greatest improvement. Near at hand this is not so evident, but when a little way off, the nakedness of the earth is hidden by the ivy, and the flowers peep above it, the whole seeming well furnished. Ivy edgings deserve far more attention than they at present obtain, and they may be used in scores of positions where they are never now seen. The best kind is the Irish; but where many edgings are made, it would be very desirable to produce some variety by using other healthy green-leaved kinds; and the variegated ones, too, should be attractive, though no charm of theirs can ever equal the unmatched verdure of the Irish ivy in early summer. Beside it all other leaves of our hardy plants seem washed out or feeble stains.—W.

Window Gardening for Young Ladies.—Don't plant yourself at the window in curl papers. By careful choice of situation and attention to aspect, young ladies may, by means of window gardening, successfully cultivate every variety of the sheepseye (*Ovis oculus ardens*), and convert corcombs from the single to the double variety, with great success.—*Punch's Almanac*.

THE 'BOG-GARDEN.

THE bog-garden is a home for the numerous children of the wild that will not thrive on our harsh, bare, and dry garden-borders, but must be cushioned on moss, and associated with their own relatives in moist peat soil. Many beautiful plants, like the Wind Gentian and Creeping Harebell, grow on our own bogs and marshes much as these are now encroached upon. But even those acquainted with the beauty of the plants of our own bogs have, as a rule, but a feeble notion of the multitude of charming plants, natives of northern and temperate countries, whose home is the open marsh or boggy wood. In our own country we have been so long encroaching upon the bogs and wastes that some of us come to regard them as exceptional tracts all over the world. But when one travels in new countries in northern climes, one soon learns what a vast extent of the world's surface was at one time covered with bogs. In North America day after day, even by the margins of the railroads, one sees the vivid blooms of the Cardinal Flower spring erect from the wet peaty hollows. Far under the shady woods stretch the black bog-pools, the ground between so shaky that you move a few steps with difficulty. One wonders how the trees exist with their roots in such a bath.

And where the forest vegetation disappears, the American Pitcher plant (*Sarracenia*), Golden Club (*Orontium*), Water Arum (*Calla palustris*), and a host of other handsome and interesting bog-plants, cover the ground for hundreds of acres with perhaps an occasional slender bush of Laurel Magnolia (*Magnolia glauca*) among them. In some parts of Canada, where the painfully-long and straight roads are often made through woody swamps, and where the few scattered and poor habitations offer little to cheer the traveller, if a lover of plants, he will find conservatories of beauty in the ditches and pools of black water beside the road, fringed with the sweet-scented Button Bush, with a profusion of royal and other stately ferns, and often filled with masses of pretty *Sagittarias*.

Southwards and seawards the bog-flowers become tropical in size and brilliancy, as in the splendid kinds of herbaceous *Hibiscus*, while far north, and west, and south along the mountains, the beautiful Showy Moccasin flower (*Cypripedium spectabile*) grows the queen of the peat bog and queen of hardy orchids. Then in California, all along the Sierras, you see a number of most delicate little annual plants growing in small mountain bogs long after the plains have become quite parched, and annual vegetation quite disappeared from them. But who shall record the beauty and interest of the flowers of the wide-spreading marsh-lands of this little globe of ours, from those of the vast wet woods of America, dark and brown, and hidden from the sunbeams, where the fair flowers only meet the eyes of water-snakes and frogs, to those of the breezy uplands of the high Alps, far above the woods, where the little bogs teem with Nature's most vivid jewellery, joyous in a

bright sun, and dancing in the breeze? No one worthily, for no one knows. For many mountain-swamp regions are as yet as little known to us as those of the Himalaya, with their giant Primroses and many strange and lovely flowers. One thing, however, we may gather from our small experiences, that many plants commonly termed "Alpine," and found on high mountains, are true bog-plants. This must be clear to anyone who has seen our pretty bird's-eye Primrose in the wet mountain-side bogs of Westmoreland, or the Bavarian Gentian in the spongy soil by Alpine rivulets, or the Gentianella (*Gentiana acaulis*) in the snow ooze. We enjoy at our doors the plants of hottest tropical isles, but many wrongly think the rare bog-plants, like the minute Alpine plants, cannot be grown well in gardens. Like the rock-garden, the bog-garden is rarely or never seen properly made and embellished with its most suitable ornaments. Indeed, bog-gardens of any kind are very rare, and only attempted by an individual here and there, who usually confines them to the accommodation of a few plants found in the neighbouring bogs. I will now proceed to point out how these may be made with a certainty of success.

In some places naturally boggy spots may be found which may be readily converted into a home for some of the subjects to

be named hereafter. But in most places an artificial bog is the only possible one. It should only be made in a picturesque part of the grounds. It may be associated with a rock-garden with good effect, or it may be in a moist hollow, or may touch upon the margins of a pond or lake. By the margins of streamlets, too, little bogs may be made with excellent taste. A tiny streamlet may be diverted from the main one to flow over the adjacent grass irriga-



Cypripedium.

Tillium.

Sarracenia.

Helonius.

Pinguicula.

THE BOG-GARDEN.

tion on a small scale. No better bog than this can be devised, and none so easily made. Another very good kind could be made at the outlet of a small spring. It was in such little bogs I found the Californian Pitcher plant in dry parts of California, where there were no real bogs. In some of these positions the ground will often be so moist that little trouble beyond digging out a hole to give a different soil to some favourite plant will be needed. Where the bog has to be made in ordinary ground, and with none of the above aids, a hollow must be dug to a depth of at least two feet, and filled in with any kind of peat or vegetable soil that may be obtainable. If no peat is at hand, turfy loam with plenty of leaf-mould, &c., must do for the general body of the soil; but as there are some plants for which peat is indispensable, a small portion of the bog-bed should be composed entirely of that soil. The bed should be slightly below the surface of the ground, so that no rain or moisture may be lost to it. There should be no puddling of the bottom, and there must be a constant supply of water. This can be supplied by means of a pipe in most places—a pipe allowed to flow forth over some firmly-tufted plant that would prevent the water from tearing up the soil.

CONDUCTOR.

(To be continued.)

RECENT FLOWER-GARDENING.

TO THE EDITOR OF "THE GARDEN."

SIR,—Our old nursery song says :—

"Mary, Mary, quite contrary!
How does your garden grow?
With silver-bells, and cockle-shells,
And houseleeks all of a row."

May not this warning rhyme of our infancy go down to posterity with "Miss Muffet who sat on a tuffet," and was alarmed by a "spider who sat down beside her" (which shows the youthful mind how foolish it is to be afraid of harmless insects, and so "lose their curds and whey"); or, again, with "the Old Woman who lived in a shoe" (which in its moral is Malthusian)? Can we not, sir, extract a moral and preach a short sermon on this piece of wisdom of our ancestors? I think so. I think that a clever person might make a homily which would even reach Mr. Ayton's heart, and although his name is most certainly not "Mary," he is decidedly "contrary" in many ways. The line referring to "houseleeks all of a row," obviously refers to a recent monstrosity in gardening to be seen to any extent in Hyde Park and elsewhere. There, for the first time, have I seen houseleeks, which in their natural grouping are like a beautiful irregular constellation of stars, put "all in a row" on mud, round flower-beds, without an inch wrong between them. This is "taming nature" with a vengeance. We must remember, however, that the great verse quoted at the head of this letter was composed more, probably, than one hundred years ago, when there *were* gardens—there are none now,—and when houseleeks were not put in a row. Looking at it in that light we may say with the immortal Chiggle, as quoted by an American gentleman in "Martin Chuzzlewit," that "it was a pre-diction, cruel smart." We have not come to cockle-shells yet in our public gardens, but we must wait and hope; we shall not be long without them if we go on steadily developing in our present direction.

I most strenuously protest, sir, *in toto*, against this new ribbon-gardening, as being utterly inartistic, utterly false to nature, and, three times out of four, utterly false in colour. Their arrangement is either empiric or traditional. As an example of the traditional method, look at the ordinary arrangement of scarlet geraniums and yellow calceolarias with an edging of blue lobelia. Is that beautiful? I, for my part, cannot undertake to say; but it is certainly fashionable. I should be disposed to ask if the present head-dress of the ladies is beautiful, and I should receive the stale, stupid, old answer that there is no disputing about tastes. I say that there is such a thing as good taste and bad taste, and that the further you depart from nature the nearer you get to bad taste. If a lady choose to wear her hair *au naturel*, or to loop it up in a natural and sensible way, she is in good taste, and will find that her head looks like that of the Venus de Medici; if she makes it the size of a bushel-basket with false hair, she is in bad taste, though she may be in fashion. So with flowers planted in rows: nature never plants in rows. It were better to get a strong man to cast a bushel of potatoes about, and to plant where each falls. However, sir, as I have cast enough potatoes about for this week, I will leave off before one of them comes back on me. I hope soon to begin my second parallel against the monstrous fortress of fashion; at present I have only broken ground.

HENRY KINGSLEY.

NOTES AND QUESTIONS ON FLOWER-GARDENING.

Aster longifolius (var. *formosus*).—There is perhaps no genus that, while containing a number of valuable autumn flowering border-plants, contains more species of a weedy and useless character than the large group bearing the generic title of *Aster*. Next to *A. bessarabicus*—sometimes erroneously called "grandiflorus"—in fact, on a par with it as to beauty, stands the above-named species, or rather variety. I am scarcely prepared to say that its specific title of "long-leaved" is a very appropriate one,—as this character is not at all marked either in the radical or cauline leaves; and were it not that it has been referred to this species on the very best authority, I should have been disposed to question it. Under any circumstances, it is a wonderfully beautiful variety, and one that no selection of herbaceous plants should be without. What the

original species is like I know not, beyond the fact of its being of a tolerably ancient date, and described as having white flowers and growing three feet high, whereas this has a densely arranged ray of florets of the most lovely warm rose-coloured tint imaginable; but beyond this it has another quality, and one that would even render it valuable for conservatory decoration, and that is, it might be made to fill an hiatus between the ordinary summer denizens and the *Chrysanthemums*, or still better, perhaps, in association with the latter. In order to grow it for this purpose, about the month of April the young shoots should be removed and placed in a slight bottom heat. They will strike freely and rapidly after they are established, and once pinched back they may be shaken out of the pot and separated—each plant being planted in a sunny situation, say twelve inches apart, receiving, of course, a good watering immediately after. They will soon take to their new quarters, and by the month of September, or the beginning of October, each of them will form a pyramid about fifteen inches high and twelve inches through at the base, covered with bloom from top to bottom, and with the still further advantage that all the blooms expand together. If lifted carefully, and placed in moderate-sized pots, they may then be removed to the conservatory or greenhouse, where their plebeian origin will be lost sight of in admiration of their intrinsic beauty. I received this same *Aster* last summer, under the name of "Madame Soynuce," which is, no doubt, of Continental origin. I have grown it for some four or five years, and have given it the above name. In conclusion I might add that, when grown undisturbed for two or three years, it attains a height with us of nearly three feet, and gets bare below, thus detracting from the beauty it presents when cultivated as I have above described.

Botanic Gardens, Hull.

J. C. NIVEN.

Ampelopsis tricuspidata.—Of this remarkable and lovely plant it is wholly impossible to speak too highly. Without doubt, it is one of the most desirable of all climbers for a rock, wall, tree, or wooden fence. It requires no fixing or nailing, but attaches itself perfectly close by means of short filaments (tendrils), which expand at their ends into a star-like group of suckers, scarcely removable from the surface, to which they most tenaciously cling. The roundish leaves are densely imbricated, lapping over each other, often 3 inches to 3½ inches in diameter. In spring and summer they are of a lively citrine colour, changing in autumn to the most luminous deep crimson, but the portions lapped over remain colourless. Its growth is most rapid, and it bears exposure to the fiercest rays of the sun, and braves the winds and frosts of winter; it rarely requires pruning, as all portions cling close to the surface. The wonderful mass of rich and vivid colour which it produces all through October and part of November, is truly glorious. This species is far more desirable than *Ampelopsis hederacea*, or Virginian creeper, the leaves of which, immediately they attain their crimson hue, and, often when still green, are scattered by winds or frosts; those of *A. tricuspidata* are retained longer than those of most climbers. It is deciduous, like all the family of vines, and the flowers are inconspicuous. One of my specimens covers a considerable portion of the lofty stone wall of the fern-house and brick buttress (which face south-west and west), and when seen from a distance associated with the scarlet-berries of the *Pyracantha* it has a truly marvellous effect. It is certainly one of the most important acquisitions ever made to our series of hardy climbers, and does honour to the memory of the late Mr. John Gould Veitch, who introduced it from Japan. Cuttings of it strike readily.

Glen Andred.

E. W. COOKE.

The Verbena in America.—I see, by English papers, that cultivators on your side of the Atlantic lament the difficulty of obtaining a healthy young stock of this useful bedding plant. In America the *Verbena* is grown by hundreds of thousands, as every cottager plants a dozen or so of it each year; and the plants, under bad treatment, are just as subject to disease here as with you. The proper way of managing them is to commence with, say three or four small healthy plants; one plant would yield all the cuttings required for stock, if they did not amount to more than a few thousands of one variety, but plant, say three or four, to make sure, in any open rich spot in the kitchen-garden or reserve-ground. Plant early in May. A moderate frost will not injure them if hardened off properly before turning out. They will require no more attention beyond that of stirring the soil and keeping down weeds. About the middle of August they should be from two to four feet across, and rooted from all the first-made joints. Cut them close down to the ground, and throw over what remains a little fine rich soil, after loosening the ground with a fork, and if very dry giving a good soaking of water. This last would, however, not be often necessary in England. In a few weeks' time the old plants will be covered with nice soft young shoots, which will be just right for cuttings. As regards propagating *Verbenas*, they can be struck in pans, boxes, or in any other way preferred, the only thing to keep in mind being to have the house or frame in which they are placed as cool as possible, and to afford shade if required. We strike our cuttings in clean sand placed on propagating-benches, and our climate is usually too hot for such cuttings until about the end of September. In England, however, the nights are cool earlier in the season. This year our first batch of cuttings was potted off in five days from the time of putting in the cuttings; but I would prefer allowing them eight days to root. We pot them in two-inch pots, place them at once in a house slightly shaded for a few days, and then let them be open night and day, unless in very severe weather, keeping the temperature rather below 40 deg. than above that point on cold nights. If required, several

cuttings may be taken from each plant by November, and others at a few weeks' interval, until planting-out time, the latest batch being the best for stock plants. We strike the cuttings in winter and spring in a night-temperature of 50 deg., and place them as soon as potted in some cold house. Never let them get very dry; dust with sulphur if a spot of mildew appears, fumigating with tobacco once or twice a week. This latter is very essential. To it in a great measure, I owed my success in cucumber-growing ten years previously to my leaving England.—JAMES TAPLIN, South Amboy, New Jersey, United States.

INSECTS, BIRDS, DESTRUCTIVE ANIMALS, ETC.

HURTFUL INSECTS.

No one will dispute that those whose business or pleasure it is to cultivate a garden would be the better of some knowledge of the insects that prey on its ornaments or products. The amount of ignorance that prevails on the subject of insects is surprising. Frequently we find all insects regarded as alike noxious. Were the whole class under trial before the majority of persons, the verdict would infallibly be that of the Scotch juryman, "Hang them a'." Not many weeks since, as we passed an individual digging, we saw him suddenly step out, and bring his foot down with crushing emphasis upon a poor beetle that caught his eye. "Why did you do that?" said we. "It is a black beetle" was the reply, as much as to say it is a condemned outlaw. We turned upon him and were about to say, "That beetle was one of your friends; its mission was to prey upon the grubs and slugs that destroy your produce. For one of them that you can kill, that beetle would have consumed hundreds." But ere we had opened our lips, we saw from the expression of his countenance that to deceive him, and extract from his mind the rooted prejudices which had prompted the action, would be no easy matter, so we saved ourselves the trouble. But if we are hopeless of him, we expect much good from making known in a paper like THE GARDEN all the important facts in connection with the insects destructive to vegetation, and the best modes of preventing their ravages so far as the present state of our knowledge will permit. It is our intention to figure every injurious species in its various stages, and thereby lead to a much more general knowledge of the subjects themselves. Entomology in England does not form part of any course of study. On the Continent there are Professors of Entomology, and in America (where it cannot be said that the practical money value of any commodity, whether goods or knowledge, is of no account) there are paid State Entomologists, whose office it is to devote themselves to the study of the hurtful insects of the State to which they belong, and to supply information regarding them to its inhabitants, by answering queries or otherwise. But although with us neglected, the study of our hurtful insects is a very important subject. The more we learn the more we see that our property often lies at their mercy; and, as has been well proved in America, it would be good economy in the long run to be at the expense of obtaining and diffusing knowledge of their habits, and of the best modes of preventing their ravages. Although no effort is made here to supply this want, it ought, nevertheless, to be supplied; and as men become wiser, we may reckon that it will be supplied. Meantime, we are determined to see what the press can do to remedy wants in this way. To assist us in the work we thus undertake we solicit the co-operation of our readers and subscribers, begging them, whenever they meet with any noxious insects, to transmit them to us for study and elucidation. We shall not spare expense where necessary for the exact portraiture of every species where required; and as we hold it useless to do work already thoroughly well done by others, we shall avail ourselves of their labours, and they shall, in all cases, be duly acknowledged. The Entomological Department of THE GARDEN will be under the care of Mr. Andrew Murray, F.L.S., whose most instructive and useful collections of insects illustrating economic entomology, at the South Kensington Museum, are a sufficient guarantee, if none other existed, of his peculiar fitness as a guide in this matter.

Remedy for the Apple Maggot. The following American remedy for this terrible pest to fruit-growers is the most successful yet made known, and well deserves the attention of our fruit-growers. We find it fully and well described by W. Riley, in *Moore's Rural New Yorker*. It is known as the bandage system: "This is best accomplished by a bandage fastened around the trunk of the tree below the branches, so as to intercept the worms. The natural habit of the worm is to spin its cocoon under the loose bark of the tree upon which it was born, and the philosophy of the bandage-system is, simply, that the worms in quitting the fruit, whether while it is on the tree or on the ground, in search for a cozy nook in which to spin up, find the shelter thus afforded just the thing, and in ninety-nine cases out of a hundred they will accept of the lure, if no other more enticing be in their way. Hay bands have been used for this purpose, but cloth of one kind or another, tacked to the tree or fastened with

string, has advantages over the hay bands, as, when taken from the tree, it can be passed through a wringer, or steeped in hot water, and the insects may thus be more expeditiously destroyed, and the cloths used again. They must surround the tree below the branches. Every man must, of course, decide for himself, according to the extent of his orchard, and the facility with which he can procure rags or cloth, whether they or the hay bands will be the cheapest and most expedient. A good bandage, ready made, is greatly needed in the country, and if some enterprising firm would manufacture canvas strips about six inches wide, lined on one side with four inches of tow, cotton wadding, or some other loose material, and would put it upon the market at a reasonable price per yard, there would be an unlimited demand for it. Such strips would last for years, and could be cut of any desired length, drawn around and tacked. As regards time, the best advice that can be given is to have the bandages on the trees about a week after the first, Wilson's Albany strawberries are ripe. It is of no use to put them on earlier with a view to entrap the moths, as I am convinced that they cannot be entrapped in sufficient numbers to make it pay. The bands should be removed, and the insects destroyed, at least once a fortnight from this time till the apples are all off the tree. Of course the bandage-system is a preventive measure, not a remedy, and the beneficial effects of this system will not be felt till the year following."

Rabbit-proof Plants.—The following list of plants reported to be avoided by rabbits is prepared from notes in the *Field*. Perhaps some of our readers may be able to add to them, and perhaps others will have found some of the present list anything but "rabbit-proof":—

Tritoma	Scilla	Elder
Iris	Woodruff	Ligustrum vulgare
Winter acuite	Monkshood	Symphoricarpos racematus
Narcissus	Muscari	Yucca gloriosa
Asphodelus albus	Roses	Berberis Darwini
Solomon's seal	Primrose in var	Syringa persica and vul-
Lily-of-the-valley	Arabis	garis
Ornithogalum	Anemone coronaria	Weicelia rosen
Fuchsia	" japonica	Deutzia scabra
Columbine	Aubrietia	Ruscus aculeatus
Poppy	Violets	" racemosus
Honesty (Lunaria)	Pansies	Lycium barbarum
Phlox in var.	Canterbury Bells	Androsæmum officinale
Periwinkle (large and small)	Hollies	Hibiscus syriacus
Lilies (common orange and white kinds)	Mahonia aquifolium	Artemisia Abrotanum
Dog's-tooth violet	Common and Irish yews	Cucurbita maritima
	Laburnum	Stachys lanata
	Lonicera in var	Enonymus

Destroying Grasshoppers.—An Adelaide newspaper recommends the following method of destroying the grasshoppers, which in some seasons commit great depredations in various parts of the colony:—"The plan is to sow borders or rows of the common larkspur in gardens; in vineyards it might be sown between the vines. The larkspur has a very pretty flower, and the leaf is so green that it attracts the grasshoppers at once, and, when eaten, is sudden death to them. I have seen them lying dead by thousands under the larkspur borders in the gardens in Adelaide." The writer adds that he has adopted this plan for years with much success. If this be so, what good news for the Mormons, who have been almost reduced to poverty by grasshoppers during the past few years.

The Woodpecker, so absurdly accused of attacking healthy trees, is an indefatigable destroyer of hosts of insects injurious to vegetation, and especially of ants. "Last summer," says M. Aime, "I was walking in my park, when I noticed a woodpecker look around to see if he were observed, and then lie down as if dead and stretch out his tongue at full length. Now and then he drew it in: near him was an ants' nest. The ants, supposing him dead, swarmed over his tongue, intending to make a meal of it, whereas they fell a prey to the wile of the bird."

The Money-Tree. The speculation has sometimes crossed my mind, in that dreary interval of drought which intervenes between quarterly stipendiary showers, that Providence, by the creation of a money-tree, might have simplified wonderfully the sometimes perplexing problem of human life. We read of bread-trees, the butter for which lies ready churned in Irish bogs. Milk-trees we are assured of in South America, and stout Sir John Hawkins testifies to water-trees in the Canaries. Boot-trees bear abundantly in Lynn and elsewhere; and I have seen, in the entries of the wealthy, hat-trees with a fair show of fruit. A family-tree I once cultivated myself, and found therefrom but a scanty yield, and that quite tasteless and inimitable. Of trees bearing men we are not without examples: as those in the park of Louis XI. of France. . . . Not to multiply examples, I will barely add to my list the birch-tree, in the smaller branches of which has been implanted so miraculous a virtue for communicating the Latin and Greek languages, and which may well, therefore, be classed among the trees producing the necessities of life—*venerabile dumna fatalis vispa*. That money-trees

existed in the golden age there want not prevalent reasons for believing. For does not the old proverb, when it asserts that money does not grow on every bush, imply *à fortiori* that there were certain bushes which did produce it? Again, there is another ancient saw to the effect that money is the root of all evil. From which two adages it may be safe to infer that the aforesaid species of tree first degenerated into a shrub, then absconded underground, and finally, in our iron age, vanished altogether.—J. R. LOWELL.

THE ARBORETUM.

THE YELLOW PINE.

PINUS PONDEROSA (DOUGLAS).

This is one of the noblest of the trees that make up the great fir forests of the West, and of which the merits and importance are very insufficiently known in this country. It not only thrives in the genial climate of the mountain slopes of California and Oregon, but also spreads far into the arid desert towards the east, and crests the mountain tops in the Utah region, spreading from the Colorado River far and wide throughout the Rocky Mountains, its northern limit being as yet undetermined.

"Near or distant," says Dr. Newberry, in describing the journey of his party from the Pitt River to the Columbia, "trees of this kind were ~~very~~ always in sight; and in the arid and really desert region of the interior basin, we made ~~whole days' marches~~ in forest of yellow pine, of which the absolute monotony was unbroken either by other forms of vegetation, or the stillness by the ~~inter~~ of a bird or the hum of an insect. The volcanic soil, as light and dry as ashes, into which the feet of our horses sank to the fetlocks, produces almost nothing but an apparently unending succession of large trees of *P. ponderosa*." Again, in the Pacific Survey, treating of the country between the Cascades and Sierra Nevada and the Rocky Mountains, we read: "The climate is everywhere characterised by the absence of moisture, with, with the exception of the mountain summits that project above the general level, gives to the surface a character to which the name of desert has not been inappropriately applied. The general aspect of the botany of this region is made up of three distinct elements. Of these the first is represented by the grassy plains which border the streams flowing down from the mountains. On these surfaces grow a considerable variety of annual vegetation, in its general character not unlike that of the Sacramento Valley. The second of these botanical phases is that of the sage plains—surfaces upon which little or nothing ~~but~~ than clumps of *Artemisia* will grow. The third is formed by forests of yellow pine (*P. ponderosa*), which apparently finds on these arid surfaces its most congenial habitat. It sometimes happened to us that, during the whole day's ride, we were passing through a continuous forest of these yellow pine trees, in which scarcely a dozen distinct species of plants could be found. The yellow pine, as it grows in these sterile regions, is a noble tree; and, though never rivalling the gigantic sugar pine in its dimensions, it claims among western pines the second place. At Mcumber's we saw many of this species six feet and even seven feet in diameter three feet from the ground; and near the base of Mount Jefferson, in Oregon, I saw one which was twenty-five feet in circumference at the same height."

Inhabiting such a vast region of country, and living under such striking varieties of conditions, now in alpine meadows, and now in hot, gravelly plains, as is the case in Mendocino County, California, there is great variety found in the form and size of the tree, and even in the quality of its timber. Professor Bolander informed me that there was a remarkable difference in the size of the cones; those in a dense forest being very small, while those of isolated trees standing in alpine meadows, or on open mountain sides, are from four to six times larger. Everywhere on the Californian mountains it may be seen, and, in fact, usually it is the commonest tree in the mighty forest region running through California and Oregon northward. On the Sierras, it usually grows at elevations of from 1,500 to 9,000 feet, and it attains a height of from one hundred to two hundred and fifty feet.

The port of *P. ponderosa* is somewhat more spreading than *P. Lambertiana*, though far less so than *P. Sabiana*. Where the last two species grow together, the contrast in form is very

striking, as is also the colour and character of the foliage. The wood of the yellow pine is generally highly resinous, and, though heavy, is brittle and less valuable than that of the sugar pine. Like the "pitch pine" of the Eastern States, it is, however, sometimes of excellent quality, containing little resin, soft and tough. The yellow pine exhibits a tendency to twist, which is very noticeable in a forest of these trees, the grain of trunk and branches being often seen coiled into the closest possible spiral. The bark of the yellow pine affords one of its most noticeable and distinctive characters. It is light yellowish-brown (cork colour), and is divided into large plates, four, six, or eight inches in breadth, which are flat and smooth, and enable one to distinguish the trunk of this tree at a considerable distance. The plates of cork-like bark are made the repositories of acorns by the woodpeckers, and it is a very common thing to see large numbers of these trees having the bark of the trunk cut into a honeycomb by thickly-set holes as large as thimbles, or as thickly studded with inserted acorns. The colour of the leaves is a dark yellow green, and readily distinguishable from the deep blue-green of *P. Lambertiana*, or the light blue-green, or glaucous hue, of *P. Sabiana*. The successive appearance and decadence of clusters of leaves at the ends of the branches, give to the smaller ones a beaded character, which distinguishes it from all other western pines. The smaller branches, and especially the central shoot in young trees, are strongly marked with the scales of the fallen leaves, closely resembling in some cases the leaf scars of the lepidodendroid fossils of the coal period. The cones of *P. ponderosa* are from three to six inches in length, ovoid in form, the bosses of the scales bearing small acute recurved spines. The cones grow singly or in clusters of from two to four, generally at the extremities of the smaller branches, and are not pendent, as in the group of pines to which *P. Lambertiana* and *P. strobus* belong. The seeds are somewhat larger than apple seeds, and form the principal subsistence of several kinds of birds.

In England the young trees are of rapid and robust growth, quite hardy, and of noble aspect; the branches are few, in regular whorls, horizontally placed, robust and more or less flexed, with the lower ones inclined to assume a somewhat drooping habit as the tree becomes old. The lateral branchlets are somewhat slender, more or less drooping, and growing in various directions; while the top or leading shoot is often more than an inch in diameter, and of very considerable length. The buds, bluntly domed, with a prominent point and full of resin; the leaves are thickly set on the branches in threes, from eight to ten inches long, rather broad and straight, but twisted at the base, with persistent sheaths one inch long and smooth when young, but much shorter and shrivelled on the older ones. This kind of pine is very subject in England to be attacked by the small pine beetle (*Hylurgus*), which destroys the young shoots by boring in their centres.

We shall be glad of information as to the progress this tree is making in various parts of the country. The following are the names of the places to which Douglas's plants were sent:—Dromore, Chatsworth, Elvaston, Carlew, Woburn, Bayfordbury, Bicton, Croom, Trentham, Belsay, Flitwick, Bear Wood, Boyton, Redleaf, Chipstead, Beauport, Carlton Hall, Hadd House, and Hopetoun House.

Our engraving, by Mr. Whympers, is from a noble photograph brought from San Francisco by the Conductor, and taken in the Yosemite Valley by Mr. Watkins.

GEORGE GORDON, A.L.S.

Planting Trees.—After all, the most encouraging things I find in the treatise *De Senectute* are the stories of men who have found new occupations when growing old, or kept up their common pursuits in the extreme period of life. Cato learned Greek when he was old, and speaks of wishing to learn the fiddle or some such instrument (*fidibus*), after the example of Socrates. Solon learned something new every day in his old age, as he gloried to proclaim. Cyrus pointed out with pride and pleasure the trees he had planted with his own hands. I remember a pillar on the Duke of Northumberland's estate at Alnwick, with an inscription in similar words, if not the same. That, like other country pleasures, never wears out. None is too rich, none too poor, none too young, none too old, to enjoy it. There is a New England story I have heard more to the point, however, than any of Cicero's. A young farmer was urged to set out some apple-trees. "No," said he, "they are too long growing, and I don't want to plant for other people." The young farmer's father was spoken to about it, but he, with better reason, alleged that apple-trees were slow and life was fleeting. At last some one mentioned it to the old grandfather of the young farmer. He had nothing else to do, so he stuck in some trees. He lived long enough to drink barrels of cider made from the apples that grew on those trees.—O. W. HOLMES.



THE YELLOW PINE (*PINUS PONDEROSA*), IN THE YOSEMITE VALLEY.

NOTES AND QUESTIONS ON FRUIT-GARDENING.

Cherries.—It would be very interesting if we could settle the question whether lime in the soil is good or bad for cherries. I have come to the conclusion that it is injurious. Some years since, Mr. Rivers recommended chalk for stone fruit, and I procured a truck-load from Ipswich to experiment with. A small proportion of chalk was added to the soil, in which a number of cherries was potted, consisting of a large number of varieties, and almost every tree became unhealthy. Whilst the question as to the cause was occupying my mind, I happened to drive through a part of Derbyshire, near Dale Abbey, and remarked some of the finest cherry-trees I ever saw, loaded with very large crops; indeed, the trees at a distance showed quite red with the enormous crop of ripe fruit. The land is on the millstone grit, and the soil must be almost destitute of lime in every shape, because the foxglove and bracken (*Pteris aquilina*) are everywhere common. What I want to discover is whether cherries are known to flourish on a soil containing much chalk or lime. It is not enough to know that lime is or is not present in the formation in which, or rather above which, cherries flourish and attain a great size, but whether the surface soil contains lime or not. I have known an oolite soil almost destitute of lime for several feet, and turnips unhealthy in consequence; and it is well known some so-called chalk soils are benefited by dressings of chalk.—J. R. PEARSON (Chilwell).

Pears grafted on Apple Stocks.—Is it true, as is asserted and reiterated every day, that pears cannot be grafted on apples with any chance of success? Have any important experiments been made on a sufficiently large scale to allow of an opinion of any weight being formed on the subject? We think not. Experiments have been limited to the grafting of only a few kinds, and, from the results of these, absolute consequences have been inferred for all cases. We do not question the truth of the failures; what we deplore is that from these failures too general and sweeping conclusions have been drawn. We have at the Museum two cases which support us in our condemnation of the exclusive character of the rule. One of these cases is a specimen of *Beurre de Malines*, which is at this moment covered with very fine fruit; the other is a *Beurre Spence* or *Fondante des Bois*, which, this year, is also loaded with splendid fruit. These trees, which are handsome and vigorous, and the very clean bark of which shows a perfect condition of health, were grafted on the *Doucin* in 1856. This was not done by accident, but from our desire to prove the truth of the asserted incompatibility of the organism of the two trees, and we mention it here in order to urge the repetition of the experiment on a larger scale and in different localities, for we cannot too often repeat that over-generalisation should be avoided, and also that we should only form our opinions from facts, especially in matters of horticulture, since experiments which fail in one place sometimes succeed in another. The following is our notion of what should be done:—Take fifty varieties of pears, and graft two of each kind by shield-budding, and two more by cleft-grafting. We recommend the two methods to be tried, as there are cases in which these two operations are followed by entirely different results. This may appear singular, but so it is.—M. CARRIÈRE, in *Revue Horticole*.

The Author of "Waverley" on Planting Fruit-Trees.—Reading the other day for the first time Sir Walter Scott's "Antiquary," I was struck with a passage at the commencement of the fourth chapter, in which Mr. Oldbuck points out to Jodel the method of planting fruit-trees adopted by the monks of old, and which plainly shows that the idea therein manifested, so far from being modern, is almost as "old as the hills." Our two friends moved through a little orchard where the aged apple-trees, well loaded with fruit, showed, as is usual in the neighbourhood of monastic buildings, that the days of the monks had not always been spent in indolence, but often were devoted to their gardens. Mr. Oldbuck failed not to make Jodel take notice that the planters of those days were possessed of the "modern" secret of preventing the roots of fruit-trees from penetrating the subsoil, and compelling them to spread in a lateral direction, by placing paving-stones beneath when first planted, so as to interpose between their fibres and the subsoil. Sir Walter writes of this idea as being a "modern" one in his day. We have had plenty of writers who have also claimed it as a modern one in our day.—A. D.

THE INDOOR-GARDEN.

THE ODOURS OF ORCHIDS.

Some years since, M. Rivière, head-gardener at the Luxembourg in Paris, commenced some observations on the odours of the orchids under his care, with respect to which he communicated new and interesting, but unfortunately few, facts to the Horticultural Society of Paris. He was kind enough, sometime afterwards, to supplement this communication by a letter to myself in July, 1866, which contained many singular remarks. Amongst these he mentioned the circumstance that *Cattleya bulbosa* (or *C. Walkeriana*) emits an odour of vanilla in the daytime and the scent of an iris at night. He required further experiment, however, to verify this statement. Since that time I have received no communication from him on the subject; but from my own investigations I have learnt that nothing is more common than to meet with similar phenomena in many exotic orchids. The following notes are the first-fruits of the experiments which I am now making, the further results of which shall be published in due course: They refer exclusively to winter-flowering kinds, which I have studied from January to the beginning of March:—

Ardisia Fiedlingii: a sweet odour of pansies in the evening, and the same in the morning, with a sharp after-flavour.
Angraecum chrysanthum: a sweet and faint odour, undefinable in the morning, but decidedly like that of serines in the evening.

Cattleya bogotensis: an odour of gilliflower in the morning, and of primroses in the evening.

Cattleya Chococensis (new species): a sharpish odour of Reine Claude plums in the morning.

Cattleya Eldorado: an odour of roses in the evening only.

Cattleya elegans: a faint odour of tuberose in the morning, and a strong one of gardenia in the evening.

Cattleya quadricolor: an odour of vanilla, in the morning.

Cypripedium: all the kinds which I have observed, to the number of six, are scentless, with the exception of *C. Schlimi*, which in the evening exhales an odour of violets, and in the morning the scent of primroses.

Dendrobium densiflorum: a very faint, irregularly intermittent perfume, sometimes scarcely perceptible.

Dendrobium glumaceum: odour of lilac in the evening, and of heliotrope in the morning.

Dendrobium nobile: odour of grass in the evening, of honey at noon, and a faint primrose scent in the morning.

Epidendrum vulcanum: an odour of carnations in the morning; scentless in the evening.

Laelia anceps: a sweet primrose scent, in the morning.

Lycaete grandiflora: an odour of newly threshed corn, in the morning.

Lycaete lanipes: slightly sweet in the morning.

Mixallaria nigrescens: a very decided odour of nectars, in the morning.

Odontoglossum angustatum integrum: a faint odour of lilac, in the morning only.

Odontoglossum cristatum: a faint odour of spiraea, in the evening.

Odontoglossum Lindleyanum: a goatish smell, in the morning only.

Odontoglossum neudense: an odour of *can sucre* mixed with orange-blossom in the morning, and a faint trace of of spiraea in the evening.

Odontoglossum pulchellum: a sweet odour of vanilla, in the morning.

Odontoglossum trinophum: varies much according to the varieties of the plants. Some are quite scentless, especially in the evening; others have an odour of pansies, but most frequently emit a more or less strong scent of cinicifuga.

Oncidium cucullatum: a sweet odour of violets, in the morning.

Oncidium leopoldinum: a faint perfume in the morning, and a very sweet odour of vanilla in the evening.

Oncidium odoratissimum: an odour of lilac in the morning, and of elder-flowers in the evening.

Phalenopsis Schilleriana: a delicate perfume of roses in the evening, and a stronger one of lily-of-the-valley in the morning.

Pitunna fragrans: an odour of vanilla in the morning, and of narcissus in the evening. It varies much in sweetness, and is sometimes scentless, according as the plant has been brought from Peru or from the Sierra Nevada of New Granada.

Schomburgkia gloriosa: a faint odour of solanum, in the evening only.

Vanda gigantea: an odour of iris in the evening, and of perfumed leather in the morning.

Vanda suriae: a constant perfume of gilliflowers.

Vanda tricolor: odour of gilliflower, much stronger in the morning than in the evening.

By the term "morning" I mean from 6 to 8 o'clock A.M., and by "evening" from 6 to 7 o'clock P.M. My observations have been conducted during fine, bright, sunshiny winter weather, and in places where the temperature ranged from a minimum of 45 deg. to 50 deg. to a maximum of 65 deg. to 75 deg. Fahr. I would recommend those who are desirous of making experiments in this direction to take into account the condition of the atmosphere and weather at the time of making their experiments, and to note the difference in the results of observations made in different localities. Amongst these singular facts, which it would be at present premature to attempt to classify or explain, I may mention that all the *Cattleyas* exhale very different odours, and that these plants (the species of which are few, but the varieties innumerable) present almost as great a diversity in the perfumes as they do in the colours of their flowers. *Vanda gigantea* also exhibits a striking coincidence in its thick leathery flowers and the smell of leather which they emit. Lastly, the intermittent odours, the exhalation of which cannot be explained as the result of the application of greater heat, or of any other apparent cause, inasmuch as the times at which they manifest themselves are very variable and uncertain, afford ample matter for reflection and interesting investigation. ED. ANDRÉ.

Griffinia Blumenhavia. This is the best of the stove bulbous plants from tropical America yet introduced; producing a graceful head of rose-striped, pendent flowers of surpassing beauty. The leaves, which are of a drooping character, are about a foot in height, and of a dark glossy green. Being a winter-flowering-plant it is of great value at that season in a decorative point of view. The best soil for it is turfy loam, intermixed with a little sand. Experience has proved to me that none of these bulbs like nature; and when the drainage is good they are best kept growing all the year round, as they are apt if allowed rest to start afresh badly. The best situation for them is as near the light as possible, with a moist atmosphere. Six bulbs in a six-inch pot make a good clump. If permitted to go to rest they should be started in bottom heat, which is required more to maintain a regular amount of moisture than for the sake of the heat. This particular species was introduced to our gardens some four years ago, and well deserves to have a place in every stove.—J. C.

In the culture of flowers there cannot, by their very nature, be anything solitary or exclusive. The wind that blows over the cottage porch, sweeps over the grounds of the nobleman; and as the rain descends over the just and the unjust, so it communicates to all gardeners, both rich and poor, an interchange of pleasure and enjoyment; and the gardener and the rich man, in developing or exchanging a fruitful flavour or a delightful scent is in some sort the gardener of everybody else.—CHARLES DICKENS.

"Water Sparingly."—How often is this advice given as autumn approaches, and how often, too, is it severely practised by many! I say, never water sparingly; when you water, water thoroughly. Do not be persuaded that by withholding water from the roots of a plant you thereby hasten its maturity, you may force it to shed its leaves; but, on examination, you will find its buds green, its bark shrivelled, and its roots far from being in a healthy condition. We may be told we must hasten the ripening process, in order to give time for rest, I would rather give shorter time for this so-called rest; it is of very little consequence compared with the proper ripening of the buds and roots. The best helps for ripening with which I am acquainted are heat, light, and air, with a comparatively, but not too, dry atmosphere. A great deal can be done by the removal of superfluous immature shoots, so as to admit light to every leaf that is left, and by withholding stimulants early, but never by withholding water from the roots. How much fuel is wasted in winter, and how many disappointments are caused through trying to force into growth apparently ripened fruit-trees; how puny the shoots are when they do appear, after weeks of hard firing; the flowers, too, are weak and imperfect; they are then said to set badly, the fact being that there has been but little to set, simply because when the tree had its most important function to perform, viz., perfecting its flower-buds, it was checked by having its supply of water limited.

Longleaf.

WM. TAYLOR.

ANTHURIUM SCHERZERIANUM.

This is one of the most brilliant and valuable stove-plants ever introduced. The singular form and intense although not gaudy colour of its flowers, accompanied by gracefully-curved foliage, and lasting, as they do, in good condition for eight or ten weeks, render it a most valuable plant. It is found in Guatemala and Costa Rica, probably in the hill district, as I find it does much better with cooler treatment than it is often subjected. With me the plant is never quite at rest; it is kept in a house, the night temperature of which, from the beginning of November to the end of February, runs from 50 deg. to 55 deg., with a rise of 6 deg. or 8 deg. by day, during which season it receives less water than in the more active period of growth, when the night temperature averages from 60 deg to 65 deg., and 70 deg. to 75 deg. by day, with a copious supply of water overhead and at the roots. This latter at once points to the necessity of a porous material to grow it in, as well as ample drainage. I use two parts best fibrous peat, such as orchids delight in, broken about the size of pigeons' eggs, with all earthy particles sifted out, to one part clean sphagnum, with a liberal admixture of broken crocks and silver sand; potting quite loosely, the whole material in a condition



Specimen of *Anthurium Scherzerianum* (4 feet in diameter).

to let the water run through it like a sieve. Its roots cling to the side of the pot like an orchid, hence the necessity of using material that will not often require renewing; as, however carefully the operation of potting is performed, the roots get a good deal mutilated. In re-potting, I break the pot with a hammer all round and get the pieces as carefully off as I can; then I take a bucket of tepid water, in which I gently move the ball until all soil is washed out; many of the crocks being held as firmly by the roots as if it were an orchid.

Those are not disturbed. I then take a pot four or six inches larger than the one previously used, half filled with drainage, in which I place the plant well up in the centre of the pot, and gradually work the new soil amongst the roots without pressing it so as to injure them, and then give a little water. But for about a month afterwards I am careful not to give too much, until any roots that have been injured have had time to heal. Its principal enemies are brown scale and thrips; the former seems thoroughly at home upon it, and thrives amazingly. The thrips get in the spathes as soon as they begin to open, and disfigure the flowers, if not dislodged. I use the sponge diligently for the scale, and the syringe for the thrips, as soon as the flowers begin to open, which, from their strong leathery texture and the natural liking the plant has for water, does not injure them in the least. Always keep the plant slightly shaded in bright weather. There are several forms of this plant, more or less attractive. Therefore it behoves those who purchase plants to make sure they obtain the right one, which is much larger in its leaves and flowers, and more intense in colour than the others. The inferior forms and small plants often seen convey a very imperfect idea of what the plant really is, as compared with a large well-grown specimen of the best variety, although the larger variety does not yield near so many flowers at any one time as the smaller one. A plant we have here, of the best variety, is now four feet through, and when exhibited in May last at the Crystal Palace it had on it twenty-four perfect flowers, the foot stalks of which were two feet long, and some of the spathes measured $5\frac{1}{2}$ inches long by $3\frac{1}{4}$ inches broad.

Southgate.

T. BAINES.

THE LARGE-LEAVED BERBERISES FOR THE CONSERVATORY.

THE chief improvement required in all our large conservatories is the planting out of various plants of noble port which will furnish the structure with refreshing verdure and stately forms at all seasons. Thus arranged, immeasurably better effect may be produced than at present when the conservatory so often depends entirely on the plant-houses. A few dozen handsome flowering-plants here and there in such a house would furnish a lovelier effect than could be obtained by any means on the older and too common principle. But everything depends on the judicious selection of the plants to be thus permanently planted. If subjects are used which, like some of the acacias, will quickly run up to the roof, then good bye to all good effect. Hardy



Berberis nepalensis (grown in cool conservatory).

palms, hardy tree and other ferns, and *Dracenas*, &c., are the sort of plants we should seek. The New Zealand flax, too, and its varieties and allied forms, always low yet always stately, I have also noticed producing a capital effect on the Continent in conservatories. But no plants are more suitable for planting out in the borders of the conservatory or winter-garden than the noble large-leaved berberises,

of which the accompanying figure represents *B. nepalensis*. These remarkable plants, so often seen in a starved and dwindled condition about London and in various parts of the country, find in a cool house of any kind the very conditions they delight in, and whosoever will plant them therein will soon be rewarded with as noble foliage, as rich crests of bloom, and as stately a port, as we can find combined in any plant. In districts where these fine plants do well in the open air, it would not be so wise to use them in the conservatory, but in the numerous places where the berberises, going by the name of *B. Bealii*, *nepalensis*, *japonica*, &c., are sickly dwarf shrubs, they may, with the greatest advantage, be employed in the conservatory.

The Drynaries.—The excellent plan of planting out exotic ferns on picturesque banks, &c., to the hothouse is becoming more popular every day; when well done, its effect is of the most satisfactory kind. The arrangements should not as a rule be confined to ferns. Noble Arums, such as may be seen in the Arum house at Kew, and the single *Monstera*, add greatly to the charms of the



ferns. But where ferns alone are used, much improvement may be effected by selecting distinct and noble types to contrast with the large and small ferns in cultivation. Among the nobler kinds of stemless ferns we know nothing more worthy of attention than the *Drynaries*, forming as they do such huge leaves and noble nest-like crests. For rocky or elevated points the species figured (*D. morbillosa*) and *D. coronatus* are superb.

Cordyline indivisa.—This is perhaps the noblest of all the greenhouse *Dracena* tribe, especially when well grown, its long and golden-striped leaves having a peculiarly rich and unusual appearance.



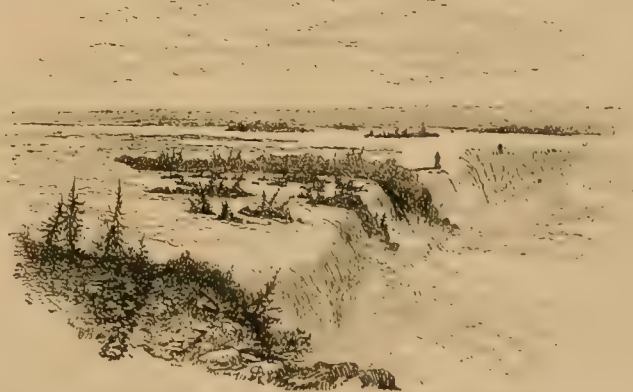
It is a native of New Zealand, and consequently requires cool or greenhouse treatment; but many cultivators, in their haste to get

large plants, subject it to stove treatment, and then, no matter how fast it may grow, it will die off much faster—and that without any apparent cause; no sooner is it subjected to cool treatment, and gets an extra supply of cold water, than it perishes. The best treatment is the following: Procure a nice healthy plant in a four-inch pot early in spring, and, if the roots are fresh and healthy, remove it at once into an eight-inch pot; but if they are not strong, then a six-inch pot will be sufficient for the first shift. The most suitable compost is fibrous peat and loam in equal proportions, broken so as to pass through the meshes of a half-inch sieve, but with the fine portions sifted out. To the rough pieces add an eighth of potshreds and charcoal, broken to the size of peas, and sufficient sand to make the whole perfectly porous. Let the pots be perfectly clean, and drain them thoroughly. In potting, take care to keep the base or collar of the plant well rounded up, and press the soil as firmly as if you were potting a heath or epacris. Place the plant in a warm and shaded part of the greenhouse, and water cautiously until such time as the plant starts into free growth, and then a copious supply may be given. If the plant gets into free growth, a second and perhaps third shift may be given during the season; but it will not be advisable to shift later than the end of July, as it is important that the pot should be full of roots before the winter commences. As the light decreases, gradually diminish the supply of water, so that the plant may be kept comparatively dry during the winter. The best situation for the plant through the winter will be a dry shelf, where there is a free circulation of air, but no cold draughts. In such a situation, with judicious attention, the Cordyline will grow on for years.—A.

NATURE'S GARDENS.

NIAGARA.

THE earth is indeed one vast garden with great drought-parched patches and snow-robed regions here and there, but there are some scenes in which the various elements are so boldly or pleasingly combined that it seems as if Nature herself had planted her a garden. The noblest of Nature's gardens I have yet seen is that of the surroundings and the neighbourhood of the falls of Niagara; before seeing it, I did not think



Bird-eye view of Islands above the Falls of Niagara

of Niagara as anything but a huge waterfall. Grand as are the colossal falls, the rapids and the course of the river for a considerable distance above and below possess more interest and beauty. Accounts of the noise of the falls are much exaggerated; their sublime beauty no pen can describe.

As the river courses far below the falls, confined between vast walls of rock, the clear water of a peculiar light-greenish hue, and white here and there with circlets of yet unsmoothed foam, the effect is startlingly beautiful quite apart from the falls. The high cliffs are crested with woods; the ruins of the great rock-walls, forming wide irregular banks between them and the water, are also beautifully clothed with wood to the river's edge, often so far below that you sometimes look from the upper brink down on the top of tall pines that seem diminished in size. The wild vines scramble among the trees, many shrubs and flowers seam the high rocks; in moist spots here and there a sharp eye may detect many-flowered tufts of the beautiful fringed gentian, strange to European eyes, and beyond all, and at the upper end of the wood-embowered deep river-bed, a portion of the crowning glory of the scene—the

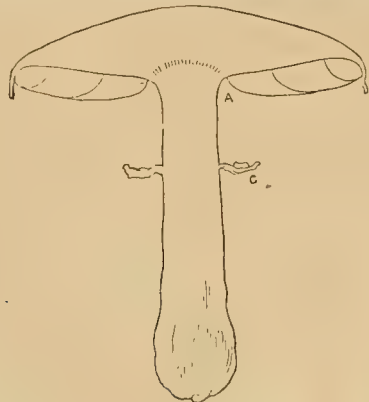
falls—a vast cliff of illuminated foam, with a zone towards its upper edge as of green molten glass. Above the falls the scene is quite different, a wide and peaceful river carrying the surplus waters of an inland sea, till it gradually finds itself in the coils of the rapids, and is soon lashed into such a turmoil as we might expect if a dozen unpolluted Shannons or Seines were running a race together. A river no more, but a sea unreined. By walking about a mile above the falls on the Canadian shore this effect is finely seen, the breadth of the river helping a poor Britisher (whose rivers are “creeks,” if he only knew it) to carry out the illusion. As the great waste of waters descends from its dark grey and smooth bed and falls whitening into foam, it seems as if tide after tide were gale-heaped one on another on a sea strand. The islands just above the falls enable one to stand in the midst of these rapids where they rush by lashed into passionate haste; now boiling over some hidden swellings in the rocky bed, or dashing over greater but yet hidden obstructions with such force that the crest of the uplifted mass is dashed about as freely as a white charger’s mane; now darkly falling into a cavity several yards below the level of the surrounding water, and, when unobstructed, surging by in countless eddies to the mist-crested falls below so rapidly that the drift wood dashes on swift as swallow on the wing. Undisturbed in their peaceful shadiness, garlanded with wild vine and wild flowers, the islands stand in the midst of all this fierce commotion of waters—below, the vast ever-mining falls; above, a complication of torrents that seem fitted to wear away iron shores, there they stand, safe as if the spirit of beauty had in mercy exempted them from decay. Several islets are so small that it is really remarkable how they support vegetation, and one bold-looking thing, no bigger than a washing tub, not only holds its own in the very thick of the currents just above the falls, but actually bears a small forest, including one stricken and half cast-down pine. It looks a home for Gulliver in Brobdingnagian scenery. Most fortunate is it that these beautifully verdant islands and islets occur just above the falls, adding immeasurably to the effect of the scene. Magnificent it would have been without them, but their presence makes Nature seem as fair as terrible in her strength.

To be continued.

THE HOUSEHOLD.

THE TRUE MUSHROOM.

THE question is frequently asked, are there any infallible rules for distinguishing the true mushroom from all other fungi? and, if so, what are the crucial points of distinction? First, and foremost, the true mushroom (*Agaricus campestris*) is invariably found amongst grass in rich open pastures, and never on or about stumps, or in woods. Many cases of poisoning have occurred owing to the supposed mushrooms being gathered



Section of the true Mushroom.

from stumps or in woods; it is true there is a certain variety found in woods and woody places (*A. silvicola*); but, as far as amateurs are concerned, it is best left alone. A second very good point is the peculiar, intense purple-brown colour of the spores (which are analogous to seeds); the ripe, and fully-

mature mushroom, derives the intense purple-brown colour (almost black) of its gills, from the presence of these innumerable coloured spores. To see these spores, and so become acquainted with the peculiar colour, remove the stem from a mushroom, and lay the upper portion, with the gills lowermost, on a sheet of writing-paper; in a few hours the spores will be deposited in a thick, dark, impalpable powder. Several dangerous species, at times mistaken for this mushroom, have these spores umber-brown, or pale umber-brown, in colour, and belong to *Pholiota* or *Hebeloma*. In the accompanying figure is shown a vertical section of the true mushroom, which differs (when the colour of the spores is taken into consideration) from almost all other agarics, and certainly from all poisonous ones. One of the principal points to be observed is the distinct and perfect collar at c, quite encircling the stem, and the edge of cap at B, overlapping the gills; in some poisonous allies, as *A. ceruginosus* (generally found on and about stumps), this ring is reduced to a mere fringe, and the overlapping margin is absent, or reduced to a few mere white flecks or scales. Lastly, the gills never reach or touch the stem A, for, on inverting a mushroom, a blank space will be seen all round the top of the stem where the gills are free from the stalk. There are innumerable varieties of the true mushroom (and of the horse-mushroom), but all are equally good for the table; sometimes the top is white and soft, like kid-leather; at other times it is dark-brown and scaly. Sometimes, on being cut or broken, the mushroom changes colour to yellow, or even blood-red; at other times no change whatever takes place. But, observe, the mushroom *always* grows in pastures; *always* has dark purple-brown spores; *always* has a perfect encircling clothly collar; and *always* gills which do not touch the stem, and a top with an overlapping edge.

W. G. S.

THE TOMATO.

IN Europe the tomato is occasionally used; in America it is as indispensable as bread. From the hot States round the Gulf, and from sunny and genial California, where it grows as freely as groundsel does in England, to the Canadas and the Northern States, where it must first be raised in heat, as with us, the tomato is a blessing to the country. No other product is so popular with all classes, high and low, and probably none so wholesome among the many things there used. For months, in summer and autumn, it may be gathered fresh. It shares the fate of peaches, pears, and oysters, and is preserved in tins for winter use, so that practically it is obtainable all the year round. Stewed, baked, as sauce, or in soup, eaten raw as a salad, or with sugar, in all these ways it is good. It would be worth while crossing the Atlantic for the sake of a tomato-salad, if one could not enjoy that luxury in England. In every country enjoying a higher temperature than that of England, the tomato should be grown abundantly as a common garden or field crop; and even where, as in northern England, you cannot even ripen tomatoes against walls, they may be easily grown in empty frames, &c., unused in summer; and, once plentiful, every child would learn to relish a food so wholesome and so excellent. It is scarcely necessary to point out the vast extent of territory in the colonies of England in which the tomato may be grown as well, and found as useful and important an article of food, as in the most favoured parts of America. There can be little doubt that Americans have much for which to thank the tomato. Such quantities of unwholesome and indigestible matter, in the shape of sweet cakes and sweets of all kinds, condiments, &c., are eaten there, that one might suppose it indispensable to resort to simple, healthful food by way of corrective; and the tomato saves society from the effects of a miserably unwise system of gastronomy.

Philanthropic travellers would do well to scatter a few tomato-seeds on their way through hot and temperate desert countries, for, in the absence of kitchen and cook, few things would be more acceptable to the hungry wanderer. Away from towns in Canada or the States—in places, it may be, many miles from a town, where fresh meat is rarely seen, and cookery, of the few things to be had, an abomination—a wholesome meal may be made from a plate of tomatoes, gathered in the garden, and a piece of bread.

Little need be said on the culture of the tomato. In the States and Canada West tomatoes bear till they are literally borne down with weight of fruit, each plant producing about twice as much as it would against a wall in the south of England. In all parts of the West they are even finer: in California they do splendidly also, both on plain and hill; and also in arid-looking Utah. I remember noticing one plant in Brigham Young’s garden, at Salt Lake City, which spread over the ground almost as far as a gourd plant would with us. So will they thrive in all countries with a warm summer. No plant

returns a more abundant yield with so little trouble. It is a curious fact that to relish some undeniably good things not a few people require nearly as much education as suffices to change a Conservative into an active Reformer. Some persons affect a dislike to tomatoes, but such have never given them a fair trial. They will not impart all their virtues at once, especially to doubtful and sneering novices. In a raw state they may at first fail to charm, but never if properly cooked; and cooking them is such a very simple affair! Yet, in a country like England, where they are not by any means common, persons will be slow to recognise their merit.

The above is Mr. Robinson's account of the tomato in America. The following recipes may serve to make the uses of this invaluable plant better known among ourselves:—

TOMATOES AU PLAT.—Butter a warmed metal or earthenware plate that will stand the fire, and add pepper and salt, and cut, in the flat direction, as many tomatoes as will cover it when placed with the cut sides downward. Cook before the fire, placing a tin reflector behind. When slightly browned they are ready. Three or four eggs may be broken into a cup, and placed in the tomatoes three or four minutes before they are removed from the fire. This simple dish, prepared without trouble is a breakfast fit for an emperor.

TOMATO-SAUCE AND FISH.—The celebrated dishes known as soles and other fish a-la-Orly, consist merely of filets of the fish fried, either plainly, or after being soaked in lemon-juice, &c., and dipped in batter, and then served with some hot tomato-sauce in a sauce-boat. Oysters blanched, dipped in batter, lightly fried and served with the same sauce, are strongly to be recommended.

TOMATO CHUTNEY.—Take 4 lb. tomatoes, 2 lbs. onions, 1 lb. apples, 1 oz. salt, capsaicums, or cayenne to taste, and one pint of vinegar. Boil two hours, and beat the whole through a colander. When cold put into small bottles, and cork very tightly. The corks are best sealed over to exclude air, and placed away in a cool chest. It is fit for use directly it is made.

TOMATOES AU GRATIN.—Take 8 tomatoes, two inches in diameter, pare off the skin round the stalk, and make an opening one inch in diameter in the tomatoes, to allow of taking out the seeds with the handle of a teaspoon; season with 2 pinches of salt, and 2 small pinches of pepper. Prepare some *fine herb* stuffing as follows:—Put in a quart stewpan 1 oz. of butter and $\frac{3}{4}$ oz. of flour. Stir over the fire for two minutes; then add 1 pint of broth; stir, till reduced to half the quantity; and put in 3 tablespoonfuls of chopped and washed parsley, 1 tablespoonful of chopped and washed shallot, 2 pinches of salt, 1 small pinch of pepper; reduce on a brisk fire for eight minutes.

TOMATO-SAUCE.—This is made either with fresh or preserved tomatoes. Choose a dozen bright-red tomatoes (say 2 lbs.); cut away the stalks; cut each tomato in two; press out the seeds and water; and put them in a two-quart stewpan, with 1 faggot of sweet-herbs, 2 gills of water, 2 pinches of salt, 1 small pinch of pepper. Put the stewpan on the fire, well covered; boil for forty minutes, stirring with a wooden spoon every five minutes, to prevent the tomatoes catching; press through a wire sieve. Make a *roux*, in a quart stewpan, with 1 oz. of butter and $\frac{3}{4}$ oz. of flour; stir over the fire for three minutes; remove the stewpan from the fire, and mix the purée of tomatoes by small quantities, stirring well all the time; add 2 gills of broth, and boil again for twenty minutes. If the sauce be too thick, mix one or part of a gill of broth. When preserved tomatoes are used, proceed in the same way, adding the preserved tomatoes from the bottle instead of the purée of fresh tomatoes; mix with the *roux* and broth; taste, and serve as before.

TOMATOES AU NATUREL.—During the heat of summer in no way is the tomato more agreeable to those who know its merits than when eaten "from the bush." The process is simple. Select a good ripe fruit, place the lips against its glossy sides, bite a piece clean off without fear, and then suck with all your might. At first certain succulent leathery coats may offer some resistance, but soon the red heart's juice, kept cool in the hottest days by the outer coats, will begin to flow, and victory will be yours.

W. B. TEGEMIER.

THE COMPASS PLANT.

(*SILPHIUM LACINIATUM*.)

FEW amongst hardy plants, are better adapted for association with those tropical forms now so largely cultivated for the purposes of flower-garden decoration than the above-named plant. Those who have the management of even our first-class flower-gardens will be well aware of the value of really hardy, and, at the same time, ornamental-foliaged plants. So treacherous and precarious are our seasons, and so liable is the whole beauty of the more tender plants to be swept away by early frost, that I need make no apology for introducing, as well deserving of notice, a plant that now (the first week in November) looks as fresh and green as at any time during the season.

I will endeavour to describe the plant to which I allude, as briefly as possible. The radical leaves form a cluster about four feet in diameter; they are pinnati-partite, or as the name very appropriately implies, lacinate, with the primary lobes slightly notched, having the appearance, at first sight, of being compound; but as each narrow segment is carried down the mid-rib, thus forming a winged appendage, uniting the whole, they must be considered as simple leaves; their length is from 2½ inches to 3 feet, and in their arrangement they are more usually vertical than horizontal. This irregularity is rather of advantage than otherwise, and, when coupled with the peculiar texture, hard and rigid to the feel, though by no means so in outline, and showing a sort of mosaic of minute divisions between the veinlets, they have somewhat the appearance of large broadly-divided fern fronds. From the centre of this group rises a stout stem to the height of about fourteen feet, with leaves of a similar character, gradually diminishing from the base to the summit, and producing from the axils of those that occur along the upper half, flowers of moderate-size, with long florets of the ray, of a pretty lemon-yellow; these indicate at once its proximity to the *Helianthus*, or sun-flower tribe, to which genus it is pretty closely related.

It will scarcely be necessary, after the foregoing description, to say that it is a plant of vigorous habit, forming enormous roots, which, with us, are deep in the very rankest clay soil. To this fact, possibly, its enormous development, as regards height, is to be attributed; as grown in sandy soil, even though well manured, it rarely reaches beyond five or six feet.

There is a further interest connected with this plant, in the fact that it is known to the North American Indians as the "Compass plant;" and by some peculiarity in the arrangement of the leaves when growing *en masse*, as it does on the wide prairie-lands of the far West, the Indian, with that instinctive power with which semi-civilization is generally endowed, is able, under a clouded sun, to shape his course for his far-off settlement, in a country where landmarks are few and far between.

There are about a dozen other species of *Silphiums* in cultivation, but rarely met with, except in botanical collections; nor have any of them either the peculiar beauty or interest which this species possesses.

It may be said,—Why is it so rarely met with? One reason, perhaps, is because it is not *new*, having been originally introduced in the latter part of last century; and another is, that, being a late autumnal bloomer, it never matures its seed, and appears shy at giving out offsets from the massive rootstock. I think, however, it is more than possible that it may be increased from cuttings of some of the fleshy secondary roots—at least I purpose trying that mode; and I am led to that inference from the fact that having had occasion to remove a plant of *Silphium terebinthinaceum* last season, I found several shoots sent up from the roots that remained buried deep in the ground where it originally stood.

To those who possess it, I would say, be chary of removing it, as it does not very readily recover that ordeal. It is, in the fullest sense of the word, a permanent perennial plant.

May I close my remarks by making the inquiry if any of your readers have had any experience of a closely allied genus from California, namely, *Wyethia*? We have three species in cultivation, but they appear very slow growers, which, anomalous as it may appear to some, is to my mind a recommendation.

Botanic Gardens, Hull.

G. C. NIVEN.

THE PROPAGATOR.

Amherstia nobilis.—This is a plant which, though grown and flowered at Ealing Park and elsewhere long since, we nowadays rarely meet with, although its blossoms are so beautiful as even to elicit the praises of poets themselves. Can the difficulty attending its propagation account for its scarcity? If so it may be overcome by cutting the branch half way through, getting a small pot, and, breaking it in half, putting it round the branch, and wiring it; then fill the pot with sandy loam, and in about three months the branch may be cut off and plunged in bottom heat of from 85 deg. to 90 deg., covering with a bell-glass. In India the branch is run through a piece of bamboo filled with soil. The *Amherstia* does not like peat; but it is fond of water. It is useless to import its seeds, as they do not retain their vitality, however well packed.—J. C.

Aralia papyrifera.—This beautiful foliaged plant having become extensively employed in the flower-garden of late, a few hints as to its propagation may be of use. Its stem being nearly all pith does not strike readily; therefore a stock of it cannot be got quickly in that way, but if the roots near the stem are examined they will be found to be fleshy. When the plant is taken up, let each of these be cut into pieces about an inch long; insert them in light soil, letting the whole be covered, and place them on a shelf near the glass, in a temperature of 80 deg. Thus circumstanced they will, in due time, throw out shoots, which should be left until they are three inches in length, when they may be potted, leaving them in heat, say, of 70 deg. until established. They should then be removed to a colder temperature, and thence to a frame to harden off. In the south of England this plant is almost hardy, and may be wintered in a cold frame, but it should be kept rather dry.—J. C.

The "Red, White, and Blue." Few processes are more dispiriting than to go through garden after garden with the same eternal combinations, the same monotonous lines of colour. Instead of giving "three cheers for the red, white, and blue," I always feel a much stronger inclination to emit three dismal howls, heartily wishing these ribbon manufacturers at Coventry—their proper home. What do you think of that, sir?" said a gardener to me in a triumphant tone, as we entered an immense kitchen-garden, ribboned all round with the old familiar pattern. "Well," I made answer, "as nearly as I can calculate, I've seen about sixty miles of it this summer; and, if you don't mind, I will cool my eyes on the parsley."—S. R. HOLF

GARDEN DESIGN.

HOME LANDSCAPES.

BY NOEL HUMPHREYS.



HOME LANDSCAPES are very far from being so common or so beautiful as they are one day likely to be, in consequence of the base taste for the formal and geometrical in gardens lingering so long. Formal gardening was first practised in England about the time of Henry VIII. It was intensified in the formalism of its character during the reigns of Elizabeth and James, and still more so pending the influence of the French taste imported by Charles II.; and under the Dutch influence brought over by William III. it still continued to flourish as vigorously, though in a somewhat modified style.

But in the reign of Anne, symptoms of a more natural taste began to show themselves, as exemplified in the park-like distribution of the land and trees at Blenheim, the noble estate presented to Marlborough as a token of the national appreciation of his great military successes. The laying-out of the ornamental grounds at Blenheim may be considered one of the earliest and most successful attempts at creating scenery of a more natural character round the country residences of our landed aristocracy. The long-avenue feature, and other characteristics of a similar kind, being, as a rule, avoided. The more natural taste thus essayed by "Capability" Brown in park-scenery, can scarcely be said to have been extended to the more confined area of pleasure-gardens near the house, where rectangular walks, cornered by vases or statues, and skirted by trees cropped to simulate green walls or grotesque objects, still lingered as favourite and fundamental features in the formation of our pleasure-gardens; a vicious style, which endured even to the time of Horace Walpole, who, with all his refined taste, did not succeed in understanding those artistic theories which must ever form the true principles of garden art, though he evidently felt a tendency towards better things. But even his galleries of artistic monuments never advanced beyond a superior kind of toy-shops, nor his gardens beyond convenient promenading-grounds for powdered beaux and belles among his marble vases, and Venuses, Cupids and Apollos, and his pretty little squirting fountains.

Nevertheless, the true English love of nature gradually emancipated itself more or less from these trammels, till at last the gardeners of the day thought they had discovered the true system of the picturesque in "serpentine walks" and "undulating turf," with, if possible, the crowning touch of a little piece of winding water, crossed (where it might have been easily jumped) by a "rustic bridge." These features, though but crude in themselves, the more especially when crudely treated, as they most certainly were, nevertheless achieved an easy and rapid victory over straight lines when once put to the test. The new system became extremely popular, not only in England but also on the Continent, where it was imitated under the name of *jardins Anglais*. The *jardin Anglais* of the Petit Trianon at Versailles, and several which were laid out in Russia, under the directions of the all-powerful Potemkin (who for a time forgot the delights of diplomacy and the glories of successful war to indulge his mania for creating English gardens in Russia), may serve as examples.

The simple devices of winding-walks, and curved canals, and rustic bridges, which had fascinated Marie Antoinette and made the great Potemkin forget the cares of State, were, with all their defectiveness, a positive advance, though of a very humble

kind, towards the formation of real garden landscapes upon true principles; and a larger and bolder style very soon began to develop itself, in which far greater breadth of treatment was forced upon the designers of gardens by the growth and beauty of the great Cedars of Lebanon, which Sir Hans Sloane had introduced some years before, and by other new trees which began to display their majestic dimensions and many novel features in their new English home. The utilization of these new features of garden-ornament, necessitated a larger and bolder style of garden art, in so much that the winding-walks and shrub-bounded lawns were extended in scale and improved in character; but, unfortunately, the effective treatment of flowering-plants did not keep pace with that of trees and shrubs. Their value as landscape features was not understood, and the touches of colour produced by them were consequently small and insignificant.

It was attempted, in days still very recent, to remedy this defect by what has been termed the "bedding system," which consists, in principle, in the aggregation of large masses of plants of the same kind in various geometric figures, say, an octagonal mass of two hundred dozen Tom Thumb geraniums as a central object, flanked by two vast diamonds of one hundred dozen each of dwarf blue lobelia, or yellow calceolaria. To these, in convenient situations, were added lengthened borderings of a similar class, called ribbon-borders, formed by continuous lines, four or five deep, say, of purple verbena, faced by a narrow line or edging, two deep, of a white variety of the same plant, and in the extreme front another edging, say, of yellow dwarf *Tropæolum*. In order to make room for this system to have its full fling, picturesquely-shrubbed mounds were levelled down, hollow sweeps filled up, and the shrubs carted away, in order to obtain the clear, open, and level space necessary for the display of the new theory of decorative gardening. And so it was that slopes, clothed with their tufted foliage of various kinds, their Laburnums, Guelder roses, lilacs, and the bright evergreen leaves of laurels and *Laurustinus*, gave place to the low, round pudding of scarlet geraniums, edged round its circumference with two or three strings of plants of strongly contrasting colours; these pudding-strings, as they may be termed, are sometimes composed of plants with richly-coloured leaves, and these effects of coloured foliage are sometimes separated from the central mass of richly-coloured flowers, by an intermediate pudding-string of the white-leaved mouse-ear, or silver moss. Glaring masses of colour of this kind, which in the sun often produce a most dazzling effect of richness, at once took amateur gardeners by storm, and the green-houses in small establishments were recklessly cleared of the "antiquated" collection of pretty half-hardy plants and shrubs, with their thousand forms of foliage and endless varieties of graceful flowers, to make room for the raising of one thousand dozen sorted bedding plants, to utilize which, after the fashionable manner, the old flowers had to be cleared out of their dear old-fashioned borders, the ancestral tufts of hepatica, that had bloomed there for the delight of successive generations, and grand clumps of towering white lilies, too, had to vacate the spot, where, year after year, they had come up in their glory to be admired. And the noble crown imperials, and the wide patches of double-white Narcissus, and the great clumps of the heavy-flowering double daffodils,—

"That take the winds of March with beauty,"

and the grand old peonies, that lolled over the box edgings and seemed so perfectly at home; all these old friends, which year after year had come forth in their beauty, at the accustomed time, on the accustomed spot, to greet their old friends, all had to be routed out. The place, said the cruel, but fashionable, gardener, was wanted for a ribbon-border; and so lilies and hepaticas, and polyanthus and globe flowers, and monkshoods, and all the old-fashioned pets were swept ruthlessly away—*exerunt omnes*. The old characters of the garden drama were no longer wanted. *Spectacle* had set in, and gorgeously-attired supernumeraries in astounding numbers crowded the stage in serried masses, each marshalled in form and array upon geometric principles; and thus were numbers substituted for the legitimate characters belonging to the horticultural drama, and the home, so to speak, of poetry was usurped by geometry.

(To be continued.)

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Butcher's Broom with Berries.—Many persons well acquainted with this plant are surprised when told that the female plant bears beautiful scarlet berries, as handsome as any we have. These are rare in gardens in consequence of the prevalence of the male and infertile female plants in our shrubberies and gardens. Dr. Syme says, in reply to a query on this subject:—"I know of but one way to get berries on butcher's broom; get a berry-bearing female plant, and put a male plant alongside. I got my berry-bearer from a garden in Southend, and it has had berries every year since. There is a male plant alongside of it from Darut Wood. Here there are six or seven large pseudo-female plants in the garden, but not one of them ever has a berry on it, though some of them are quite near the fertile female and the male plants. Neither did I ever get a berry on the plant I had in London from the Regent's Park Botanic Gardens. I have sowed five or six seeds of the Southend plant, to see if any females of its descendants are also fertile."

Acclimatisation of Australian Trees.—Considerable advance has been made of recent years in France in introducing hardy foreign trees and shrubs suitable to the climate; and with a fair amount of success, many natives of warmer climates being found to stand the winters in the southern departments. The *Eucalyptus globulus* has given the best results in the department of the Var, where it has resisted the malign influences of the mistral or north-west wind. It is described as growing with ten times the rapidity of the oak, and being remarkably well-adapted for the re-clothing of denuded mountains. The improvement that may be thus effected in many dry, warm, and barren parts of America, as along some of the more arid and treeless parts of the Pacific slope, it is impossible to exaggerate. And it is pleasant to reflect that the lovely acacias of New Holland, and the gum-trees, unrivalled for their grace of habit, when starting up into the sky at the rate of sixteen feet or so a year, are one day destined to embellish many a region besides their own. We should be glad to learn how the *Eucalypti* are doing in the south of England. With us, however, their employment must be very limited.

THE FRUIT-GARDEN.

IMPROVEMENT IN ORCHARD CULTURE.

THERE is one way by which great improvement in fruit culture may be effected at once and to everybody's satisfaction. I mean by the judicious thinning of the branchlets of standard orchard and garden trees. The natural tendency of trees of the apple order, to which most of our fruits belong, from the hawthorn of our hedges to the showy-flowered Chinese pear, is to produce a dense profusion of bloom, and consequently of fruit. Sheets of white or pink blossoms in spring, and showers of pretty fruit in autumn, usually adorn them. And the tendency is as apparent in the newest and largest apple and pear as in one of those American thorns laden with crowds of bright scarlet haws. For ages and ages man has bred our hardy fruits, until they so vary in flavour and size and beauty of colour that they puzzle system, and until some of the varieties have no more likeness to the aboriginal native than a Life Guardsman has to a chimpanzee. Yet in one point they still inherit their marked native trait—profuseness in bud and fruit. It is true that by selection the fruits have become so large that the improvement to be had by judicious thinning is not likely to present itself to many cultivators; but one trial of the system will convert the most obtuse. Nature's tendency is to the production of myriads of individuals, whereas in the case of our fruits we require size and perfection of the individual rather than mere quantity. Let it be duly considered that the total weight of finely developed fruits may equal, or nearly equal, an unthinned and half starved crop, and perhaps be worth three or four times more in money value.

Generally the practice is to leave the crop as much to nature as regards thinning of the branchlets as we do that of the ash or blackberry. One year the tree bears a great crop of fruit, and the whole of its vigour is so drawn up by the many hungry feeders that little remains to form fruit spurs for the following year, and such as are formed may lack vigour to set. Then comes a year of effort in the production of wood and spurs, and perhaps by the end of autumn there will be a score, or even two score, fruit buds on one fruit spur, where one, two, or at most three, would be sufficient. Now, if all be allowed to set, the result will be a dense crop of poor fruit, which, if submitted in the market test, will prove of little value. But if these spurs be thinned so as to force the energies of the tree to be concentrated in fine and succulent fruit, there will also rest sufficient strength in it to form at the same time a medium crop of fruit-buds likely to afford a crop the following year, and to induce a more regularly fertile habit in the tree. By following this thinning system we may, in fact, get good and valuable crops every year; and by the other the alternate and useless profusion before alluded to. The pear requires this attention as much as the apple when grown as a standard or freely developed tree; but, in consequence of being much more grown in a dwarf and contracted form, on espaliers, walls, &c.,

and much pruned, the want of thinning is not so often seen as in the case of the apple.

No method of pruning or training these trees in the open air is better than the freely developed standard tree, if the thinning process be well carried out. And how shall we best do it? Clearly the right way is to thin the branchlets, and the best time in early winter, when it may be done with some comfort and facility, though, of course, at any time through the winter will do. The tree should be opened up in the usual way as regards its main branches, but the chief attention should be given to the regular and bold thinning of the fruit-bearing branchlets, and even to the thinning of the spurs, where there is plenty of time to do so. It may more fully show the importance of this subject when we say that we know of one large orchard plantation of pears to the west of London the fruit of which has brought more than double the amount of money during the last few years, and since falling into the hands of a market gardener who carefully prunes and thins out his trees, than it did when left to nature. The thinning of the branchlets here advised should not be performed till they have begun to bear fruit-buds in too great abundance.

PRUNING AND NAILING IN THE COLD.

THERE are many inhumanities practised in gardening, chiefly, I believe, for want of thought and for lack of sympathy. Masters give orders irrespective of the weather and without regard to the feelings of those who have to execute them. St. Clare remarked concerning his negroes, "How can I punish them for doing exactly what I should have done myself, in their circumstances?" The carrying out of the whole spirit of this remark would prevent much suffering and loss in many gardens. Before ordering others to do certain work, let the question be put,—Should we like to do it ourselves? or, could we do it well under the conditions of heat or cold, wind, rain, frost, &c., then prevailing? Here is a case in point, seasonable and, unfortunately, only too prevalent—that of winter pruning and nailing. There are gardens not a few in which these operations go on, without intermission, in all weathers, unless interrupted by blinding snow or very heavy rain indeed. We have stood on walls—hands and muscles blue—helplessly trying to nail, with fifteen or twenty degrees of frost; or the east wind making a clean sweep through our scanty clothing; or the thick fog, or drizzling rain, as near the freezing-point as rain could fall, slowly, like a terrible fate, drenching us through. No one can estimate the mischief and misery caused by such cruelty. The seeds of diseases unknown—consumption, rheumatism—are sown broadcast among men and boys under such circumstances; and the terrible results are reaped after many days in early graves, and lives of misery and helpless suffering. How many gardeners are the victims of rheumatic and other chronic diseases! We believe that most of them were contracted by an exposure, as inclement and cruel as it was wasteful—for it cannot be too often repeated that no work could be purchased so dear as that of nailing trees in cold weather. No man can do an honest day's work under such conditions. His numbed fingers and his depressed spirits alike forbid it. On the contrary, the man who knows that his comfort has been studied in the matter, will do more training in an hour in genial weather at noon than he could have done in the eight or nine hours of a cold wintry day. Thus, self-interest counsels the aid of humane management: and, indeed, where there is a will in this matter there is no difficulty in finding a way. True, much training must needs be done between November and February, but, by picking opportunities, time will be found for it all. No mild weather should be lost. Every genial day as much as possible should be given up to such occupations; and hours should be picked out as well as days. Work should rise, as it were, in couples in its winter season. A man's job for the morning or evening should be coupled to a cool one, such as training, for the middle of the day. Again, on days when training is practicable, though somewhat cold, it is easy to have a piece of digging or trenching at hand for the men to warm themselves at when they get chilly. More nailing or tying will then be got through than had the processes proceeded without intermission, and the comfort and health of the operatives, as well as the ground tilled, will be so much to the credit of humane management.

It is ever thus that kindness, like virtue, is its own reward. Consideration for the comfort of men is an employer's most profitable investment. Doubtless it will occasionally be abused; but such will not be its fate generally. Like begets like: thoughtfulness for workers, for the interests of masters; and no master was ever any worse, but better, served for embodying in his management the golden rule which succinctly sums up the whole matter of humane management: "Whatsoever ye would that men should do unto you, do ye even so unto them."

D. T. F.

Aspects suitable to the various Kinds of Wall Fruit.

The following table, compiled by Mr. Powell, manager of the hardy fruit department in the Royal fruit and culinary gardens at Frogmore, is well worthy the attention of fruit growers:—

NAMES OF FRUITS.	ASPECT.			NAMES OF FRUITS.	ASPECT.		
	East.	West.	North.		East.	West.	North.
APRICOTS:							
Large Early							
Moorpark							
Breda	E	W					
Shipley's		W					
Hemskirk							
Royal							
Musch Musch		W					
PEACHES:							
Grosse Mignonne		W					
Rosanna							
Buckingham Mignonne	E	W					
Bellegarde							
Chancellor							
Noblesse	E	W					
Barrington							
Walburton Admirable	E	W					
Late Admirable							
Royal George		W					
Violet Hative	E						
Millet's Mignonne							
Early Albert							
Early Victoria							
Frogmore Golden	E	W					
NECTARINES:							
Murray		W					
Elmze							
Violet Hative		W					
Downton							
Vermash							
New White							
Pittaston Orange	E	W					
Roman	E	W					
Pine Apple							
Prince of Wales		W					
Victoria							
CHEERRIES:							
				Circassian	E	W	
				Bigarreau Napoleon	E	W	
				Florence	E	W	
				May Duke	E	W	
				Downton	E	W	
				Holman's Duke	E	W	
				Adam's Crown	E	W	
				Elton	E	W	
				Black Eagle	E	W	
				Bigarreau	E	W	
				Late Duke	E	W	
				Morello		W	
				Werder's Early			
				Purple Grotte			
				Frogmore Early			
				Bigarreau	E	W	
				Governor Wood			
PLUMS:							
				Victoria	E	W	
				Washington		W	
				Fotheringham	E		
				Reine Claude Violette	E		
				Coe's Golden Drop	E	W	
				Reine Claude de Baviere	E	W	
				Kirk's Hative	E	W	
				Greengage	E	W	
				Imperatrice	E	W	
				Wilmot's Orleans	E	W	
				Isabella	E	W	
				White Magnum	E	W	
				Standard of England	E	W	
				Angelina Burdett	E	W	
				Frogmore Orleans	E	W	

Cornish Strawberries and Bush Fruit. About Penzance, and a little way in from the sea, around the adjacent villages there is splendid land and facilities for strawberry and raspberry culture. On flat, moist spots the raspberry and black currant can be grown beautifully to any extent, and the banks and slopes of undulated ground affords splendid opportunities of producing bounteous crops of early strawberries. I say early, and for this purpose early varieties alone should be cultivated, and that on the right aspect, viz., south and west. Intermediate sorts would prove almost a total loss, and the very latest varieties would not pay for their culture in Cornwall. By growing them, however, in northern counties, and in northern aspects, our English strawberry season might be greatly lengthened to the advantage of everybody.—JAMES BARNES.

The Vintage of California.—One of the leading wine-makers of California, who has extensive dealings with grape-growers, estimates that the crop of this year will produce from 6,000,000 to 7,000,000 gallons of "must" or raw wine. Alluding to this estimate, the *San Francisco Bulletin* of October the 25th says:—"This 'must' is worth about thirty cents a gallon, making an aggregate value of 2,100,000 dols. The grapes for wine-making sell in bulk at about one cent a pound. There is, in addition, a large amount of table grapes, raised for home consumption and for shipment. The choice varieties sell in the home markets at much lower rates than formerly. It will not be far from the mark to estimate the cash value of the grapes grown for other than wine purposes at 400,000 dols. The aggregate value of the vintage for this year, in California, may be set down at 2,500,000 dols. The estimate may be a low one; but there are data to support it. Moreover, there is a large number of vines which are just coming into bearing, but will not produce a full crop until next year. From all quarters we hear that the quality of grapes was never better than this year. The dry weather has nowhere shortened the crop. In some vineyards noticed by us in Napa Valley, the yield of the better sorts of grapes was enormous. The proprietor of one vineyard, containing about twenty acres of choice varieties, estimated that the net returns would be not less than ten cents a pound, the entire crop having been engaged for the home market."

After the War.—The horrors of modern war do not vanish with the advent of peace, as the French have often found out of late. Apart from the indescribable destruction of dwelling-houses and property of all kinds, great danger often waits the people, when, having put their dwellings in something like order, they repair to their gardens and fields. In many nurseries and gardens in March of the present year there were unexploded shells, sometimes gathered and placed in fountain-basins as a precaution against their bursting. About l'Hay and Bourg-la-Reine, and in scores of other places about Paris and throughout France, the ground was literally sown with shells, a good many of them buried but not exploded, making it exceedingly dangerous to put the grounds in their former order. A gardener at Auteuil was recently employed cutting down some trees that, like numbers of others around Paris, had been injured by shot and shell. Suddenly he struck with his hatchet a shell embedded in the trunk, and unhappily so as to ignite the shell, which immediately burst with frightful noise, rending the trunk into fragments. By a singular stroke of good luck neither the gardener nor other persons near at hand were touched. There have been many frightful accidents from shells since the war ended. A terrible accident occurred lately on the plateau of Champigny, where the

combats of the 1st and 2nd December, 1870, were fought. The share of a plough came in contact with a bombshell, which had sunk into the earth, and caused an explosion. The body of the man driving was scattered about the field in morsels; the horses were killed, and the plough blown to pieces. The trees suffered as much as the combatants; millions were cut down to the ground, and fine plantations left standing, here and there in the suburbs, were mutilated by shot and shell. Large boughs and trunks fell from the passage of a shell as the young grass falls before the scythe in summer. We have a piece of shell, part of one that passed through a large specimen of an *Ailantus* tree, at five feet from the ground, leaving a hole about two feet in diameter torn right through the tree. The shell seemed to have passed through the tree as easily as if there had been no wood within the bark. The tree was supported by about a foot of wood on each side, and did not seem to suffer. The shell entered the ground ten feet beyond the tree, and there burst. The gardener filled up with clay the great jagged hole in the tree, which now remains erect where many of its fellows have fallen.

THE KITCHEN-GARDEN.

WATER.

The most pressing need in most gardens is that of water. Soil, manure, site, shelter, aspect—all, as a rule, have been more or less planned or provided for, but water has been expected to drop down from the clouds. And if it does not, how many gardeners have to go without it, or nearly so! Go without it! What does that mean? It means hard sticky vegetables, stunted leathery fruits, and small withered flowers; for water is the life, the very substance, of most garden crops. As well try to make bricks without clay, as to grow succulent vegetables, luscious fruits, and fresh-scented flowers without water. And yet water is not only exceedingly scarce, but most recklessly wasted in nearly all English gardens: it is treated more as an enemy to be got rid of than a friend to help in every good work. It is carried off buildings into sewers, swept off the surface into the nearest ditch, and the earth tapped in all directions under the garden, that we may be rid of it. The whole or greater portion of that water ought to be saved up for future use. The rainfall throughout the greater part of the country is not sufficient for the majority of our garden crops. Sometimes for months during the most trying weather we have no rain. By storing our water we could regulate, and to a great extent equalise, the distribution. Common sense would tell us to open the lower cisterns when those in Cloud-land were closed or exhausted. But to do this we must store water in a more wholesale manner. I say store rather than raise water; for spring water, unless first exposed for some days to the ameliorating influences of the atmosphere, is too harsh and hard for the nourishment of plants. The only water taken care of now is the little that falls upon our roofs. All that flows from deep drains is wasted, when it ought to be collected in huge tanks.—*Field*.

NOTES AND QUESTIONS ON KITCHEN-GARDENING.

The Lima Bean.—This is a delicacy unknown to untravelled Englishmen, and quite worth a trial in some of your large English gardens. I consider it to be the best of the bean family, both when cooked alone and in the form of the well-known Indian dish called "Succotash," which is sweet corn in the green state cooked with Lima beans. The climate of England would not be hot enough for these beans, but after May there are generally empty frames, from early potatoes, &c., which might be used for them. The Lima bean is a climber, but by pinching-in its tops, as is frequently done with scarlet runners, it may be kept in a dwarf state. It is shelled and cooked like peas, and it is also excellent dried and cooked in winter like haricots, but is much superior to them.—J. TAPLIN, South Amboy, New Jersey, United States.

Harvesting Herbs.—A good many herbs are used dry as well as green. The best state in which to gather them is when they first come into flower. At that stage their peculiar flavours have culminated. The general mode of drying herbs and treating them afterwards has been slovenly and filthy in the extreme. They have been cut and either tied up at once, or left in a back shed till they are withered a little, and then bunched up in some dusty spot until called for in the kitchen, where they have often made their appearance much more heavily coated with dust than distinguished by flavour. St. Clare, in "Uncle Tom's Cabin," implores all gentlemen who would enjoy their dinner to keep out of the kitchen. It is more necessary to caution those who relish the flavour of herbs not to ask to see their dry stores. All herbs should be dried quickly on open trays in a hot kitchen or room; and, as soon as they are crisp, rub or grate them down to powder, and store them away in bottles closely corked. Kept thus, clean and air-tight, the strength and purity of the flavour is preserved for years. With the bottles closely corked and sealed, or bladdered like other preserves, a dinner liberally flavoured with herbs will be within reach any season, summer or winter. In conclusion, I may add that the flavour of dried parsley is perfect.—*Queens*.

Cultivation of Shallots.—I do not think it is generally known that shallots will grow much finer from seed than from the parent root. I send you samples, two of which measure over 7½ inches. The seed should be sown about the third week in February, in ground prepared as for onions, namely: trench the ground two spits deep with a quantity of manure, and then tread the surface as hard as you can. Sow the seed in drills. The roots sent were grown by an amateur, and I doubt whether you can get any seed from a nurseryman.—C. A. [The specimens sent by our correspondent were very large and fine. They are the common, not the true, shallot. The common shallot is very nearly allied to the onion, and seeds freely. The true one does not].

THE MARKET-GARDEN.

MARKET GARDENING IN CORNWALL.

This is carried on chiefly about Penzance, which is the most westerly town in the county, and has a population of from 9,000 to 10,000. It is about ten miles from the Land's End, and 326 from London. It is defended from Atlantic storms by surrounding hills, and the atmosphere generally is soft and gently humid, particularly when the wind blows from south to west. Such a climate suits vegetation admirably; and the locality is renowned for its market-garden produce.

The land in the vicinity of Penzance has a substratum of horn-blende, rock, and slate, and is not surpassed in fertility by any in the kingdom. Its natural capabilities indeed are evinced by the luxuriance of the vegetation produced even under the hedges, fences, and odd corners. I never observed anywhere else such rank natural growth. A track of land adjoining the town, consisting of about a thousand acres, produces a rental of more than £10,000 a year. An immense breadth of early potatoes is grown here, which are very remunerative, being ready to take up and send to market in May and June. They are conveyed in immense quantities to London, Bristol, Birmingham, Manchester, and to the markets of other large inland towns. On my first visit to Penzance many years ago, in May, I was surprised to have new out-door potatoes for dinner, and to find that they were plentiful everywhere thereabouts. After the first crop is taken up, some of the land is planted again to produce a second crop, which comes in ready for the next year's seed. The early crop is, of course, planted in the winter and early months of the year.

The crop which succeeds early potatoes, and which is equal to them in importance, is white broccoli. This is sown in February and March, and is strong enough to put out at once when the potatoes are cleared off. This crop is grown to a very large extent, and is sent in crates by hundreds of tons during the early spring months to almost every market in the kingdom. This broccoli is generally close-headed, early and white, if attention is paid to breaking down the foliage over it, or to giving it some other slight protection, so as to prevent light in some measure and slight frosts reaching the heads. It is planted from two feet six inches to three feet apart.

Early cabbages, too, are pretty extensively grown about Penzance; its inhabitants and shipping population consuming annually many tons of them. Early rhubarb, as long as it is good, is sent inland to market; and asparagus is also cultivated to some considerable extent. I am surprised, however, that it is not more extensively grown than it is on such beautiful land as exists here, and under such a genial climate; more especially as it can be so easily packed—large quantities occupying but little room, compared with rhubarb or broccoli. Asparagus, too, is always a most saleable vegetable, and can be produced at least a month earlier than it can be about London or one hundred miles inland. Besides, in some of the Cornish caves and mines, it could be produced very early, and well bleached for those who like it white. Moreover, just a few miles from Penzance, is what is termed Asparagus Island, where asparagus grows in a wild state. There is also abundance of wild cabbage, seakale, and celery growing round the coast. Seakale is another saleable, wholesome vegetable, well worth a trial in this locality, where salt and sea-weed abound. It is astonishing what an acre of strong seakale roots would produce. If taken up and placed in the caves or mines, it would come on early, and a later portion could be left in a natural way to be covered with sand or light earth. If it only averaged, say sixpence per pound, an acre would produce a profitable result.

Globe mangolds are also grown to some extent after early potatoes. They are sown in a corner of the potatoe-field, and transplanted as the potatoes are cleared, and heavy crops are thus produced. Turnips, also, are sown; and, what very much astonished me the first time I went to Penzance, was to see the splendid healthy pieces of spring-sown turnips, in full-sized pulling order in April and May, a season when every turnip in the London markets of spring-sown growth is worth as much as an orange, inasmuch as first crops of them have to be produced on slight hot-beds, and those for succession on warm, sheltered borders, while, as a rule, they only last good a very short time, afterwards becoming strong, hot, and sticky. At Penzance the climate just suits these and other vegetables; and if I were inclined to grow asparagus and seakale for the million, that is the locality I should select on which to make a commencement.

Penzance, too, possesses the very climate and soil for early lettuces, which seem to have but little attention paid to them anywhere. Instead of a few common kinds of cabbage-lettuce, which are the sorts mostly cultivated here, I should begin with, at least, on a small scale, some of those fine Paris and London Cos Lettuces, which are sown in October, and planted out at the end of January and through February, in succession—why, they would grow splendidly in sheltered places, such as slopes behind large, high banks—and in March and

April they would be worth from sixpence to a shilling each, and often more. At the same time I should recommend enough only to be grown after the above date for home consumption. It is in the early spring only I should attempt their production, for markets at a distance, and the land would be early cleared, and not much robbed, for another crop.

Early carrots could also be produced at Penzance. If sown in July and August they would be fit to pull early in spring: thus competing with those from France, which sell then at a high price in the London markets.

As to manure, of course when two, and sometimes three, crops are annually taken off any land, however good, some must be applied; and I observed that about Penzance this for the most part consisted, in addition to sea-weed, of substances well suited for vegetable growth. It is applied pretty freely; but as respects horse-hoeing, surface-stirring, trenching, and general pulverisation of the soil I must confess that I have seen these and other operations of that kind done better in other districts.

JAMES BARNES.

The Milanese Sewerage System.—This is recommended by Mr. Child, of Oxford, in the *Times*, as being suitable for small towns and country villages. Its essential feature is the drainage of the houses into water-tight cess-pools, which are emptied frequently, efficiently, and quite inoffensively by means of a barrel-cart, previously exhausted of air, and a hose. The barrel-cart then conveys the sewage to a depot at a convenient distance, where all that is saleable is sold to farmers, and the rest is manufactured into a kind of dry artificial guano. Many of our little towns and villages lie on dead flats or at the bottom of deep valleys, where ordinary sewerage works could not be established without an expensive provision for raising the sewage in order to render it available for irrigation. In such places the Milanese system might be carried out with ease and at comparatively small outlay. A certain number of cesspools must be rendered water-tight—a process not very expensive. One cesspool would serve for several cottages, and frequent emptying would be better than large size. Two Milanese barrel-carts must be procured, and these, with a small steam-engine at the depot to work the air-pump, would, together with about three men and two horses, form the whole of the apparatus required for testing the system upon a small but sufficient scale. On the day on which Mr. Child visited the depot near Milan, farmers' carts were waiting there literally in scores to obtain their supply of it, and he feels sure that if landed proprietors or farmers were to give the system a trial in this country they would find it well worth adoption. [This system is, no doubt, a main cause of the deep verdure and luxuriance of the market-gardens outside the city of Milan.—W.R.]

NOTES AND QUESTIONS ON SOILS, MANURES, ETC.

Spent Hops.—Refuse or spent hops from the brewery are very easy to obtain in many localities, and, like coconut fibre and one or two other refuse materials, may be advantageously utilised in the garden. London nurserymen sometimes use them for plunging small pots in, getting them very much cheaper than any other loose and suitable material, and they are also occasionally used as a means of furnishing bottom heat. The heat generated is not by any means so strong as that afforded by other heating materials; but it is a mild, genial heat, suiting many things better than a strong one, and nothing can be more congenial to a lot of newly-struck cuttings of soft stuff in spring than to be plunged or seated on a layer of this. When rotted into mould, it makes a useful vegetable manure, and when thoroughly rotted, it is as good as leaf mould for mixing with common potting stuff, or in the soil for such things as cinerarias, fuchsias, and "soft-wooded" and bedding-plants generally. It is also highly useful as a mulching, and on light soils, liable to get too dry and to starve and dwindle some of their crops, a layer of it spread two or three inches thick over the soil of the crops most liable to be injured produces a great improvement. Of course it may afterwards be dug in with advantage to the ground. It is one of those things that cannot be generally used or recommended, because not to be had everywhere; but there are many neighbourhoods in which it may be had at a nominal price, and in such places it will be found useful in the garden.—M.

Substitute for Gravel.—Having the misfortune to live in a part of the country where gravel is not very plentiful, most of my garden walks are paved with pitching stones, and I find it impossible to keep them clean; for no sooner does the "weeding boy" get to the end of a path than he has to begin over again, so fast do the weeds grow. Can any of your readers inform me of any remedy for this nuisance? I have already tried salt, and found it of no use. G. R. Wherever gravel is scarce, clay is generally abundant, and if (clay) may be dug and burned into ballast for 2s. or 2s. 6d. per cubic yard. It should be hard burned, the lumps broken up, and passed through a half-inch sieve. Spread a layer, dry, three inches in thickness, over the surface of the paths, well roll it, then lay three inches of concrete over that, formed of five parts ballast and one part blue lias ground lime, spread it evenly, and beat down with the back of a spade. This should be done in May, after the frosts are gone. Or a more durable but more expensive concrete may be formed by using Portland cement in the proportion of six to one. Gas-tar, costing about 3d. per gallon at gasworks, run over the walks will prevent vegetation, and, to obviate the unsightly appearance, might be covered over half an inch or so with fine gravel or ballast.]

Books and Articles on Soils. Can you recommend the best work on the varieties and properties of soil? A Student. [Much useful information will be found in Morton's work, "On Soils." The following prize essays and articles in the *Journal of the Royal Agricultural Society* should also be read, viz.: "Soils, their Origin and Composition," by Powles, vol. iv, p. 129; "Indications of Fertility or Barrenness," by Jno. Atkell, vol. v, p. 129; by Jno. Bayverder, vol. v, p. 559; and by Schuber, vol. i, p. 177. "Power of Absorption," by H. S. Thompson, vol. x, p. 68; by J. T. Way, vol. xi, p. 323; by ditto, vol. xii, p. 124. "On Agricultural Geology of England and Wales," by J. Trauner, vol. xii, p. 145. "Causes of Barrenness or Fertility," by J. Coleman, vol. xvi, p. 169. "Chemical Properties of," by Voelcker, vol. xxi, p. 105. And there is a good deal of information on the subject in Mr. Loudon's and in various other works.]

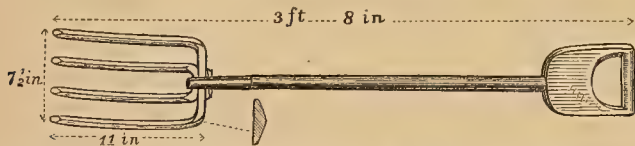
The Cleaning of Garden Walks. Last summer I tried for the first time the efficacy of sulphuric acid for this purpose, and found it far superior to salt in many points. Procure the darkest, cheapest acid (about 1d. per lb.), and mix in a glazed pan with about twenty times its own amount of water, then have a copper can, pierced at the bottom, or better a copper water-can with a rose, with which apply it till the ground is just wetted all over, and no more; don't go

within six inches of the edgings, nor make any spray fly, as it kills wherever it touches. It kills every seed in the walk, and there are often hundreds dormant in every square foot. In all flint and clay gravels there is soda, and the acid unites with this, forming sulphate of soda, which is an efflorescent salt, that is a salt promotive of dryness, just as common salt is promotive of wetness; so that if applied in a little patch on a damp green walk it will soon become dry and clean. And the salt will be seen as a white mark encircling all the pebbles in the walk. The acid, if applied in the spring, will last all the summer well. This deserves to become the universal method of cleaning a walk, for it is soon done and done with, it makes the walk so dry and pure, and it is as cheap as common salt, or even cheaper. It will be well to note that if the gravel is too full of lime the effect will be less.—A. D.

TOOLS, IMPLEMENTS, ETC.

A GOOD DIGGING-FORK.

THE great importance of agriculture as compared with horticulture in America explains the fact that our inventive cousins have not made as great progress in improvements of horticultural as of agricultural implements, &c. Nevertheless, they are not quite at a standstill in this respect. Before leaving New York last autumn, I made a small collection of American garden tools, some for the sake of comparing the quality of their tools, &c., with that of our own; others, for their novelty and merit; and among these the digging-fork here figured is



an implement of proved excellence. My specimen is accurately shown in the engraving. The merits of this fork consist in its strength and lightness. It is strong enough for any ground or for any work, and withal without a trace of the clumsiness of the old digging-fork. The mode of fixing in the tines is worthy of attention. They are in two pairs, and passed through a large eye in the very strong iron apex of the handle, and then fixed in firmly by iron wedges, as shown in the cut. The section of the tine is also shown, but, though the fork cannot be better explained by an engraving than it is by ours, that fails to give the good idea of the article which seeing and handling it does. It ought to be in every garden. I am not aware that it can be purchased in this country, but if not, no seedsman or tool-merchant should have any difficulty in getting it from a New York house. I would strongly advise our nursery and seedsman to keep it in stock, and some of our manufacturers to arrange for its production in this country.—W. R.

Moscow Exhibition, 1872.—Arboriculture and horticulture are to occupy a prominent position at this great International Polytechnic Exhibition. It cannot be expected, perhaps, looking to the distance of the place of exhibition, that very much in either of these branches will be contributed from this country; but it is obvious that, from nearer sources, it must be well supplied with abundance of materials that must be most interesting to arboriculturists and horticulturists, and which will well repay a journey to Moscow to see them. The *Arboricultural* division has been, we observe, sub-divided into the *Geography of Forests*; *Topography of Forests*; *Results of regular cultivation and artificial Arboriculture*; *Importance of Arboriculture in its relations to other branches of State Economy*; *Applied sciences*: animals useful or injurious to forests; herbaria, dendrological collections, samples of the soil with analysis; *Applied arts*: drawings, models, photographs; *Literature*: books, maps, plans, and pamphlets. The *Botanical and Horticultural* Section contains: 1. The exclusively scientific botanical part, comprising a botanical garden, with a systematic arrangement of the plants, and a botanic museum, with collections of various parts of plants, their raw and manufactured products, and with scientific data of general interest on the structure and growth of plants. 2. The applied part, including within it, fruitculture, floriculture, kitchen-gardening, and other branches of plant culture.

The American and his Gardener.—Lackland has great faith, like almost all the men I ever met, in his study of physiognomy. About a man's temper or his honesty, he can hardly be mistaken, he thinks, if he can once set eyes upon him. He is therefore strongly disposed in favour of a stout, jolly-faced Irishman, who assures him he can grow as good 'vigittables as enny man in Ameriky.'—"And flowers, Patrick (Patrick O'Donohue is his name); you could take care of the flowers?"—"Oh, flowers, and begorra, yis, Sir—roses, pinks, v'lets—roses, whatever you wish, Sir."—"And the poultry, Patrick; you could look after the poultry, couldn't you?"—"And indade, Sir, that's what I can; there's niver a man in the country can make hens lay as I can make 'em lay." In short, Lackland bargains with Patrick, and reports him at the home-quarters "a perfect jewel of a man." Lackland provides frames and glass for the early salads he covets so much; and Patrick, with the fresh sweepings of the stables, has presently a bed all a-steam. At the mere sight of it the Lacklands regale themselves with thoughts of crisp radishes and the mammoth purple fruit of the egg-plants. The seeds are all put in—early cabbage, cauliflower, peppers,

radishes—under the same frame, by the judicious O'Donohue. The cabbages and the radishes come forward with a jump. Their expedition forms a pleasant theme for the physiological meditation of Lackland. He is delighted with the stable manure, with the cabbage seed, and with the O'Donohue. He is inclined to speak disrespectfully of the seed of peppers and of egg-plants in the comparison. But the bland O'Donohue says, "We must give 'em a little more hate." And after some three or four days, Lackland is stupefied, on one of his visits to his hotbed, to find all his fine radishes and cabbages fairly wilted away; there is nothing left of them but a few sun-blackened stumps; the peppers and egg-plants show no signs of germination. "What does all this mean?" says Lackland; "the cabbages are dead, Patrick."—"Yis, Sir—it's the hate, Sir. The sun is very strong here, Sir; we must give 'em a little more air, Sir." And they get the air—get the air (by a little forgetfulness on the part of Patrick) night as well as day. The peppers and egg-plants, after a fortnight more of expectation, do not appear. "How's this, Patrick, no start yet?"—"And are ye sure the seed's good, Sir?"—"It's all Thorburn's seed."—"Then, of course, it ought to be good, Sir; but, ye see, there's a dale o' chaterly nowadays, Sir." And Patrick grubs away with a great deal of misdirected energy—slicing off, in the heat of his endeavour, two or three of Mrs. Lackland's choicest rocket larkspurs; whereupon that lady comes down upon him with some zeal. "Larkspur! and that's a larkspur, is it, M'am? (scratching his head reflectively) and, begorra, I niver once thought 'twas a larkspur. Pity, pity; and so it was, indade, a larkspur? Well, well, but it's lucky it wa'n't a rosebush, M'am."—J. D. MITCHELL.

OUR CALENDARS.

IT is our intention to furnish monthly a General Calendar of Garden Operations in each important branch of gardening. The different departments will be written by cultivators who have proved themselves to be unusually successful in the particular department placed in their hands. In addition to this, we shall always supply, weekly, except on the days on which the Monthly Calendars appear, a concise remembrancer as a guide to amateurs. Mr. James Barnes, late of Bicton, will write the monthly calendar for the Kitchen-Garden, Pinetum, and Arboretum; Mr. Tillery, of Welbeck, the Fruit-Garden, both in the open air and under glass; Mr. Baines, of Southgate, the Stove, Greenhouse, and Conservatory departments; Mr. Westland, of Witley Court, will take charge of the Flower-Garden; Mr. R. Dean, Florists' Flowers; while, Herbaceous, Alpine, Aquatic, and Bog Plants will also receive their share of attention. As a rule, the writers of these divisional sections will be changed annually or biennially, so as to obviate monotony, and to secure the best advice in such matters from widely different districts of the kingdom. These Calendars will commence in our next number, and will generally be published at the beginning of each month, so that our readers may avail themselves in due time of the directions given.

The Ivy as a House Plant.—Our very old friend the Ivy Green is a first-class indoor plant. We have known him so long as an inhabitant of silent and gloomy places that few perhaps would think of introducing such a child of the woods to civilised house-life. However, judiciously placed, no plant will furnish a better result or live more contentedly indoors. As a screen plant it is admirable, and much used in various places for that purpose in the drawing-room. It is planted in long narrow troughs and trained to an erect trellis, placing the trough in another ornamental trough of some kind of earthenware, so that the moisture necessary may not descend to the carpets. It is in the first instance pretty well grown on the trellises before being placed in the house. But it is not only in places where numerous gardeners are employed to attend to such screens that it may be enjoyed. If in any hall or place where fire-heat is rarely used, all that we have to do to form a screen of the richest ivy is to plant it in a box of rich earth and train it as may be desired. The best of all kinds for this purpose is the common Irish ivy. It may indeed be grown in almost any part of a house if supplied with soil and water and trained a little at first. I have seen a beautiful effect produced by its means in an entrance hall—the deep box in which it grew being placed in a niche and the shoots allowed to fall down so as to form a curtain of rich leaves.

Tree Guides in the American Deserts.—Dr. Newberry says: "For a time we were often deceived by the poplars and willows, regarding them as indications of the presence of water, but we soon learned that they were only a sign that water is to be found in their vicinity at some time during the year. Alders we found much better guides to water, as they will only follow the courses of the streams just as far as they are permanent, and no further; and we never failed, even near the close of the dry season, to find the roots of the alders washed by living water." The American aspen (*Populus tremuloides*) is abundant in the region east of the Cascade Mountains and Sierra Nevada, forming a marked feature of the vegetation of the slopes of these mountains, where the forests of the higher lands border the Sage plains of the central desert. Here it is seen in long lines of trees of small size, marking the courses of the many mountain streams which are in summer absorbed by the arid surfaces of the plains soon after leaving the mountain sides.

Horticultural Hints for Everybody and Always.—Cultivate acquaintances, if desirable; if not, cut them. Never sow the seeds of dissension. Weed your library. Invest in stocks. Get as much heartscase as you can. Fern-growers, don't be too fierce in your rivalry; remember the wars of the Froud (e). Attend to wallflowers and trim coxcombs. Emulate the cucumber—be cool. Beware of auricula (r) confession. Don't peach. Avoid flowers of speech. Pot—a lot of money on racecourses. "Bedding out" is good for plants, but not for friends. Take the advice of the sage, or you may rue the consequences. Ladies! success to the great rose show—on your cheeks—and may you always be eye-bright! N.B.—Never pay your bets in fox-gloves.—*Punch's Almanac.*

THE GARDEN.

"This is an art
Which does mend nature: changes it rather; but
THE ART IS NATURE."—*Shakespeare.*

All communications for the Editorial Department should be addressed to WILLIAM ROBINSON, "THE GARDEN" OFFICE, 37 Southampton Street, Covent Garden, London, W.C. All letters referring to Subscriptions, Advertisements, and other business matters, should be addressed to THE PUBLISHER.

The Name and Address of the writer are required with every communication, though not for publication, unless desired by the writer. Letters or inquiries from anonymous correspondents will not be inserted.

All questions on Horticultural matters sent to "THE GARDEN" will be answered by the best authorities in every department. Correspondents, in sending queries, are requested to write on one side of the paper only.

Readers who may find it difficult to procure the numbers regularly through the newsagents, may have them sent direct from the office, at 19s. 6d. per annum, or 9s. 9d. for six months, payable in advance.

THE FLOWER GARDEN.

NOTES MADE IN THE "TIME OF ROSES."*

BY S. REYNOLDS HOLLE.

WE may congratulate each other, we who love the rose, that never was her excellence in this floral world so conspicuous, so supreme, as now. Some of us may be sceptical as to the advances made and the conquests won by "the march of intellect," and some of us may even dare to doubt (without denying that in the matter of velocity there are advantages attached to a telegraph which we find not in a Pickford's van) whether the vaunted "progress of civilisation" itself is not mainly a procession of trumpets; but we must all believe in the development of beauty, which our eyes have seen, among the flowers generally, and specially in their queen, the rose. Recollect, ye who can, the pelargonium, the cineraria, calceolaria, fuchsia, twenty years ago, and see what amplification and symmetry of form, what variety and intensity of colour, has been granted to their descendants! But to none of these has come such an accession of tint and of form as to the rose. To her of all "the daughters of the year," of all flowers in hothouse, greenhouse, or garden, we may reverently apply the words of the wisest and greatest of all gardeners, "Many daughters have done virtuously, but thou excellest them all."

I have "a list of roses grown at Cauntton Manor," made at a time when I may be said to have taken my degree, after four years' study, as a rosarian, namely, in the year 1849, and at the end of it there is a summary consisting of 362 varieties. Of these, how many, think you, are now available for the censor's eye at a rose-show? *Two only* Adam and Devoniansis. And 355 have long ago disappeared from the scene, leaving with the two fore-named, Blairii No. 2, still one of the loveliest, but expanding too soon for exhibition; Coupe d'Hebe, charming as a tree, but small in its individual flowers; Comte de Paris, a bright, fresh, tea-scented rose; Géant des Batailles, retained as pensioner for brilliant rose on the tented field; and Safranot, beautiful for the button-hole when Madame Faleot is away. All gone but these; and yet there was a time when they realised our ideal, and satisfied our desire; when we believed that Grandissima deserved her title, and took off our hat to Reine des Beautés, and should have called a man out had he hinted a suspicion as to that rose's modesty who said of herself, "*Reine ne me surpasse.*" We were never tired of admiring our Aurora, our Aimée Vibert, our Beauty of Billiard (not raised by "Jonathan," or Roberts père, but red as the ball which they love to see in proximity to the middle pocket), our Celina and Ceres, our Daphne and Emerance, our Melanie Cornu and New Village Maid, our Orphirie and Pulcherie, our Reine des Vierges, and our Sophie Duval.

And then, because we appreciated that which was given to us so heartily (and found, as always, in such an appreciation the main secret of earthly happiness), because loveliness is not the cause only, but the result, of deep and innocent love, new

gifts were granted, and new graces shone. Because we served so loyally, so faithfully, we were commended as true knights for higher enterprise, admitted to a more noble company, and rewarded by the smiles of yet more radiant beauty.

First there came to us a great champion, a mighty conqueror flushed with victory, whom we called our Giant of Battles. We made him by acclamation our commander-in-chief, and as he glowed in brilliant uniform at the head of his troops, with a superior form and brightness, we thought that we had found perfection; and when a report reached us that an officer, yet more handsome and more vigorous, was to be promoted over him, there was doubt, and dismay, and disorganization in Queen Rosa's Army. But when General Jacqueminot came upon the scene, incredulity and indignation disappeared from it, arm in arm, and every soldier accepted for his chief this General Jac—the Giant-killer. We were quite sure that now, at all events, our hero was invincible. To every war of the roses, he came, and saw (no, not saw, for he had never an "eye"), and conquered. The hero of a hundred fights, he was entering upon a second century of triumph, when music, martial, jubilant, audacious, preluded the approach of a rival. "Wha would na' die for Charlie?" was the air selected, and presently Royal Charlie himself (I can only explain the sobriquet of Lefebvre by supposing it to be a corruption of *la fièvre*, the fever, which raged among rosarians on his arrival) drew near, with such an overwhelming power and majesty that the general at once tendered his sword, and himself led the king to his throne.

A like development of beauty has been manifested in the other varieties of the rose. In white roses, our old favourites, the Princesses Clementine and Lamballe, Mesdames Hardy and Zoëtmans, have been superseded at court by Mesdames Rivers and Vidot, by Mademoiselle Louise Magnan, the beautiful Baroness de Rothschild, and others. In pink roses, our well-loved Duchess of Sutherland and Baronne Prevost are supplanted by such flowers as Madame Furtado, Thérèse Levet, and Marquise de Castellane. In yellow roses, our "Jaune de Smith," our Harrisonii, Persian Yellow, and Solfaterre have succumbed before Maréchal Niel, and in the darker varieties, our Boula de Nanteuil, D'Aguesseau, and Ohl, "pale their ineffectual fire" in the presence of Pierre Notting, Prince Camille de Rohan, and Xavier Olibo.

And every summer brings some accession (I once heard a gardener describe a new chrysanthemum as "a beat on Bob") in colour or in form—some novelties, of which more anon.

Meanwhile, to whom shall we give our thanks and our praise, when we have proffered them reverently to the Giver of all good—to whom, as being His agents? Not to botanists. Not to men of science, falsely so called, who never "raised" a flower in their lives. Not to the anatomist, who glories in his museum of malformations, and describes, but prescribes not for, disease, who would rather dissect the dead than revive the dying, and has more pleasure in his herbarium, with skeletons dry and sere, than in gardens of life and beauty. Not to him, but to the gardener, whose love and skill and industry have, humanly speaking, gained these treasures for us; who tends with a complete devotion, blends with all the wisdom of experience and thought, and waits with an untiring hope. To him, our thanks; to him, and to such as him, to all gardeners who deserve the name, be they owners, occupiers, or servants, whether they "walk in silk attire," or wear purple baize, we dedicate and inscribe THE GARDEN.

THE BOG-GARDEN.*

As to the planting of the select artificial bog, all that is needed is to put as many of the undermentioned subjects in it as can be obtained, and to avoid planting in it any rapid-running sedge or other plant. When this is done, all satisfaction with the bog is at an end. Numbers of carexes and like plants grow so rapidly and densely that they soon exterminate all the beautiful bog-plants. If any roots of sedges, &c., are brought in with the peat, every blade they send up should be cut off with the knife just below the surface; that is, if the weed cannot be pulled up from being too near some precious subject one does not like to disturb. All who wish to grow the tall

* See p. 5, ante.

* See p. 7, ante.

sedges and other coarse bog-plants should do so by the pond-side or in one or more moist or watery places set apart for the purpose. Given the necessary conditions as to soil and water, I can testify that the success of the bog-garden will depend on the continuous care bestowed in preventing rapidly-growing or coarse plants from exterminating others, or from taking such a hold in the soil that it becomes impossible to grow any delicate or minute plant in it. Couch and all weeds should be exterminated when very young and small. The following are the bog and marsh plants at present most worthy of culture; but there are numbers not yet in cultivation, equally lovely.

A SELECTION OF CHOICE BOG-PLANTS.

Anagallis tenella; *Butomus umbellatus*; *Calla palustris*; *Caltha* in var.; *Campanula hederacea*; *Chrysobactron Hookeri*; *Coptis trifoliata*; *Cornus canadensis*; *Crinum capense*; *Cypripedium spectabile*; *Drosera* in var.; *Epipactis palustris*; *Galax aphylla*; *Gentiana Pneumonanthe*; *Helonias bullata*; *Hydrocotyle bonariensis*; *Iris graminea*, *Monnieri*, *ochroleuca*, *sibirica*; *Leucojum aestivum*, *Hernandezii*; *Linnaea borealis*; *Lobelia syphilitica*; *Lycopodium* in var.; *Menyanthes trifoliata*; *Myosotis dissitiflora*, *palustris*; *Nierembergia rivularis*; *Orchis latifolia* and vars., *laxiflora*, *maculata*; *Orontium aquaticum*; *Pinguicula* in var.; *Primula Munroi*, *sikkimensis*; *Rhexia virginica*; *Sagittaria* in var.; *Sarracenia purpurea*; *Saxifraga Hirculus*; *Spigelia marilandica*; *Swertia perennis*; *Tofieldia* in var.; *Tradescantia virginica*; *Trillium*.

The above are most suitable for the select bog-bed kept for the most beautiful, rare, and delicate plants; and among these, as has been stated, should be planted nothing which cannot be readily kept within bounds. To them lovers of British plants might like to add such native plants as *Malaxis paludosa*; but it is better, as a rule, to select the finest, no matter whence they come. Some may doubt if the American pitcher plant, *Sarracenia purpurea*, would prove hardy in the open air in this country. It certainly is so, as one might expect from its high northern range in America. It will thrive in the wettest part of the bog-garden. In America I usually observed the pitchers half buried in the water and sphagnum, the roots being in water. In British gardens it usually perishes from want of water.

The following is a selection of vigorous marsh and water-side plants which may be planted in any sufficiently moist positions, and left to struggle with each other for existence:—

A SELECTION OF VIGOROUS MARSH AND WATER-SIDE PLANTS.

Acorus Calamus, *gramineus*; *Alisma* in var.; *Aster Tripolium*, and coarse varieties; *Butomus umbellatus*; *Calla aethiopica*, *palustris*; *Caltha palustris*; *Carex paniculata*, *pendula*, *Pseudo-cyperus*; *Cyperus longus*; *Epilobium hirsutum*; *Equisetum* in var.; *Eriophorum* in var.; *Eupatorium* in var.; *Glyceria aquatica*; *Gunnera scabra*; *Hibiscus* in var. (North American herbaceous kinds); *Hippuris vulgaris*; *Houttuynia cordata*; *Iris Pseudacorus*; *Leucanthemum lacustre*; *Lysimachia thyrsiflora*; *Lythrum Salicaria*, and its var. *rosea*; *Myosotis palustris*; *Oenanthe fistulosa*; *Osmunda* in var.; *Phormium tenax*; *Pontederia cordata*; *Pyrethrum serotinum*; *Ranunculus aquaticus*, *Lingua*; *Rumex Hydrolapathum*; *Sagittaria* in var.; *Scirpus lacustris*; *Sparganium* in var.; *Typha*, all the kinds.

A group of the boldest of this last selection is strikingly effective in the picturesque garden. CONDUCTOR.

SEDUMS AND SAXIFRAGES.

We are beginning to appreciate the advantages in an artistic point of view of middle and neutral tints, as well as bright colours in the pictures we paint in our gardens with living plants and flowers, and we have, fortunately, at command, and amenable to cultural skill, a tribe of plants that enables us to shade off our floral sketches by soft gradations of brown, and grey, and green. The hardy Sedums and Saxifrages not only enable us to do this in summer, but they help us to relieve and brighten our winter gardens; and, associated with early bulbs and those spring flowers which are deficient in foliage, they give the balance of green that is required and carpet the dull, dried ground with their soft and spring-like verdure; and their value in the winter and spring garden is not only in the pleasing effect they produce. The bulbs and roots of plants with which they are associated are effectually screened from the effects of frost, or trying changes of temperature. No ordinary frost would penetrate a healthy tuft of *Saxifraga hypnoides*. I have two beds filled with *Scilla bifolia* and *Scilla*

sibirica, the surface of which is brightened with a selection of Sedums, Saxifrages, and *Sempervivums*. Fragile as the flower stalks of the *Scillas* seem, they force their way through the green carpet of *Stonecrop* and *Saxifrage*, and seem to enjoy the association.

It is only by planting in masses that we are able to realise the effect these simple plants are capable of giving; and to obtain vigorous examples presenting the distinctive characteristics of the tribe, it is best to divide and replant either annually or biennially, according to the growth of the variety. Although many of the Saxifrages will live almost anywhere, starvation no more agrees with them than with other plants. This may be readily seen, if the dwarfed, stunted, pot-bound specimens sometimes found in a botanic or nursery collection are compared with plants placed in circumstances favourable to their full development. The hint that is conveyed to us by plants that spread out and extend over the ground annually, should be understood to mean that one year's growth and occupancy of the ground exhausts its fertility, and new soil is required for further growth.

I have mentioned the utility of some of the Sedums associated with bulbs. Their application in the spring garden may be extended to many combinations. Masses of *Erica herbacea* are brightened, and thrown up, and rendered more effective by a base of *Sedum acre aureum*. The same Sedum, planted with *Lamium maculatum*, helps to bring out the rather dull variegation of that spring plant. Combined without advantageous aid, a mass of varied Sedum and Saxifrage is sure to invite attention and admiration. Thus, a bed composed of a central mass of *Saxifraga geranioides*, edged by a broad green band of *Saxifraga hypnoides*, succeeded by *Sedum glaucum* and *Sedum acre aureum*, and fringed by *Sedum rupestre*, is not the least attractive bed in the spring garden. Next year I hope to employ that gem amongst Saxifrages *S. longifolia*. That bright star is, with me, somewhat nebulous as yet. I may, perhaps, be allowed to indicate for your amateur readers a few of the most effective and manageable Sedums and Saxifrages for winter and spring gardening. Foremost on the list is certainly *Sedum acre aureum*. The Sedum known as *S. glaucum* in London gardens is of equal value with the foregoing, and affords a very useful middle tint of light grey. *S. rupestre* assumes a crimson tinge in the spring.

Amongst Saxifrages, *S. longifolia* stands conspicuous. Its beauty is due to the accuracy of its star-like form. *S. oppositifolia pyrenaica* is distinguished by the profusion of rosy blossoms. It produces early in the year. *Saxifraga hypnoides* and its varieties are essential in a collection of these, *S. juniperina*, *spathulata* and *pulchella* are useful species, affording tufts of the brightest green; *Saxifraga cæspitosa*, *S. ceratophylla*, and *S. geranioides*, are also hardy and easily managed kinds, which may be usefully worked to any artistic arrangement that may be desired.

Belvoir.

WM. INGRAM.

Notes on Hardy Plants.—I now adopt the plan of mulching my mixed border and never digging them, and in some cases I go further. On my peat-bed and fernery I do not remove the fallen leaves that may accumulate there, but I cover them over with a slight mulching of cocoa-nut refuse. In this way I imitate nature, who, by a thick covering of leaves, provides against the ill effects of plants throwing themselves out of the ground. The majority of plants die every year; but nature meets that by a mulching of leaves, which become soil. If I could dare to brave the imputation of untidiness I would not cut anything down till the spring. You may be sure the flower-stems and decaying root-leaves are an immense protection in winter. I have mixed borders right up to the drawing-room windows. Of course I am rather particular what plants I put there. As an instance, I will just describe to you one small bed near the drawing-room. It is perhaps ten feet long and eight feet wide. The back is filled with *Arundo Ragomovskii* and *A. falcata*, one corner with *Pistacia terebinthus*, the wall with *Bignonia capreolata*; another is filled with a large clump of *Zauschneria californica*, and a fourth with *Acanthus latifolius*; at other stations are shrubs of *Berberis Wallichiana* and *Hydrangea quercifolia*. The centre is filled with anything, and near the edge are *Narcissi*, *Lathyrus tuberosus*, &c. There is no formality, and there is plenty of interest. Lilies never did well here, so I put on my considering-cap about two years

ago, and made them a special bed for themselves. I chose the *lowest* part of the garden. There I dug out my bed two feet deep; I filled six inches of this with brick and other rubble, and the remaining eighteen inches with coarse river sand and garden soil in equal quantities. In this I planted my lilies, putting no manure; but, when they had been in a year, I mulched the surface with rotten manure, and shall do this again. Hitherto the result has quite satisfied me. The spaces between the lilies I intended to fill with Oxalises, but last winter destroyed many of them. Those that survived evidently like the soil much, and in the front, now, I have Croci, and other small bulbs. I have a large bed of Yuccas, and another bed edged with Erica, but the soils are totally different—one is a stiffish clay, the other sand. Have you ever known *Arundo Donax* versicolor really hardy? I have not. *Polygonum cuspidatum*, grown in the lawn, is a grand plant with me, measuring ten or eleven feet high. I should add, that no one should ever condemn a plant for its first year's show. Many plants do not show their full beauty till well established. As regards *Adenophora*, the best is *A. verticillata*, but it is scarce. I once had it fine, but lost it by dividing for a friend. With respect to *Alstræmerias*, nobody need trouble about planting them deep; they will soon get deep enough. I have been trying to destroy them in one place, and cannot, because I cannot reach them. *Aponogeton distachyon* is quite hardy in water that does not freeze (running water). It is so grown at Edinburgh. The very finest *Aquilegia* is *formosa*—bright red. *Arum crinitum* has the peculiarity of not putting in an appearance at all the year after flowering—at least, that is its habit here. *Asarum virginicum* is well worth growing for its mottled leaves; but where can it be got? *Asarum* is one of the very best plants to grow in dense shade, or in dry places under trees.

Bitton.

W. H. ELLACOMBE.

WATER-MARGINS

MANY people like a little water in their garden, and make a little pond, or perhaps a big one if they can afford it. Yet how few of these ponds, lakes, or whatever they may be called, ever give the satisfaction desired, and why? Obviously, because we make our little bits of water too bald, too puny, and altogether different from what we find in nature. The chief difference between the two lies for the most part in the setting or margin, about the treatment of which there is much misconception. Let us, therefore, give to water-margins some little attention, in order that we may discover what it is they require to set the water off to advantage. I was, a little while ago, inspecting a piece of water, the margin of which I could not help admiring. At one part a sweet flat meadow stretched a long narrow lip completely into the water, which a little



Margin of Loch Achray.

farther on was overhung with trees and bushes; then came a patch of reeds, half concealing the pebbly bed of the mouth of a little brook; bushes again, and in one part little trees, through which the water looked, as it always does under such circumstances, particularly pleasing. Water splashing and dashing in some places, and sweetly flowing in a long suggestive line in others, has often engaged the pen of the poet, and is not unfrequently found on the canvas of the painter, but we seldom meet with it in gardens. We have a dreadful way of making the banks turn down and dip stiffly into the water, and of making the margin quite formal. It is a mistake to call neatly-rounded margins an imitation of nature; and yet they are fondly believed to be so. We must not depend on the

mere presence of water for striking effect; it should be tastefully relieved and made presentable in a framework or margin skilfully conceived; just as a nosegay is relieved and softened by the leaves of ferns and other greenery with which it is surrounded. The accompanying illustration, showing the beautiful margin of Loch Achray, which I sketched last autumn, will indicate how immeasurably superior nature's margins are to those with which we are satisfied in our gardens.

A. D.

THE FLOWER-GARDEN, &c., FOR DECEMBER.

BY G. WESTLAND, WITLEY COURT.

Flower-Garden.—Here the summer occupants of beds have been cleared off, and they are now, for the most part, replanted with spring-flowering plants. If bulbs for early blooming are not yet planted, make it a rule to plant nothing without a green groundwork of some kind to cover the soil. Arabis, Aubrietia, Violets, Sedums, Saxifrages, Daisies, Primroses, Forget-me-Nots, and similar plants are admirably adapted for the purpose. Decorating the spring garden so as to yield a constant succession of flowers constitutes one of the most interesting phases of modern flower-gardening. I plant bulbs by the thousand; but I cover the raw earth about them with an evergreen or variegated carpet. How this is done will be stated in due time. In the summer arrangements much may be done in the way of substituting for common-place effects refined and artistic combinations. With the great variety of hardy ornamental plants of all forms and colours which we possess, we have material enough of the most varied and effective description for making noble and striking groups, thus lessening to a great extent the use of tender bedding-plants, which would be a decided gain. Whilst thus advocating, however, greater variety in the way of planting our beds, let it not be inferred that I do so to the exclusion of tender exotics and sub-tropical plants. On the contrary, I believe them to be indispensable, in the highest sense of the word, to effect, when used in moderation. For a few well-arranged beds may give the greatest amount of satisfaction. Our requirements for tender plants have become so great as to make it a matter of serious importance as to how they are to be managed, as adequate accommodation and labour have not by any means kept pace with the mania for high colouring. If not already done, protect all choice plants likely to suffer from frost, and endeavour to render such protection as little objectionable as possible, by finishing off with a garniture of evergreen sprays. Magnolias and standard Bays should have some slight covering of spruce or light evergreen branches, and the stems should be bandaged with hay. The Pampas Grass often succumbs to the severity of our winters. In its native habitats this grass is parched up whilst at rest; therefore we ought to preserve the roots in as dry a state as possible in winter. See also that Canna roots left in the ground have sufficient protection. Prune and nail hardy creepers upon walls and pillars, and tie in such as are on lattice-work. Holly-hocks, allowed to remain out all winter, secure against wet and slugs by placing cinder-ashes round them. See that plants requiring support are secured against high winds. Take advantage of frosty weather to turn compost heaps, and lose no opportunity of collecting refuse to rot down for manure.

Herbaceous and Alpine Plants, &c.—Annual and biennial plants raised in summer and early autumn may now be transplanted into the positions in which they are to bloom, giving them in all cases light and well-drained open soils. Lilies of all kinds may now be transplanted, having the positions fully prepared previously, so that they may not be kept out of the ground. Lilies often suffer much, or perish, from being exposed to the air. All other bulbs may be transplanted now. Alpine plants will require little or no attention, beyond scattering a little fine earth or leaf-mould or cocoa-fibre among such as have grown or pushed up a little out of the earth, and which are in consequence likely to perish from cold drying winds. Herbaceous plants may be transplanted with safety in almost any weather, though it is not desirable to move them when the ground is frozen deep.

Shrubberies.—As soon as the leaves have fallen, rake them together, and cover them with soil, so that when they have rotted they may be returned as manure to the ground from which they have been collected. Avoid the usual practice of digging shrubberies: for there is no greater mistake in reference to garden management than periodically root-pruning plants, the majority of which have not a root to spare. Shrubberies should not show any margin of raw soil, for the covering of which we have thousands of dwarf evergreen plants that might be made to look very effective in such situations. Bulbous plants, too, pushing their way through the low green boughs are by no means unwelcome. I have seen a terrace-slope planted entirely with *Juniperus sabiniana*, through

which, in the spring time, thousands of bulbs throw up their flowers; and nothing could be more charming. Shrubberies *en masse* should consist of a well-chosen combination of the finest evergreen and flowering shrubs, so arranged as to furnish the greatest amount of variety and striking effect.

Rose-Garden.—Transplanting may now be done with advantage; and if new kinds have to be procured, the sooner they are got and planted now the better. Before planting, however, take care that the stations for them are properly prepared by removing part, if not the whole, of the old soil to the depth of eighteen inches, and replacing it with fresh compost of the proper kind. Everyone knows that the rose delights in a strong soil, and that it will take any reasonable quantity of rich manure. Hence each variety, after it is planted, should be mulched with rotten dung; and the beds will also be all the better for a similar supply. When planting, make the plants secure by means of stakes. But do not prune, beyond cutting off the points of straggling branches, until frost has left us. Some of the more tender kinds of Tea and Bourbon roses may require protection; dwarfs may be pegged down and covered with dry fern. And a handful of dry fern fronds drawn into the head of a standard rose, and well secured, is not a bad protection, that is if the snow is not allowed to lay or melt and run into it. Dryness is the point to be attained. In some localities it may be requisite to lift Tea-roses and place them under protection for the winter.

Pits and Frames.—As a general rule everything in these should be kept as quiet as possible, and no encouragement given to induce a weakly growth. Give an abundance of air on every favourable opportunity; using fire-heat only in case of frost, or to expel damp in wet, foggy weather. Remove decaying leaves and water sparingly. Alternantheras and similar plants, which are so useful in pattern-bedding, should not be overlooked, but afforded heat of from fifty-five to sixty degrees. Violets should be uncovered on fine days; giving them occasionally weak manure-water. They are impatient of much nursing.

FLORISTS' FLOWERS.

AURICULAS in cold frames will now be at rest. Any decaying leaves on them should be removed as they appear, and when the weather is mild, plenty of air should be given them. The foliage, and especially the hearts of the plants should be kept perfectly dry; water must be given sparingly, and chiefly to those plants which appear to flag. During frost the frames should be kept closely shut.—Carnations and Picotees in pots, which will also be in cold frames, should be kept as near the glass as possible. Plenty of air should be given them. Water should be given only in the morning, and withheld altogether in frosty weather. Decaying leaves should be removed, the surface of the soil kept clean, and the plants must not be crowded too much together.—Cinerarias should be kept near the glass, but secure from frost. Air should be given them, but they should be kept free from cold draughts, which curl their leaves. Keep the plants growing by shifting them into larger pots as required, and kill green-fly by means of fumigation.—Dahlia roots should be kept dry and free from frost, and they should be looked over occasionally in order to remove decaying tubers.—Hollyhocks may be wintered in a dry, cold frame, where air can be admitted. Old roots in the ground should be lifted, put in pots, and placed in a cold frame to get cuttings from in February. All decaying leaves should be removed as fast as they appear.—Pansies in beds should be secured against wind, by means of pieces of sticks or pegs, and in hard weather protected by placing a few small branches of spruce firs among them. The beds should be fully six inches above the paths in the centre, and rounded, in order to throw off rain. In cold, damp localities, it is best to lift the plants and to plant them in a cold frame, or the smaller ones can be put in small pots.—Pinks should also have their branches similarly secured, and after heavy rains it is well to stir the surface soil of the beds, as they get beaten down by heavy autumn rains. Should the plants be lifted by the action of frost, they should be gently pressed into the beds when a thaw sets in.—When the Ranunculus is planted in somewhat heavy soil, it will be well to lay a few boards, or some other covering, over the beds to throw off the rain. Excessive moisture at this season is injurious.—Verbenas, whether as old plants for stock or as cuttings in store pots, should be placed in a warm, dry position near the glass in a greenhouse, and kept only moist enough to keep them alive. The plants should also be kept as clean as possible.

R. DEAN.

Asphalte Roads.—These have been subjected to a severe test in London, and have been found to answer well. What a happiness for those who have cars! A wagon conveying a large granite block, the weight of which, including the vehicle, was twenty-three tons, passed over the asphalte in Cheapside the other day without making any abrasion, or causing it the slightest injury. The police are under the impression that fewer horses fall, and are certain that no more fall on it than upon granite. It has, therefore, been decided to pave many other streets with Val-de-Travers compressed asphalte.

PYRETHRUMS.

A FEW words on the culture and propagation of these now somewhat fashionable plants may not be unacceptable to many who have a garden, and, perhaps, very little glass. They are, I need scarcely say, perfectly hardy, and I know of no family of plants that has made such advances during these last ten years as the Pyrethrums. They have now become as beautiful as many of our China Asters, and they have the advantage of flowering at a different season, which makes them more acceptable, viz., from May onward through the summer months.

If required for the ornamentation of herbaceous beds or borders, where the ground is in "good heart" that is what they want, and if tied to some slight supports while in flower, they will afterwards take care of themselves. As the old flower-stems die down they should be removed, as that will give the plants fresh vigour to throw up flower-stems again.

If intended for pots for exhibition purposes or otherwise, they should be taken up from the ground in spring, as soon as they show any appearance of growth, picking out carefully the old soil, and potting in good fibrous loam and rotten dung or vegetable mould, using a moderate amount of drainage, and plunging them in leaf mould, or something of that kind, to keep them from drying at the roots. As they advance in growth they require a good supply of water; and, when coming into flower, a little liquid manure will prove beneficial to them.

As regards propagation, the proper time for that is early in spring. Take the plants up, shake all soil from them, and pull them to pieces, putting them in small pots, and placing them in a cold frame for a few weeks, until they become established. Care should be taken not to keep them too close, as they are apt to damp. When established they may be planted out in their proper quarters.

The following are all first-rate double kinds, varying in colours from white, bluish, yellow, and red, to dark crimson, being, in fact, a selection from about fifty varieties, viz.:—

Boule de Neige.	Gloire de Stalle.	Mrs. Dix.
Carneum.	Gustave Hertz.	Rev. J. Dix.
Candidum.	Hermann Stenger.	Nancy.
Delicatissimum.	Imbricatum.	Nemesis.
Dr. Livingstone.	Iveryanum.	Niveum.
Elegantissimum.	Luteum.	Paul Journa.
Eximium.	Lady Blanche.	Roscum.
Floribundum.	Madame Billiard.	" album.
Fulgens plenissimum.	" Munier.	" perfection.
Galathee.	M. Barral.	Rubrum.

Exotic Nursery, Tooting.

T. BROWN.

NATURE'S GARDENS.

NIAGARA.*

A CHIEF reason for speaking of this oft-described spot is a desire to plead for the preservation intact of such a magnificent scene. The whole is so vast and so far out of man's control that probably nothing man or machinery will do can ever cause it to be other than a place of the highest interest; but it may be injured and deteriorated in various ways—nay, it certainly will be so if precautionary measures be not taken. One of the islands is already the home of a common-place paper-mill; persons are here and there allowed to levy black-mail on spots that ought to be quite free to the public; the "leprosy of White Hotels" has broken out in one or two spots, and a "museum" (stuffed with double-headed calves, a fine specimen of a "mummy," with a full red beard, &c.), the proprietor of which assured me that his collection was far finer than that in Great Russell-street, is allowed to plant itself by the margin of the noble river. Looking at the magnificent Horse-shoe Fall from the central island, the eye is caught by a wretched block of a "tower," erected no doubt to afford a view, which is not so good as may be obtained near at hand from the island. Suppose this kind of "improvement" goes on, the charms of the scene must perish to a great extent. In a great country like America, where land has in many cases a merely nominal value, all such glorious scenes as this should be preserved for the public for ever. That could be easily done in this case by reserving a strip of land along the margin, so that the towns and factories would not protrude themselves so as to be reflected in the water. There is plenty of room for towns and hotels without allowing them to destroy the woods and copes that frame this glorious picture! The Government has reserved

* See p. 16, ante.

the famous Yosemite Valley for the public for ever—and a most wise proceeding it is. Nothing tends to vulgarise and enfeeble a scene like Niagara more than planting on its very margin a great hotel. Let such structures be near enough for convenience, or even for a good view; but not so near as to stamp out all traces of the once beautiful foreground. Besides, the hotels themselves lose considerably by being thrust, as the Clifton House is, on the margin of the river, without a tree to soften its hard outlines. All such structures would gain considerably by being cut off from the river by at least a lawn and plantation; and this need not deprive them of a good view of the scene. If we deface such rare and magnificent scenes, posterity will regard us as sordid barbarians. I never yet saw a spot which, if preserved, would in time to come form, without any but the simplest aids, so paradisaical and vast a garden, taking the river for a mile or two above and below the falls into consideration. For miles below the falls the woods are charming, and some of the scenes—as the whirlpool, where the river makes a sudden bend in its deep rocky bed—quite unique. The greatest portion of this space is as wild as ever, so that it is not yet too late to guard it from the hands of the spoiler. Nothing could be in worse taste than allowing persons to extract half-dollars from the public for the mere permission to see such places as the whirlpool. But as multitudes visit the place, the temptation to occupy every inch of land and prostitute it to some dollar-extracting use will be irresistible if the States do not step in and save it. All that needs to be done by the American and Canadian Governments is to prevent persons clearing or occupying the ground within a few hundred yards or even feet of the margin. This done—and means taken to secure the destruction of the wretched buildings that now perch themselves on the margin of the river—and, without any further attention from man, the place would ever be unrivalled in its majestic beauty—a garden worthy of America, and which, in the interest of the whole world, ought to be preserved from pollution. W. R.

THE PROPAGATOR.

HOW TO RAISE VERBENAS FROM SEED.

THAT the Verbena has been greatly improved of late years, nobody can deny; but, after all, it is doubtful if so much has been done with it in the way of cross-breeding, or fertilization, as by careful selection of certain flowers from which to take seed. Still, something has been done, evidence of which exists in the pretty striped flowers raised by Mr. Perry, of Castle Bromwich, during the past four years. These possess as many fine qualities of form, size, and substance, as the best of the self-varieties so called. Seedling Verbenas, as a rule, are not prolific of striped flowers, and fertilization appears necessary, to some extent, to produce them. Mr. Perry's aim was to obtain white flowers, having stripes of vivid scarlet or crimson, and in two fine varieties, named respectively, *Carnation* and *Singularity*, these combinations were strikingly present.

Supposing a cultivator of Verbenas has a flower possessing unusual brilliancy of colour, or some hue strikingly novel, but having the pip deficient in that circularity of form to which considerable importance is attached in these days; in order to combine the particular colouring with a higher degree of form, he would select a finely-rounded stout flower like Eckford's *Peter William*, or Perry's *Perfection*, and, using a very fine camel's hair, he would gently insert it into the tube of the flower, and transfer the pollen from it to the one from which he desires to obtain seed. In case of some flowers that are subject to the process of fertilization, it is the custom to remove, as far as possible, the pollen deposited on the anthers, replacing it with that brought from another flower, for the purpose of promoting fecundation. In the case of the Verbena, this would be a somewhat tedious, and, possibly, an injurious, process, and, therefore, it is the custom with raisers simply to transfer the pollen from one flower to the other, without any anterior removal of the pollen from the proposed seed-bearing flower.

A careful selection of seed from a few fine varieties will assuredly produce flowers of remarkable quality. For seed purposes, plant out, as early in the season as possible, on an open airy spot favourable to the proper ripening of the seed.

The seed thus obtained should be kept through the winter, and sown about the middle or end of March, in any conveniently-sized pots, using a good, free, rich loam, and covering the seeds to the depth of a quarter of an inch. The pots can then be placed in a temperature of some 65 deg. or 70 deg. and the soil kept constantly

moist. The seed germinates quickly, and in about three weeks or a month the young plants will be large enough to prick off two or three inches apart into pans, pots, or shallow boxes, and as soon as the roots lay hold in the fresh soil, begin to harden off gradually, and, as soon as it can be safely done, get the plants into a cold frame. Spider is very apt to lay hold of the young plants at this stage, and proves a bad enemy if it once gets the upper hand. Amateur raisers should guard against harm from the attacks of this pest.

Meanwhile, a bed should be prepared in the open air, for the reception of the seedlings. A rich, free soil suits the Verbena admirably. Plant out, by the beginning of May, if the plants are sufficiently large and inured to exposure. They soon make rapid growth; and all that is required is to keep the bed free from weeds, till the plants begin to flower. Then it is the raiser selects the best of his seedlings. A short stick is usually placed against any flower worthy of attention; the inferior varieties around it are removed, so as to secure ample room for development. It is from such flowers the seed for another season's sowing should be taken.

Let it be remembered, the Verbena likes, and, consequently, flourishes best in a rich soil. The liberal use of well-decomposed manure is employed by all successful cultivators, and the bed should be in an open situation. There is nothing like the open ground on which to test Verbenas. There is nothing more likely to interfere with their well being than coddling them in pits or houses. One of the foremost Verbena raisers of the day, Mr. H. Eckford, of Coleshill, grows all his seedling Verbenas in the open ground; and there is this great advantage about it, that it is a most favourable, and, at the same time, fitting mode of testing the habits of growth of the seedlings. A Verbena without a good free stocky habit of growth is, after all, of but little value. R. D.

A NEW AND EXCELLENT FLOWER-POT.

WE are all apt to run short of flower-pots of one sort or other at the busy spring season of potting, and it happens sometimes that a fresh supply cannot readily be obtained; the little history, therefore of a successful makeshift which I propose to give may be as useful to some of your readers as it has proved to me. Examining some pear-grafts in the autumn of last year I found that the old fashioned mixture of clay and cow-dung which had been used in the operation had become so hard that it was necessary to employ a knife to remove it. I held this little matter in mind, and in the spring I had a good heap of clay, cow-dung, and sand well mixed together, and set some men, one wet day to the task of moulding sixty-sized small pots in a metal mould I had provided. These pots were put on dry shelves and stoke-holes, and were allowed to dry thoroughly. They were then employed for potting-off geraniums, verbenas, lobelias, iresines, and other bedding plants. I had the satisfaction of seeing that the plants did well in their clay covering, and the pots bore the watering well. In May they were plunged into the summer beds with the plants, and I calculated that the clay and cow-dung would gradually fall to pieces, would help to support the plant, and would first induce it to form a ball of roots, so that in the autumn its removal would be attended with little loss of roots. The result has been more

satisfactory than I anticipated; the clay pots, in most instances, have remained entire, but the roots have pushed through the bottoms, and above the rims, and the plants come up with a compact ball, very different from others turned completely out of the pots, which have sent down long roots, half of which they lose on removal. I have had some of these pots preserved with the plants in them as they were taken up, and I am persuaded the contrivance will be of immense use, not only to me, but to others. I, therefore, send you a sketch of a plant taken up from the bed a few days ago, the lifting of which will only cause the slightest possible check to it; also a sketch of the somewhat rude iron mould, with a wooden plug to fashion the lump of clay, cow-dung, sand, &c., into shape. We tried first moulding in an ordinary flower-pot, but broke so many that we gave up terra-cotta in favour of iron.

Belvoir Castle.

W. INGRAM.



Plug of wood,
2½ inches.



Iron mould for
clay pots.



Petal geranium,
flower of spring.

GARDEN DESIGN.

HOME LANDSCAPES.*

BY NOEL HUMPHREYS.

Is the epidemic of geometric flower-gardening abating in intensity? it may be asked. No, far from it. It is still spreading far and wide, and the fair face of nearly every garden in the three kingdoms is either pimpled or pitted with the mighty and glaring patches of this garden disease. No doubt very striking effects of colour are thus achieved at very little cost of intellectual culture or judgment, and with an excessively limited knowledge of the endless variety of exquisite flowering-plants, acquaintance with which it would be necessary to study in order to carry out successfully the creation of "home landscapes," instead of geometrically-shaped and formally-placed patches of large numbers of plants of the same kind.

Geometrical gardening, upon the bedding system, has, however, not been entirely without its utility. It has stimu-



lated the culture of very beautiful plants, though of few sorts, with unwonted activity and great success, causing old kinds to be improved, and many new and valuable varieties to be raised.

But it is high time that a general reaction should be initiated in the direction of a nobler, simpler, and more natural mode of treating our pleasure-gardens; and it is pleasant to observe that already many of our most advanced gardeners and amateurs are beginning to perceive, as Mr. Robinson points out in his instructive introduction to "The Sub-tropical Garden," "how far we have diverged from Nature's ways of displaying the beauty of vegetation; our love for mere rude colour having led us to ignore the exquisite and inexhaustible way in which plants are naturally arranged

* See p. 18, *ante*

in a wild state; brilliant blossoms being almost invariably relieved by a setting of abundant green."

By directing attention to this principle in the creation of a pleasure-garden, and in the more artistic distribution of flowers, shrubs, and trees in combination with the characters of the green elevations and depressions of our lawns, either natural or artificial, delightful home landscapes may be created, as lovely, or even more lovely than any real Alpine scenery; for, undoubtedly, true art may be made to aid and improve nature.

Let us imagine such a nook as that represented within the framework of the capital H. in the first number of *THE GARDEN*. How charming would such a flowery hollow be, within eyeshot of a drawing-room window! It is made to appear as a glimpse of some very highly-favoured bit of flower-land towards the end of summer, or rather the commencement of autumn. In front is a profuse tuft of the rose-tinted Japan Anemone, a handsome free-growing plant that at once gives the keynote of natural growth, free from the trammels of any kind of trimming or training. Immediately behind it is a mass of *Tritoma Uvaria*, with its noble heads of brilliant scarlet blossoms, shading into orange and yellow, which define themselves effectively against a mass of dark-green foliage. To the right, is a showy plant of one of the rank-growing but picturesque *Rudbeckias*, in front of a great towering tuft of *Hollyhocks*; beyond which is a bush of one of our finest flowering-shrubs, the *Althæa frutex*; and other attractive plants just shadow forth their forms beyond, to be fully appreciated only by a nearer approach than the glance from the drawing-room window.

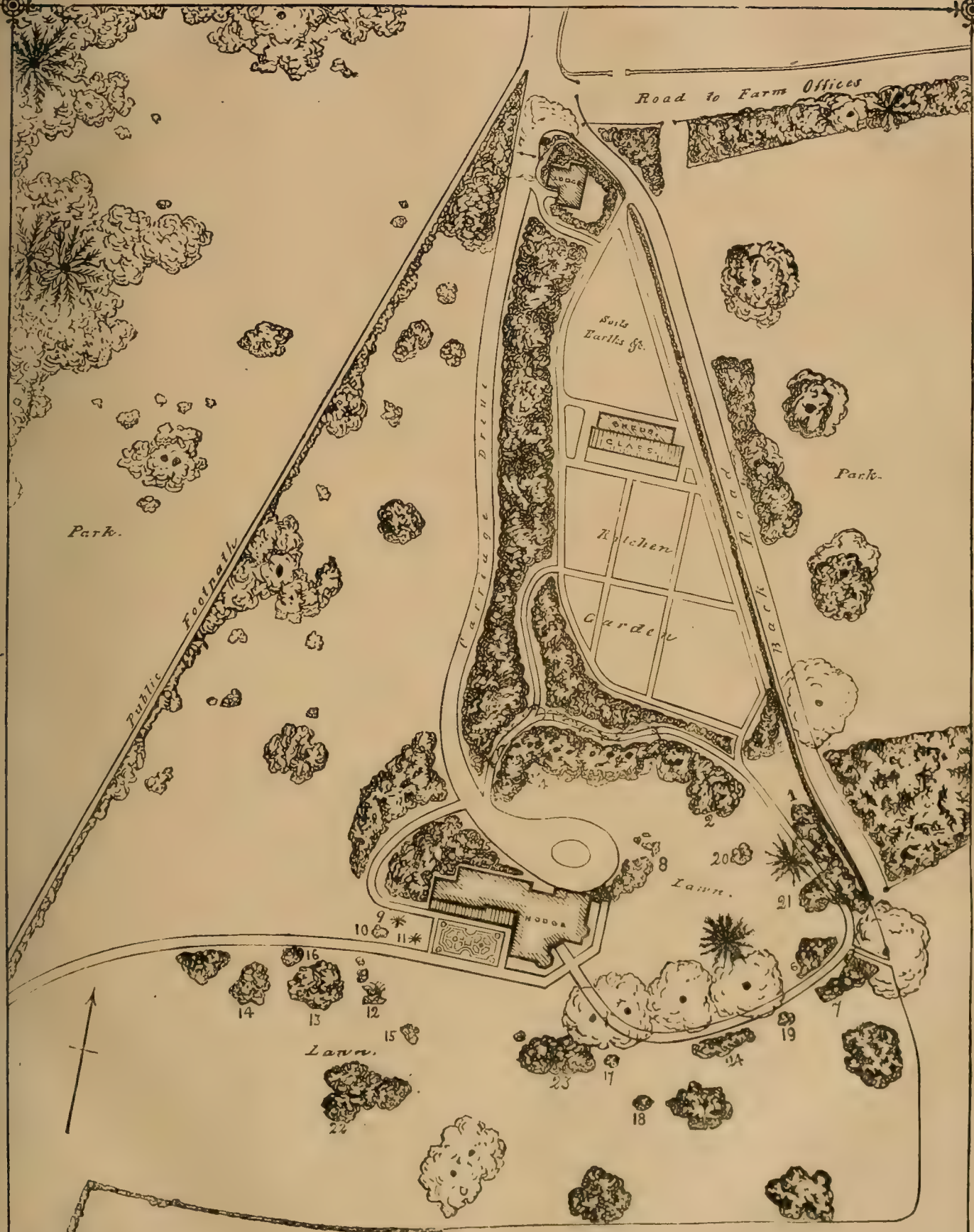
Turn now to another scene, represented in this article—a more open, and somewhat wilder piece of home landscape. How grandly the giant mass of *Pampas Grass* occupies the principal place in the living picture, shooting up its noble plumes to the height of some eight feet or so, near a bank on which *Crinums* are growing and blooming as though in their own native wilderness! How different is the aspect of the gigantic grass in such a position, from that which it is often compelled to assume in the precise centre of a circular flower-bed, surrounded by a regular double ring of *Geraniums* or other "bedding plants"! Call in an artist—a true student of nature—and ask him which he prefers. In front is a group of *Yucca pendula* in flower, the scale of which, though often reaching three feet in height, is dwarfed by the lofty height of the *Pampas* plumes. To the right, are scattered tufts of *Cyclamen*, just as they are found on the knolls and slopes of an Italian *campagna*. The low-growing plant in front is the *Oenothera macrocarpa*; and beyond, in the distance, are great detached clumps of nobler hardy herbaceous plants. Of these, the *Ferulas* and various others of great beauty have not as yet been introduced to gardens generally.

We shall have so much to say on home landscapes, and on good and simple methods of producing them with the greatest effect; and shall have to add so much on the score of the endless variety of flowers and trees, by which the aspects of garden landscapes may be varied *ad infinitum*, that we cannot afford space to say more in this general introduction to the subject.

BUCKLAND, THE SEAT OF F. H. BEAUMONT, ESQ.

THE almost total absence throughout the country of evidence of taste in garden design, and this nowhere more apparent than in our most famous private and public gardens, has made us determine to endeavour to remedy the evil by the publication of plans of gardens, not remarkable merely for their lavish wealth of plants, or vast extent, but for the true taste evinced in their disposition. With this aim in view, we shall often have to select comparatively small gardens for illustration, for, so far as we have observed, it is among such that the best examples of good taste are now to be found. Plans of gardens, it is well to bear in mind, however, are often very deceptive; frequently those places displaying very bad taste look well on paper. Every person interested in this matter should, therefore, understand that it is by abolishing the gyrations that often look so attractive on plans, that we get the space and breadth that characterize the true garden, and that we do not look down upon a garden as we do upon the squares of a chess-board.

With reference to the annexed plan, it may be mentioned that it represents a place of no small extent, charmingly situated near the



foot of that portion of the Surrey hills known as the North Downs, and commanding fine views both of upland country and broad sweeps of open park land. Originally an old brick wall extended along the eastern side of the present line of carriage drive, running very nearly as far as the mansion. This has been removed, with the exception of some portions that are thickly with covered with ivy, which have been allowed to remain, and which have been utilized (as all such objects should be) by being worked into the general arrangements of the place. On the opposite, or western side, of the carriage road, an old hedge, very much of the ordinary type, existed, and this also has been cleared away with the exception of a few picturesque thorns, which have been here and there allowed to stand alone. Towards the south-eastern parts of the ground, and where the best views of the open park lands are to be found, an old farm-road occurs, and in order that the traffic along it should not be visible from the pleasure-ground, the centre of the road has been lowered where it crosses the line of sight, and the sides slightly, but almost imperceptibly, raised, but in such a manner as to fall into, and blend with, the natural surrounding ground, so that, looking from the locality of the house, the ground appears to retain its original natural aspect.

Several large old trees exist also, both on the east side of the carriage road, to the south-east of the mansion, and in other parts of the ground. These trees have been carefully preserved, and have been either worked into the new plantations, or, where they stand on grass, the surrounding ground has been so managed as to make them fall into and blend with the general scheme of improvement to which the place has been subjected.

With regard to the arrangement of planting: passing along the carriage drive, we have, on the left, the large trees already referred to, and an undergrowth added of ordinary evergreen and deciduous shrubs. With respect to the detached clumps and groups, it is only necessary to remark that they are formed in the usual way, but that each has one or more distinct and striking trees introduced into it, for the sake of variety and contrast, and at the same time for conferring on each separate group a certain individuality of its own. In the following references, therefore, these special subjects only are referred to, the remainder being ordinary plants:—

Clump No. 1.—Weeping Willow. No. 2.—*Magnolia grandiflora*; *Thujaopsis borealis*; *Salisburya adiantifolia*; *Thuja Lobbi*; *Rhus Cotinus*. No. 3.—Lombardy poplar; *Abies canadensis*. No. 4 *Wellingtonia gigantea*; *Cupressus Lawsoniana*; *Pinus Cembra*. No. 5.—Lombardy Poplar; *Taxodium sempervirens*; *Taxus baccata*; *Thujaopsis borealis*; *Cryptomeria Lobbi*; Red Cedar; *Thuja Lobbi*; *Cedrus atlantica*; *Picea Nordmanniana*. No. 8.—*Thuja Lobbi*. No. 9.—*Pinus Cembra*. No. 10.—*Rhus Cotinus*. No. 11.—*Yucca gloriosa*. No. 12.—Pampas Grass. No. 13.—*Picea nobilis*. No. 14.—*Aralia japonica*. No. 15.—*Juniperus fragrans*. No. 16.—*Cephalotaxus Fortunei*. No. 17.—Scarlet Thorn. No. 18.—*Thuja aurea*. No. 19.—*Cephalotaxus*. No. 20.—*Cedrus atlantica*. Nos. 21 and 22.—Beds of *Rhododendrons*. No. 23.—Mixed Shrubs. No. 24.—Roses. No. 25.—Mixed shrubs. No. 26.—Mixed Shrubs and Roses.

The Kitchen Garden has, it will be observed, been effectually shut out from the carriage-road, and also from the pleasure-grounds, by a screen of planting, combining existing large trees with other suitable ones of intermediate growth, filling in with various kinds of shrubs.

Where no special plants are named for a group, the planting would consist of such things as different kinds of Box, Holly, *Laurustinus*, *Aucuba*, Portugal Laurel, *Thujas*, *Thujaopsis borealis*, *Cupressus Lawsoniana*, *Cotoneaster*, *Lilacs*, *Spiræa*, *Weigela*, &c.

In addition to these, there is a sprinkling of such deciduous trees as *Acacia*, Mountain Ash, *Laburnum*, *Gleditschia*, Thorns of various kinds, and similar things which, being of only medium size, and having small and, in most cases, pinnate foliage, do not too much overshadow the plants underneath, afford sufficient protection from extremes of weather, and tend to break up the various masses, giving them more or less a light and varied outline, thus obviating the appearance of too much sombreness of tone arising from masses of evergreens, as well as the lumpy effect which groups of mixed shrubs are likely to present where not broken up in this way. The full and easy breadth all round the house is worthy of note.

Overdoing.—It should be a cardinal rule in landscape art (as in all other art, I think) not to multiply means for producing a given effect. Where one stroke of the brush is enough, two evidence weakness, three incompetency. If you can secure a graceful sweep to your approach-road by one curve, two are an impertinence. If a clump of half-a-dozen trees will effect the needful diversion of the eye, and produce the desired shade, any additions are worse than needless. If some old lichen rock upon your lawn is grateful to the view, do not weaken the effect by multiplying rocks. Simple effects are the purest and best effects, as well in landscape art as in moral teaching. A single outlying boulder will often illustrate by contrast the smoothness of a lawn better than a ponderous roller. One or two clumps of alders along the side of a brooklet will designate its course more effectively and pleasantly than if you were to plant either bank with willows. A single spiral tree in a coppice will be enough to bring out all the beauty of a hundred round-topped ones.

Because some simple rustic gate has a charming effect at one point of your grounds, do not for that reason repeat it in another. Because the Virginia creeper makes a beautiful autumn show, clambering into the tops of one of your tall cedars with its five-lobed crimson leaves, do not therefore plant it at the foot of all your cedars. Because at some special point the red rooflet of a gateway lights up charmingly the green of your lawn, and fastens the eye of visitors, do not for that reason make all your gateways with red rooflets. If some far-away spire of a country church comes through some forest vista to your eye, do not perplex yourself by cutting forest pathways to other spires.—D. G. MITCHELL.

PUBLIC GARDENS.

PARIS GARDENS AND PARKS.

I HAVE just returned from a tour around the various public-gardens here, and beg to send you a few words of information as to their present condition. The Park Moncieux has not suffered much. In fact, little in it has been destroyed by the siege or by the Commune. The only difference is shown in the ornamentation. Instead of beautiful-foliaged and flowered plants, which were so much admired formerly, and which were the delight of lovers of horticulture, I noticed but a few species of *Pelargonium*, *Ageratum*, *Chrysanthemum*, &c., not better than those to be seen in a London shop-keeper's garden. The small squares, like la Tour, St. Jacques, la Temple, la Champs Elysées, have received no alteration in their forms, and they have preserved their old aspect, except the change in the quality of the floral decorations. At the Square des Invalides, the gardener, who has been recently appointed to replace M. Troupeau, principal gardener of the squares in the interior of Paris, has absurdly replaced the pretty ivy-borders by lines of dwarf box-tree. Since MM. Barillet and André resigned their situations of head-gardeners, a sort of interim had taken place up to the last spring. The engineer-in-chief, M. Alphand, who had the general superintendence of this service, having been raised to a higher position, the promenades and plantations have been placed in the hands of an engineer, M. Darcel, des Ponts au Chaussees, who knows nothing about gardening. So the fair days of public gardening in Paris are past.

However, an improvement has taken place lately. A M. Rafarin, who had charge of the propagating gardens and houses of La Muette, where all plants required for public gardening were cultivated, having carelessly left everything to perish by the winter frost, has been removed, and replaced by M. Troupeau. We have just seen this last-named gentleman at La Muette, and we are happy to say that the collections will be soon restored in his hands, perhaps not to their former state, but still to good order.

At the Avenue de l'Impératrice, which had been entirely spoiled—with all the trees, conifers, evergreens, and rare shrubs, cut down and burnt—an army of gardeners is now at work. Unfortunately, the arboretum that had been planted there with so much care and skill will not be replaced. The Emperor was opposed to roadways through these gardens from place to place, so as to allow people to cross the avenue; therefore they were obliged to walk a long way without an opportunity of getting across. To-day this inconvenient arrangement is done away with. All necessary thoroughfares have been provided, and instead of the high iron-fences along the lawn edges, some elegant arched rustic-iron borders have been placed as a frame to the garden. They have improved the mode of sloping the ground, and are making what they call *vallonements*, by undulating the surface of the lawns and planting clumps of trees on a larger and more harmonious scale. Some evergreens will be planted there; and the new plantations of *Poplars*, *Horse-chestnuts*, *Ash-trees*, &c., already made, without showing much at once, will be effective in a few years.

The Bois de Boulogne has not now the sad aspect it presented when we saw it last March. Almost all these dreadful-looking and empty places that we noticed on our way at that time to the ruins of St. Cloud are now covered with fresh vegetation. The underwood, formed by new branches sprouting from the roots, will be stronger than ever in a few years; and, had we not to regret the destruction of the large forest trees, firs, pines, and rare ornamental shrubs and trees, we should find that a nicer growth is the result of the thickets having been cut down. A most curious effect is produced by the scarlet tints of the American oaks (*Quercus coccinea* and *Q. rubra*), which, of course, have been cut to the very root, like the common species. About la Mare d'Anteuil, where M. de Sahme, the *ancien conservateur* of the Bois de Boulogne, had planted several thousands of these trees, sent direct to him from the United States by André Michaux, nothing is more striking than this field of fresh branches with their scarlet foliage. All the way round, the Bois is deprived of its beautiful plantations. You notice here and there

some scattered and uninjured poor oaks or birches and common conifers. Along the formerly woody places of the Bois they have constructed a line of wooden fence, to prevent people from walking into the thickets and destroying the new vegetation.

The Porte-Dauphin entrance of the Bois, by the Avenue de l'Impératrice, is to-day almost entirely repaired, replanted on each side as it was before; and, in the course of a few months, no trace of the gigantic barricades and fortifications, cheveux-de-frise, &c., will remain.

The houses of La Muette, much more injured by the shells of the Commune than by the siege, have not much improved since the last time I saw the place. The new range of houses situated in the Clos Georges, between the railway and the Rue de la Tour, is still quite empty, the glass in pieces, and the pits inside the houses covered with weeds. The prospect of desolation has now ceased here. Some collections remain perfect, as the Camellias, Azaleas, and a few others; but I saw with much regret all those beautiful palms black and dead in their boxes. I shall soon have another opportunity of completing these notes on the present state of gardens and gardening in Paris and in France, which, I hope, will recover shortly from such tremendous disasters.

Paris, Oct. 22, 1871.

E*****

THE IN-DOOR GARDEN.

PALMS FOR THE GARDEN.

THE word "palm" suggests to many a majestic tree towering above all others, and, therefore, we at once conclude that palms are unfit for anything but a large house. Though this is true of such kinds as *Sabal umbraculifera*, *Arenga saccharifera*, and a few others; yet if we take into account such miniatures of them as *Areca monostachya*, *Chamærops humilis*, *Rhapis flabelliformis*, and others, which show their beauty at the height of from three to six feet, we at once discover that not only are they suitable for small conservatories, but that they are also useful as ornaments for the window or table; having, moreover, the advantage of lasting the whole season, thereby making up for the difference of cost in the first instance as compared with that of other plants. On the Continent palms sell by the thousands for window decoration, at low prices, and I hope, now that they are becoming appreciated here, we shall soon see them selling at a price within the reach of all. Another advantage palms possess over other plants for decorative purposes is the hardness of their foliage, which, in some measure, saves them from injury from gas and changes of temperature, and renders them capable of being washed when dusty without fear of breakage; again, they are not liable to be hurt by over-watering, which kills so many plants of other kinds. As to diversity of foliage, we have fan-shaped leaves in the *Latanias* and *Chamærops*, pinnate in *Areca*, *Thrinax*, *Cocos*, and others; while the beautiful *Adiantum*-like foliage of *Caryotas* and *Arengas* everybody is charmed; in fact, no conservatory or stove can be said to be complete without palms. Let me, therefore, hope that, by giving some account of the habit, country, and nature of such sorts as are best adapted for general purposes, I may be instrumental in encouraging the cultivation of this beautiful class of plants.

As regards soil: that which suits them best is loam, with slight drainage, as the roots, being strong, run to the bottom of the pots, and form drains, as it were, themselves. Though some palms are found in dry places, it is well known in districts where they grow naturally that wherever there is a palm, water is sure to be below it, from which the roots, running as they do deep, derive a good supply. So thirsty, indeed, are palms generally that they may be watered every day with advantage, and, if in a stove, they enjoy a pan to stand in during summer-time.

In potting, the roots should never be cut or pulled out; and if the plant can be placed lower in its new pot, all the better, as it encourages the production of fresh roots. Spring is the best time to shift the greenhouse kinds, but stove palms may be re-potted at any season, water being given freely immediately after the operation, both at the roots and in the form of a good syringing.

In the following descriptions, habit and the decorative uses of each sort will be the points chiefly dwelt upon. The flowers of many are not likely to be seen, excepting those of a few *Chamædorias*, and therefore it is useless to speak of them. I may remark, however, that, many palms being unisexual, those who want to do anything in the way of hybridization must procure male and female plants of *Chamædorias*, in order to effect their object; and that seed, when obtained, should be sown in a bottom heat of from 80 degs. to 90 degs. I shall briefly refer to each genus, taking the species alphabetically, so that my list may be consulted with facility, and enable those requiring one, twelve, or fifty kinds, to get the best for their

respective purposes, limiting my observations to such sorts as are in cultivation, and giving their synonyms:—

Areca alba (Mauritius).—A fine palm, bearing from eight to ten fronds, eight feet long, of a greyish green; stem clear. A fine plant, when old, to stand above others, the fronds standing almost flat from the stem; in a young state they are more erect; this species may be distinguished by a filament running from leaflet to leaflet when first developed; the leaflets in all *Areca*s are flat, and nearly opposite. A good stove palm in all stages of growth; suitable for table decoration.

A. Baueri (syn., *Seaforthia robusta*: Norfolk Island).—Plant denser in habit than the last; fronds more erect; midrib clothed with black scales; leaflets, in young plants, four inches wide. A good greenhouse palm, or for out-door decoration in summer, and in a large state one of the noblest of its class, its dark-green foliage contrasting well with *Musas*, *Latanias*, and *Caladiums*.

A. crinita (syn., *Calamus dealbata*, *Acanthophoenix crinita*: Mauritius).—A very elegant palm, having the appearance of a *Calamus*, useful for standing over a tank, having, when six feet high, fronds four feet long, of a drooping habit; being dense, it is unfit for table decoration; upper side of fronds green, underneath white; the petiole and stem densely clothed with light-brown spines; rather tender, and requiring plenty of water.

A. Catechu (East Indies).—The palm that produces the betel-nut; in a young state, good for table decoration; habit erect, running up with a slight stem; foliage bright green, quite smooth and glossy, contrasting well with that of other palms; a fast grower when placed in a smart heat, which it enjoys.

A. concinna, (East Indies).—Allied to the former in habit, but dwarfier, and a slow grower.

A. lutescens (syn., *Hyophorbe indica*: Mauritius).—One of the best of palms for table decoration and for stoves, being small and dwarf, and forming offsets as it gets old; fronds graceful, pale green; petiole with a yellowish tinge, in the centre of which the whole plant partakes a colour that varies in intensity in different individuals. Young plants of this species may be kept in small pots for from two to three years, if copiously watered. This is a palm which should be in every stove, as it is well adapted for mixing with large-foliaged plants, and, being erect, it stands well above them without intercepting light.

J. C.

THE IN-DOOR GARDEN FOR DECEMBER.

BY THOMAS BAINES, SOUTHGATE.

A CALENDAR, I need not say, acts as a sort of prompter, to assist the memory of the practical gardener, who, under the pressure of multitudinous duties, is apt to forget the performance of some operation at the proper time; and if it emanates from cultivators who have been careful observers—who have, in fact, made it their study to pick up these cultural crumbs, which lie thickly on the ground for those who have the perception and industry to gather them; and who have had, moreover, more than usual experience in the departments of which they take charge—then it will, perhaps, not be presumptuous to suppose that these instructions may be of use to those even who already possess a practical knowledge of horticulture. Our limits only admit of a portion of the things which require attention during every season of the year being touched upon, therefore we shall confine ourselves to such as we have found to be of most general use. As regards my own particular department I may premise that I have no startling cultural revelations to make by which success can be attained under all or any circumstances, but only a number of small matters attention to which I have found essential to successful cultivation.

Stove. Now is the best time to eradicate insect-pests, as both foliage and wood ought to be in a condition to bear a stronger application of whichever of the numerous insecticides is used than when growth is active. Whatever is applied for this purpose, ought to be persevered with until no insects are to be found; this will necessitate repeated applications, for it is little better than labour lost to kill the greater portion and still have a breeding stock, that will cause no end of labour in spring, when it is required in so many other channels. Let all glass and woodwork, both inside and out, be well scrubbed and washed with clean water; if only for the sake of preservation, it is as good as a coat of paint; but it effects an object of still greater importance, viz., the admission of every possible ray of light, of which, in our sunless winters, we are so deficient. Place all plants as near the glass as possible, for although there is now comparatively little growth, still, light is essential to their general health. Clear out all old tan, and refill with new. I do not, however, advocate plunging in tan by any means; on the contrary, I never plunge a single plant, be the object the production of flowers for cutting, or of plants for the decoration of cooler

structures; in either case it renders them soft and liable to flag. But a good tan bed will maintain a temperature of 90 degs. for many weeks; a circumstance which materially helps to keep up the necessary warmth of the house without resorting to so much fire-heat. On this account alone the use of tan is wise economy, leaving out of the question the healthy atmosphere which it promotes.

There is scarcely a garden, large or small, now to be met with in which the demand for cut flowers is not at least double what it used to be. Therefore we must grow such things as last longest in a cut state, and grow them, too, under such conditions as will assist that property. For instance, the beautiful *Euphorbia Jacquinæflora*, as often grown, flags in a few hours after being cut; but if small plants of it are grown, say in six or eight-inch pots, so as to admit of their being placed within two or three inches from the glass, their blossoms will stand when cut for a week; and this holds good of almost every other plant, but especially of that most useful of winter subjects, the old white *Azalea*. This requires very little heat to induce it to bloom, provided that in its growth and the setting of its flowers there has been a little forethought as to the time at which they would be required. Place, in gentle heat, now, plants of *Deutzia*, *Spiræa japonica*, and *Lily of the Valley*, along with such *Hyacinths*, *Narcissus*, and other bulbs as are likely to be required. Get *Allamandas*, *Bougainvillæas*, and *Clerodendrons* sufficiently dry at the roots to induce them to shed their leaves and to get into a state of rest. Be careful not to place bulbs of *Caladiums* or *Gloxinias* in too low a temperature; 50 degs. for *Gloxinias* at rest, and 60 degs. for *Caladiums*, will keep them right. To name any fixed temperature at which stoves should be kept, would be a mistake, inasmuch as each individual should be guided by his requirements, and, above all, by the condition which his plants may be in; always remembering that those that have made and matured their growth under those essential conditions,—abundance of light, and sufficient air, with plenty of healthy roots, will stand a higher degree of temperature without excitement, or a lower one with impunity, than weak, half-ripened plants will, that are deficient in stamina.

Orchid House.—The growth of most of the East Indian orchids ought to be nearly completed, and therefore they will require a reduction as regards temperature and moisture, both at the roots and in the atmosphere. It is, however, a bad practice to dry them up indiscriminately to the extent often done, with a view to induce a greater profusion of bloom. Most of the *Dendrobies* require to be well dried, otherwise they do not flower freely; but *Vandas*, *Saccolabiums*, and *Aérides* are frequently dried to an extent that causes them to lose their bottom leaves, thereby spoiling their appearance; and this is wholly unnecessary, for if their growth is made under sufficient light and air, with an absence of too much heat and moisture they will show bloom at every leaf they make. I feel confident that three-fourths of the "spot" that yearly destroys such numbers of these valuable plants is produced through too much heat and moisture, with too little air and light; true, they frequently bear up against ill-treatment of this kind, even for years, for orchids will bear more bad treatment than most other plants, but ultimately they give way under it. *Cœlogyne cristata*, which is one of the most beautiful as well as useful of winter flowering plants, should never be allowed to become dry at the root, or be in too dry an atmosphere; but at this time, when it is throwing up its flower-spikes, see that they do not get much wet in the operation of watering, or they will damp. From 60 degs. to 65 degs. night temperature will be sufficient during the season of rest.

Most of the plants in the Mexican house should now be at rest, and with the exception of *Lycaste Skinneri*, *Odontoglossums*, and plants of similar requirements, they should receive little water for the next two or three months, only just sufficient to keep them from shrivelling too much. The beautiful *Cattleya Skinneri* ought now to be put in the coolest end of the East-Indian house, as it will not stand so low a temperature as most of the other inmates of the Mexican house, the night temperature of which may now range from 48 degs. to 55 degs. We frequently find a collection of orchids from both eastern and western hemispheres grown in the same house, and with better results than where the treatment is of that extreme character either as to heat or cold that some growers adopt.

Greenhouses.—Be careful here in watering all hard-wooded subjects. Never water before a plant really wants it, and never defer the operation for an hour after it does require it. Get all specimen plants tied, using just sufficient and no more supports in the shape of sticks than the nature of the plant requires. Now is a good time to wash all *Azaleas* with moderately strong tobacco-water, laying the plants down over a shallow trough, so as not to waste the liquid; after which lay them on their sides until dry. By no means wash the liquid off, as is sometimes done; for although no living thrips may be seen, still their eggs may exist under the little black spots on the leaves, ready for hatching under the genial influences of a higher temperature; these the tobacco-water will kill. I have found

this much better than smoking, which, when done strongly enough to kill the insects, generally causes some of the leaves to fall prematurely off; and all the smoke possible will not kill the eggs. Sulphur is the best antidote for mildew, should that pest make its appearance; but be careful that it does not get into the soil, for its effects there on the roots of plants are similar to those of lime. If *Primulas* have had the attention which they deserve, the first batch will now be strong plants coming fast into bloom, therefore assist them with occasional applications of clear liquid manure. Give them all the light possible and a dry atmosphere, and if they can have a night temperature of 45 degs. they will not be liable to damp. The first batch of *Cinerarias* will be throwing up their blooms fast; these will be equally benefitted by liberal applications of manure-water; but instead of being on dry shelves like the *Primulas*, they should be accommodated with a cool, moist bottom of ashes or sand. *Calceolarias* for spring blooming require similar treatment. *Cyclamens* will be benefitted by a little more heat than that usually given to ordinary greenhouse stock. Place them near the glass, or the blooms will come weak. *Camellias* required for flowering about Christmas will now be opening apace, if their treatment during the season of growth has been such as to induce a disposition to flower at this time; but it frequently happens that they have to submit to more heat at this time to get them into blossom than they like, and unless some judgment is exercised, they will cast their buds. This is often attributed to a bad state of the roots; but no matter how good their roots are, even with sufficient moisture in the soil, if the atmosphere is too dry, the buds will drop; therefore it is necessary, where heat is required to induce them to open, to keep sufficient moisture in the atmosphere to prevent this happening. The conservatory should now be kept at about 45 degs. night temperature, and every effort should be made, by means of tasteful arrangement, and in other ways, to render it as engaging as possible, more especially at this season, when the attractions of the out-door garden are at a minimum. Towards the end of the month put in cuttings of *Chrysanthemums* where large blooms are required; for cutting, early struck plants will be found best. On wet days get a good stock of plant-stakes made and painted, also tallies; and let crocks be washed and broken; let, too, all spare pots be washed ready for use. See that the different soils required for potting are got under cover, so as to be sufficiently dry for use when wanted. If severe weather sets in during the month, be cautious not to use more fire-heat than is necessary, as any excitement to plants now is most injurious.

ASPECTS OF VEGETATION IN NORTHERN AND TEMPERATE COUNTRIES.

HERBACEOUS VEGETATION IN SIBERIA.

AMONG the many aspects of vegetation in northern and temperate countries, few are more singular than that of the great cow-parsnips and other plants of the Umbellate Order, with tall grasses, nettles, &c., which abound in Siberia. So rapid and vigorous is the growth of these in early summer that it would seem as if the giant herbaceous plants, fated to hide beneath the ground every year, had resolved to rival trees in stature during the short summer life of their stems. In spring huge earth-buds followed by noble young leaves; in summer a herbaceous forest; in autumn the tall stems, through which the sap coursed so vigorously in spring, dead and dry, the strongest of them yet rigid and erect, a miniature blighted forest, while the promise of another year lies in the great buds swelling just beneath the surface. There they rest till the relentless winter is gone. This is one of the many interesting types of northern vegetation that we may readily develop in our pleasure-grounds and woods. It would indeed be out of place in the garden proper, but in nearly all country-seats there are various spots on islands, on the banks of streams or ponds, or in rich and sunny hollows in woods or copses, or the rougher parts of pleasure-grounds, where the giant type of herbaceous plants might be grown without any trouble, and with a striking and picturesque effect. It need hardly be remarked that this type should not be included in what is called "dressed ground," as half the beauty of such an arrangement as that proposed would consist in its absolute wildness; and the stately dead stems should be left to the care of the snows and rains of winter. In collecting suitable subjects for planting, it would not be desirable to select plants from Siberia alone, as we have but a few of its giant herbaceous plants in cultivation. All herbaceous plants of large and vigorous habit and noble port

ASPECTS OF VEGETATION IN NORTHERN AND TEMPERATE COUNTRIES.—HERBACEOUS VEGETATION IN SIBERIA.



should be selected. They would require no attention whatever after planting. All the following will thrive well in ordinary soils, and are obtainable in this country in nurseries where collections of herbaceous plants are grown. Of some, like the *Verbascums* and *Onopordon*, seed may be sown on the spot. *Callisace dahurica*; *Arundo Donax*; *Crambe cordifolia*; different varieties of *Ferula*; *Glycerium argenteum*; various kinds of *Helianthus* and *Heracleum*; *Polygonum cuspidatum*; different sorts of *Onopordon* and *Rheum*; *Datisca cannabina*; *Phytolacca decandra*; *Silphium* in var; *Eupatorium purpureum*; *Vernonia noveboracensis*; *Aralia*, various herbaceous kinds; *Asparagus Broussoneti*; *Asclepias Cornuti*; *Centaurea babylonica*; *Bupthalmum speciosum*; *Gunnera scabra*; *Lavatera unguiculata*; *Althæas*; *Papaver bracteatum*; *Cynara Scolymus*; *Verbascum* in var.

W. R.

THE FRUIT GARDEN.

FRUIT-TREES FOR ORNAMENT.

It is often thought that Nature is usually sparse of leaf-beauty where the flower is highly ornamental, and stingy with flowers where leaves assume large proportions and elegant outlines; and, to a smaller extent, that she is apt to exhaust herself in an analogous way upon fruit. Nothing can be further from the fact than this supposition. When we consider the flowering charms of the greater portion of our fruit-trees, we are struck with astonishment that they are not more planted for the sake of their beauty alone. Take the apple in its countless varieties, and just consider that, if it did not give such crops of fruit, beautiful to look upon, and more delicious in flavour than half the boasted fruits of the tropics, we should seek after it for the sake of its blushing cups, which turn the formal orchard into a scene of fairyland.

But it happens to bear fruit of various colours, sizes, and flavours, and, of course, that is a reason why we have hitherto not employed such a beautiful hardy tree in the pleasure-garden. Then we have the pear, which comes in earlier, and furnishes snowy masses of bloom; and with a more picturesque and handsome habit than the apple, but unhappily with the same fault of bearing delicious as well as ornamental fruit.

From nearly every hardy fruit we may reap a like harvest of beauty—almonds, apricots, cherries, crabs, medlars, peaches, plums, and quinces, being all more or less ornamental. And some of them have not even the demerit of fruiting—the double cherries and double peaches, for example. Both of these trees should be planted ten times more abundantly than they are at present, for no trees are more attractive. There is a scarlet variety of the double peach, which imparts a vividness of colouring to the shrubbery in early spring that we have hitherto been quite devoid of; and there are others deeply coloured, as well as a pure white one, all of which deserve to be extensively employed. And as perhaps some curious persons here and there may not object to plant beautiful flowering fruit-trees because they also bear precious and handsome fruit, a few observations on the best way of enjoying them may not be out of place here. We have nought to do but place these objects, usually hidden in the orchard, in any open spots, in pleasure-grounds, by wood walks, in the fences at intervals, instead of the worthless stuff that now too often occupies them—and, in a word, in the many positions where many trees neither good for timber nor flowers now take up valuable ground.

There is another phase of the question to which our readers are probably strangers, and that is the ornamental orchard. We have never seen it attempted but once, and that was in the garden at Meudon, where it was very successful. Usually the orchard is, of all spots, the most formal; but there is no need that it should be so, as anyone with extensive pleasure-grounds can quickly prove. At Meudon the position was a sort of valley-like hollow, but in an elevated position—just the spot to make a concise pinetum or pleasure-ground. Instead of planting it with trees and shrubs of the ordinary type, it was resolved to embellish it with well-arranged groups of fruit-trees. On one side a large clump was devoted to handsome pyramidal pear-trees, on another one to apples, another to plums, and so on. The grass was not broken up, nor any of the ornamental features of the spot interfered with in the least. We need hardly point out how varied, as well as exceedingly useful, such an arrangement might be made. There might be mixed groups of new and untried kinds, as well as masses of thoroughly appreciated ones; there might be isolated specimens of various kinds on the grass, from an apple on the dwarf Paradise stock to a fully-grown and handsome pear of twenty-five or thirty feet high. Fruits little

known or of doubtful utility like the *Eugenia* or the cherry plum, might be associated with the others with greater propriety than in the fruit-garden proper. Such things as the American blackberries—and very fine some of these are—would find a congenial home; so would the dewberry and the various cranberries, which some like so much. The relatives of our common fruit-trees might of course be planted in the near neighbourhood for comparison's sake; standard peaches, figs, and apricots, might be tried with safety if the garden were in the south; and the whole would prove one of the most interesting features in a country place.

THE FRUIT-GARDEN FOR DECEMBER.

BY WILLIAM TILLERY, WELBECK.

Out-Door Fruits.—Hardy fruit-trees of all kinds should be planted as early in the month as possible. If not done in October and November, the pruning of fruit-trees should likewise be carried on with vigour. In neglected orchards this is an operation of great importance; for the trees get so crowded with wood and spurs, that good crops are few and far between. Were orchard-trees carefully pruned every year, and the fruit thinned where too thickly set, failing crops would seldom be seen, and the fruit would be of the largest and finest quality. This is now a good time to eradicate that pest to apple-trees, American blight. I had some cordons and dessert varieties of apples on an east wall very much infested by it last year, and stamped it out, in the winter-time, by scrubbing every branch where it appeared with a hard brush, then painting the places over with soft soap. The system of growing single and double cordons of apples and pears on the bottoms of walls and trellises will be found of great utility, and a source of enjoyment to the cultivator. They are not recommended to take the place of pyramids or bush fruit in the borders, but only to fill up bare places on the bottoms of walls where nothing else is grown, and as edgings to the sides of walks, where they interfere with no other crop in the borders. This year, I have had very fine fruit off single cordons of Calville Blanc, Reinette du Canada, Reinette Grise, Herefordshire Pearmain, Menagere (a large-French apple), Belle Dubois (another very large French apple, like Warner's King), Calville Sauveur, and some other kinds of apples and pears. The apples are all on the French Paradise stock, and the fruit is thinned out, so as to leave only a dozen or two on each tree, according to the size of the sort. These little trees, being grown on the bottom of south and west walls, do not suffer much when in blossom from spring frosts, being sheltered by the foliage above them. Single and double cordons, however, planted as edgings in the border are more exposed; but they can be easily protected from spring frosts by means of a few fir branches or light straw hurdles. When these cordon trees are planted in December, a covering of litter over the roots will keep the winter's frost out, and keep the roots moist in dry springs.

Figs on the walls will soon want protection from severe frosts in winter, and when the branches are tied together, and straw wrapped round them, they will be quite safe. Where dried fern can be had, it likewise makes a safe covering, by thatching the trees with it. Gooseberries, currants, and raspberries, may be still planted; but, at this late period it is better to mulch the roots afterwards. A way to get rid of gooseberry caterpillar on established bushes infested by them is to scrape away all the earth from the base of the bushes, and dig it into the middle of the rows. The space denuded round the bushes, if filled up with old tan or fresh soil, will contain no larvæ or young caterpillars to crawl up the stems, and commence their ravages in the summer. Strawberry-beds are often top-dressed in December with litter, to protect them from severe frosts; but experience makes me recommend this operation to be deferred till the spring. When the beds are top-dressed, then, with some rather strawy litter, just before the spring-growth commences, the foliage and fruit stalks grow through it, and the fruit is kept clean from heavy rains; besides, the litter keeps the roots of the plants moist in hot, dry summers. The nailing of wall-trees should now progress as fast as possible in open weather; for it is cold work in the dead of winter, and in spring many other operations occur which cannot be deferred. The nails should only be driven in sufficiently to hold, and never into the bricks to injure them; for it is foolish work spoiling good walls with nails, when wiring them would answer every purpose; and all new walls should be done so. The fruit stored in the fruit-room will now frequently want looking over, and all fruit picked out that show the slightest symptoms of decay. The temperature should be kept rather low, and as equable as possible; and all damp and frosts expelled by artificial heat. All vines artificially forced are liable to much injury by severe frosts in the winter, if left in the open air. They should, therefore, be protected till they are taken into the forcing-houses.

In-Door Fruits.—As early forcing generally commences in this dull and dreary month, vines, when breaking, will require a temperature of from 55 degs. to 60 degs., with air given freely in favourable weather. Grapes in late vineries will require frequent looking over, in order to pick out any decaying berries, as they induce damp, which infects the others. Where such houses are wanted for any particular purpose, the grapes, if cut off and put into bottles of water, will keep good for three or four months in a well-ventilated fruit-room, or other room fitted up for the purpose. Early peaches started this month will require a temperature of from 40 degs. to 45 degs. at night, and admit plenty of air when that is possible. When in blossom, the pollen should be gently distributed with a feather, in order to assist the fruit to set. The earliest batch of strawberries will now want introducing into a forcing-pit, or placing on the shelves of a peach-house at work. If a little bottom heat in a pit heated by oak, or any other kind of leaves, can be used, with the temperature of the pit kept low and well regulated, the fruit will set all the better. I find Keen's seedling and President best for the earliest supply. Figs, in pots, may now be started where an early supply is desired, and any requiring shifting, or top-dressing, should now be looked to, using turfy soil of a loamy nature with a little leaf soil, and plenty of drainage. Orchard-house trees of all kinds should be pruned as soon as the leaves drop, and top-dressed, if not done in October or November; a solution of Gishurst compound, consisting of about five ounces to a gallon of boiling water will, if put on when cold, by syringing the trees, be an effectual cure for insects. Peach-trees trained on walls will likewise be much benefitted by the same application, if put on with a powerful syringe or engine.

Pine-Apples, now swelling their fruit in various stages, should not have too much heat while the days are dark and short, nor too much humidity. Those starting now into fruit should be placed in a compartment by themselves, where they can be kept pretty dry while in bloom, or abortion, or some deficiency in shape of pips, or uneven swelling, will most likely be the result. Succession plants in all stages should be kept in a growing state, moderating the heat and humidity to suit the season. Give air freely when the weather is favourable, surrounding the pits with fermenting materials to their summits, in order to heat the interior and dispel damp. J. B.

FOSTER'S APRICOT SHED.

MR. FOSTER, of Beeston, has, I think, by chance hit on the best known plan of growing apricots. Requiring a shed to back carts under, and to shelter ladders, planks of oak, &c., he thought, as it would be seen from his garden, that a glass roof would look much better than one covered with slate. He accordingly built one about one hundred feet long and ten feet wide. Posts every nine feet carry the roof, which is all fixed, no ventilation being required. The south-west side, next the garden, is boarded and painted over with tar, wired, and planted with dwarf-fruit-trees, as in the woodcut. Wires are also stretched under the glass, as if for vines; the distance from the glass being about one foot. On the north-east side of the wooden fence, standard



Apricot Shed.

apricots, plums, and nectarines are planted, whose heads are trained under the glass, their roots passing under the wooden side into the same border in which those shown growing on the outside are planted. Both ends of the shed are closed in with boards. It is, in fact, a long narrow glass shed open to the north-east, just high enough to back a cart under, but looking from the garden like a double-roofed greenhouse. The trees have been planted three years; they have never been syringed, and, in fact, except tying the shoots to the wires and thinning and gathering the fruit, have had hardly any attention. In some parts of the shed it has been necessary to climb over piles of timber from four to five feet high to get a good look at the fruit. The result has been extraordinary and, to me, most unexpected.

The nectarines have not been large, but high coloured, and of good flavour; but it is evident that these would be better for more heat. Plums would have been all that could be wished if it had not been for the plum aphid, but as these have been allowed to have their own way, the trees have suffered from their attacks. Apricots seem to have found all they require, and look quite at home. The foliage, though untouched by rain or syringe, is healthy, large, and free from insects or mildew. The first year they were planted they bore a good crop. The last two years almost every blossom appears to have set. I counted, before they were thinned, seventeen apricots on a shoot seven inches long; and each season they have carried twice the number of fruit I would have allowed to remain for a crop. In spite of the large crop, the fruit was beautiful in colour and most delicious, and I have seldom seen so fine a



Section of Apricot Shed.

sample. I should say the trees have been only watered twice since they were planted, and that in the hot summer of 1870. Though I think few would have foreseen such a success through what may be considered an accidental discovery, it cannot be thought the less valuable on that account. How loudly it proclaims the advantage of ventilation for apricots! Does it not equally proclaim, too, the advantage of a dry climate for this tree? What method of pruning apricots can compare with this, either for productiveness or cost of production? The trees are sheltered from frost and wet, and the roots take care of themselves. How different from either the open wall or the orchard-house! No watering, no syringing, no shading! Even good gardeners have been surprised at the result.

(Childwell.)

J. R. PEARSON.

THE HOUSEHOLD.

SELECT EDIBLE FUNGI.

BOLETUS EDULIS.

BELIEVING it desirable that the more useful edible fungi that abound in our woods and pleasure-grounds should be much better known than they now are, we propose to publish, from time to time, descriptions of the more important species, with the most improved modes of cooking them; accompanied by drawings and engravings by Mr. W. G. Smith, who knows these subjects so well and draws them so faithfully and so gracefully.

Boletus edulis is one of the safest and most delicious, and at the same time most abundant and long-continuing, of the British edible fungi. The first crop may be gathered soon after the rains of early summer, and the growth continues till the frosts of winter have fairly set in. There are about three dozen species of *Boletus* in this country, but *B. edulis* materially differs from all its allies; it is probable that most *Boleti* are either edible or harmless, but such species as *B. edulis* and *B. aestivus* certainly stand in the first rank. Our plant has maintained a good reputation from time immemorial, and has been consumed as a delicacy in all countries of Europe for ages; not, however, in this country; but, thanks to Dr. Badham, Dr. Bull, and others, it is at last rapidly becoming a recognised article of diet with us.

To distinguish this plant from other *Boleti*, the following points must be carefully noted, and when the fungus is once known, no other species will ever be mistaken for it:—It grows in woods; the cap is smooth, and of a very pure and delicate shade of pale brown, often with an edge of a lighter shade, as shown in our illustration; the under surface of the top, instead of being furnished with gills, like the mushroom, has a soft spongy substance, composed of innumerable

pores or tubes (like the pipes of a miniature organ); this spongy substance is at first pure white, then sulphur-coloured, at length sulphury-green; the stem is stout and fleshy, pale brown in colour, and furnished with an exquisite minute reticulation or network round the upper portion; the flesh, when broken, is snow-white, like crumbs of bread, and the taste agreeable and nutty. It should not be gathered for the table when too young, when the tubes are white; or when too old, when the tubes are green and the plant flabby; neither should specimens be used that are mildewed or soddened with rain. They are in the best condition when the tubes are sulphur-yellow. *B. edulis* grows to a great size, being often many inches across; it is frequently very irregular and uncouth in shape, with a swollen stem; and at times varies considerably in the colour of its cushion-shaped top, which, at times, will vary from delicate fawn to



Boletus Edulis (Edible Boletus); Woods; Summer and Autumn; delicate fawn colour; tubes yellowish; diameter 4 to 12 inches; spores enlarged, 700 diameters.

dark brown. One of its best points of distinction resides in the beautiful white network round the apex of the stem.

The following is Paulet's recipe for *Boletus edulis* soup, as made in Hungary:—Having dried the Boleti in an oven, soak them in tepid water, thickening with toasted bread, till the whole be of the consistence of a puree; then rub through a sieve; throw in the Boleti, boil together, and serve with the usual condiments.

Person recommends the preparation of this species for the table in the following terms:—It may be cooked in white sauce, with or without chicken in fricasee; broiled or baked, with butter, salad-oil, pepper, salt, chopped herbs, and bread crumbs; to which may be added some ham or a mince of anchovy. It makes excellent fritters. Some roast it with onions (basting with butter), but as the onions take longer to cook, they must be put down first, and when they have begun to soften, the Boleti may be added.

Mr. Edwin Lees, the veteran botanist of Worcester, writes as follows of this species:—It should not be disguised with any sauce, beyond lemon-juice and powdered lump-sugar; in fact, as part of a fungus dinner, it should come last—with the puddings and sweets. As a fricasee or sweet omelette it is excellent; and when thus delicately cooked, it has a close resemblance to custard-pudding.

Dr. Bull, of Hereford, has published the following recipe for *Boletus edulis a l'Andalouse*:—Remove the stems and pores from the funguses, and divide the remainder into half-inch slices. Take six or eight ounces of lean uncooked ham, cut into small squares, and put them into a large stewpan, adding a large wineglass of the best salad-oil, and fry for a few minutes, until the ham takes a pale yellowish colour, then add the pieces of *Boletus*, and fry for another five minutes; remove from the fire, and add a teaspoonful of chopped parsley; add a large wineglassful of sherry. Then place it on the fire, with the lid of the stewpan closely shut down, and let it stew gently for three-quarters of an hour; stir in the juice of half a lemon, and serve it hot. N.B.—The pimento has a warm, aromatic flavour, but it is not hot to the taste. If it cannot be procured, a fresh green Chili may be substituted; or, the dish will be excellent if the judicious cook will slightly increase the quantities of the other condiments. A very good and simple plan of cooking, is merely to remove the tubes and stem, and cut the top into slices, and fry with butter, &c., like the common mushroom; or lay the pieces in a dish, with butter, pepper, and salt; cover the dish close, and bake for half an hour.

A few species of Boleti are either highly-coloured, acrid when raw, or change to bright blue when cut or broken. Such as these, and all having the tube surface red, should be discarded. W. G. S.

AMERICAN FRUIT-PRESERVING JAR.

THERE is one practice in common use in America which for us is almost as important as if we could command a brighter climate for one division of our farms and gardens—we allude to the practice of "canning" fruit. This means the preservation, in a perfectly palatable and wholesome state, of fruits and vegetables for any needful length of time in tins, or more commonly in glass jars. The

American housewife is no longer at the mercy of the season. The delicious summer pear, which decays soon after it is ripe, is not now merely enjoyed during the few weeks of its perfection; the housewife collects her fine Bartlett's (Williams's Bon Chretien) in good time, peels them, and by a very simple process preserves them. And in mid-winter, when the snow is deep round the house, the pears are as good as in September. But if one kind of pear will not keep, others will for a long time, so, perhaps, the utility of the system is not seen in this case so much as in that of perishable fruits. Then take the tomato, so indispensable in every American house. It is much cheaper than the potato during the summer and autumn months; but before the epoch of canned fruit there was a long and dreary interval dreaded by the lover of tomatoes; now they are obtainable all the year round. And so of every other esteemed fruit or vegetable, from peaches to asparagus and green Indian-corn, with the exception of the apple, of which there are varieties that keep so long as to ensure a supply till the current year's fruit is ripe, and thus remove any necessity for canning. This process is now so well known and practised there that most housewives can their own fruit. The table in every house shows its value, and whole villages and towns are sometimes devoted to the preservation of one article for the market.

The vessels in which fruits are preserved are tin, glass, and earthenware. Tin is used at the factories where large quantities are put up for commerce, but is seldom used in families, as more skill in soldering is required than most persons possess. Besides, the tins are not generally safe to use more than once. Glass is the preferable material, as it is readily cleaned, and allows the interior to be frequently inspected. Any kind of bottle or jar that has a mouth wide enough to admit the fruit, and that can be securely stoppered positively air-tight—which is much closer than water-tight—will answer. Jars of various patterns and patents are made for the purpose, and are sold at the crockery and grocery stores. These have wide mouths, and a glass or metallic cap which is made to fit very tightly by an india-rubber ring between the metal and the glass. The devices for these caps are numerous, and much ingenuity is displayed in inventing them.

Mason's jars are very commonly in use in America, and nothing can exceed their simplicity and excellence—a wide-mouthed glass jar, with a ring-band of india-rubber on its neck; on this the edge of the zinc screw cap rests. This cap is very simple, and can be readily screwed home. A little vertical bar on the outside of the cap gives a hold to a small wrench, formed so as partially to grasp the neck of the jar, enabling anybody to screw air-tight or open the jar in an instant. When such excellent contrivances as this are popular, it is needless to allude to the practicable but past method of using cement and corks. We shall give in detail the best American modes of preserving the various kinds of fruits, vegetables, &c., as the system deserves to be popular everywhere fruits and vegetables are grown.



Mason's Fruit-jar.

THE ARBORETUM.

THE SWEET CHESTNUT.

MOUNT ETNA is celebrated for the great age and colossal dimensions of its chestnut trees; for one of the largest and oldest trees of the kind in the world is that on Mount Etna, which is called Castagno di Cento Cavalli. It is said Jeanne of Arragon, on her road from Spain to Naples, visited Mount Etna, attended by her principal nobility, and being caught in a heavy shower, she and a hundred cavaliers took refuge under the branches of this tree, which completely sheltered them.

A century ago, according to Brydon, this tree measured 204 feet in circumference near the ground; but more recent travellers give only 180 feet as its girth. There are also two other celebrated chestnuts on Mount Etna, one called the Castagno di Santa Agata, which measures 70 feet in girth; and the other, Castagno della Nave, which measures 64 feet; their stems, however, attain no great height, but soon branch off above the ground. According to Dr. Philippi, the *Castanea vesca* does not appear to be wild on any part of Mount Etna, but always to be cultivated.

In Britain, the sweet chestnut is by some considered to be indigenous; but, notwithstanding the great age of some specimens, it appears more than probable that it was introduced into England by the



OLD CHESTNUT-TREE ON MOUNT ETNA (180 FEET IN CIRCUMFERENCE).

Romans. The largest tree in England of the sweet chestnut, is said to be one at Croft Castle, in Herefordshire, which, thirty years ago, measured 80 feet in height, with a stem 8 feet 6 inches in diameter, and the spread of its branches 112 feet. The great Tortworth chestnut, on Lord Ducie's estate in Gloucestershire, measures 57 feet in circumference, and is mentioned by Sir Robert Atkins, in his history of that county, as a famous tree in King John's time; and by Evelyn, in his "Sylva," to have been so remarkable for its magnitude in the reign of King Stephen (1135), as then to be called the Great Chestnut of Tortworth; from which it may reasonably be presumed to have been standing before the Conquest (1066).

The sweet chestnut is found in the east and west of Asia, and north of Africa, and in Asia Minor, Armenia, and the Caucasus. It is generally said to have been first brought to Europe by the Greeks, from Sardis, in Asia Minor, about 504 B.C.

The chestnut is displayed to most advantage when standing singly or in scattered groups along with our oak. Gilpin considers the chestnut in maturity and perfection as a noble tree, which grows not unlike the oak; its ramifications, however, are more straggling, but free, and its foliage loose. As an ornamental tree the chestnut ought to be placed before the oak; its beautiful leaves, which are never attacked by insects, and hang on the trees till very late in the autumn, mass better than those of the oak and give more shade. An old chestnut standing alone, and especially when in flower, is a noble object. In old trees the bark is remarkable for its deep, wide clefts, spirally directed, which give to the stem the appearance of being twisted.

The chestnut, however, should never be planted near a residence, because the flowers emit a very powerful and disagreeable odour, which is offensive to most people. A group of chestnuts forms an excellent background to other trees; but a chestnut copse is insupportably monotonous. The sweet chestnut prefers a deep, sandy loam; it will not thrive in stiff, tenacious soil; and in a rich loam, its timber, and even its poles and hoops, are brittle, and good for nothing.

In Britain the tree will not attain any height unless in sheltered situations, and where the soil is free and of some depth. While in poor, gravelly soil, where its roots will only run along the surface, it will attain a very considerable diameter of trunk and be of great longevity, though its head may never be larger than that of a pollard; of this the chestnut trees in Greenwich Park and Kensington Gardens, near the magazine, may be cited as examples; but wherever the chestnut is planted in good and warm soil, and in a warm and sheltered situation, it will outgrow any other tree in the same length of time; perhaps, the larch, the willow, and some poplars excepted. The chestnut, also, thrives well among rocks, where there is apparently very little soil, insinuating its roots among the fissures and clefts.

The wood of the chestnut has the remarkable property of being more durable when it is young than when it is old, the sap or outer wood very soon changing into heart-wood; and hence the great value of this tree for posts, hop-poles, stakes, hoops, &c. In every part of the country where hops are grown, the most durable poles are found to be those of the chestnut.

GEORGE GORDON, A.L.S.

PINUS PONDEROSA.

I AM a great admirer of this tree. It forms one of a splendid group of terrate pines (three leaves in a sheath), having for its companions *P. Benthamiana*, *P. Jeffreyi*, and *P. arizonica* (alias Coulteri). All are from California, and have many points of resemblance. Unfortunately, they all agree also in being peculiarly liable to the attacks of that most destructive and tantalizing beetle, the *Hylurgus piniperda*, which (some years more than others) effects a lodgment into, and totally destroys, the leading shoots. It is very aggravating to find a fine robust shoot, which yesterday was developing its leaves, suddenly drooping, and, on examining it, to see the medullary central pith eaten up by the larva of this troublesome insect. You vindictively and indignantly destroy the wretched grub; but, alas! it is too late. The work of destruction is complete, and the growth of the year is arrested. All the splendid pines just named are perfectly hardy with me; and the *P. ponderosa* bears the reputation of being a very rapid grower. Probably, when well-established and in luxuriant growth, it may bid defiance to the onslaught of the noxious pest alluded to; but its introduction (in 1826) has been too recent to afford us well-matured and full-grown specimens. From what I have seen of them I expect that the *P. ponderosa* will become a splendid tree, both in point of ornament and utility. It should, when fully grown, form a magnificent

object; and its timber must indeed be solid, close-grained, and tough, if it be true (as is reported, and implied in its name) that it is so heavy as to sink in water.—A. MONGREDIEN.

The *Pinus ponderosa* here, measuring from the ground, is seventy feet in height; the circumference at one foot up is nine feet four inches, and at four feet from the ground it is eight feet; one third of the circumference being the nearest approximate diameter.—JOHN COX, *Redleaf*.

I have measured our largest specimen of *Pinus ponderosa*, and find it to be twenty-six feet six inches in height, and three feet ten inches in circumference one foot from the ground.—WM. M. BAILLIE, *Beaufort Castle*.

P. ponderosa does not grow well in the north of Scotland. Its top gets heavy, and its roots do not spread very much on the surface, and it generally loses its upright position, and falls over. This has been the fate of all those that I have known to be put out singly, and at present I do not know of a *P. ponderosa*, forty feet, remaining in this quarter. It appears hardy enough, and planted in suitable soil closely, in clumps, it might be able to hold on and stand straight; but I know of no such clump in this district, and here the tree is not in demand, as it generally falls over before attaining the height of thirty feet when alone.

—JOHN GRIGOR, *Forres*.

SEASIDE TREES AND SHRUBS.

A FEW facts respecting such trees, shrubs, and other things as will grow, thrive, and stand before all others the blast and violence of the great storms that repeatedly visit our coasts, may not, perhaps, be uninteresting. I mean such as do really thrive, and are always green, even under the violent storms that in spring-time and autumn so suddenly take place, and drive a long way inland the thick spray of salt water, killing and scorching up foliage, young shoots, and branches of almost every kind of tree, shrub, and flower in its course. Many kinds of vegetables, and even our native weeds, pasture-grasses, &c., are forced to yield before such devastating storms from the south-east as occurred on the 10th, 26th, and 27th of September last. Having within these three years visited all the Channel Islands, Scilly Islands, Isle of Wight, &c., and having travelled all round the coast from thence to Land's End, besides taking a look at other coasts, I am able to state precisely what really does stand out fresh and green, while other trees and shrubs similarly circumstanced are burnt and scorched up.

Prominent among those which bear the sea blasts are the following:—*Euonymus europæus* and its variegated varieties, *E. latifolius*, *americanus*, and *atropurpureus*, Virginian-creeper, ivy—always cheerful and fresh-looking; *Laurustinus*, *Spartium junceum*, common myrtle, and *Myrtus mucronata*.

It is truly wonderful what storms and sea washings myrtle will stand, and afterwards look fresh. As to the *Eucallonia macrantha*, it is the very best of all seaside plants; I mean that it will grow and thrive in any kind of soil, close to the sea, in every place and aspect. Even after great storms it exhibits a most lovely, shining, healthy green colour, when its neighbours are all scorched up; and it is always in bloom, if the strong shoots are stopped or pinched out. It is, moreover, one of our best evergreens for making a quick, thick, and beautiful hedge for garden shelter I have ever yet met with. Its beautiful green, glaucous foliage, and warm red flowers, make it a plant of great value. *E. rubra* and *E. montevidensis* are also lovely varieties, which stand the sea breeze well. The old *Rosmarinus officinalis* also grows to an immense size close to the sea, and will stand any amount of breeze and salt-water spray. This would likewise make very quickly splendid hedges of any height or width, close to the sea, for breaking the force of those terrible storms that damage everything else subjected to them; besides, on account of its perfume, it has a value for distilling purposes. I really, therefore, wonder it is not more planted than it is. The *Arbutus Unedo* and its variety, *rubra*, are both glorious seaside plants, which are always green and beautiful every day in the year; and now, after the successive great storms and drenchings of salt spray which they have had, they are covered with beautiful scarlet-coloured fruit,

green fruit, and blossom. Indeed, *Arbutus laurifolia*, magnifica, and some others, are all good and flourishing seaside plants. The *Phillyrea* family again furnishes some of our most useful thriving evergreen shrubs for seaside planting, standing even unscathed great and sudden storms of wind and sea spray. I have noticed that *Phillyrea media*, *angustifolia*, *rosmarinifolia*, *ligustrifolia*, *pendula*, *olecefolia*, *latifolia*, *lœvis*, *obliqua virgata*, and *spinosa*, all withstand great violence without a scorched shoot or leaf. That pretty, delicate sub-evergreen plant, the *Tamarix gallica*, is well known to all seaside visitors, growing and thriving as it does everywhere, even on high-dry rocks, on the sea shore, in the salt sand, salt marshes, and low swampy places, maintaining a luxuriance that is surprising, without the least ill effects from any sea gale. With a little care in the way of management, this might be induced to make fine hedges for shelter. The *Baccharis halimifolia*, which grows freely, will likewise be found to make hedges of any width and height for seaside shelter; even when planted on any dry, rocky, sandy, salt, poor soil, it thrives most luxuriantly, and stands, even close to the sea, any amount of sea breeze and spray. The *Barberry*, *Box Thorn*, or *Duke of Argyll's Tea-tree*, grow most luxuriantly, even when close to the sea—the last, particularly, will grow in nothing else but a bank of saline sand, where every high tide swamps it, and every breeze blows on it, “suckering” and spreading immensely; a rare plant to retain and fix any extent of blowing, loose sand, and for sheltering and nursing others for planting to reclaim waste and useless sand. *Pinus pinaster* and *austriaca* grow everywhere close to the seaside, and stand the breeze and spray well at all seasons. They make capital nurses for sheltering other plants. But among the whole of the plants to be found thriving close to the sea, everywhere the *Cupressus macrocarpa* stands pre-eminent. This is truly the most valuable of all seaside conifers, growing so luxuriantly that, planted to any required extent, it would very quickly afford excellent shelter for any seaside bleak place in a very few years, breaking and softening the most severe gales into a soft breeze, and altering the harshness of the climate in a way most desirable in bleak localities. This truly handsome cypress, too, seems to thrive and grow with luxuriance on every kind of soil.

I may add that every kind of pink, carnation, and picotee, thrives wonderfully well all round the sea-coast, on any kind of soil, even when subjected to the very splash of sea water.

JAMES BARNES.

TREES.

I WANT you to understand, in the first place, that I have most intense, passionate fondness for trees in general, and have had several romantic attachments to certain trees in particular. Now, if you expect me to hold forth in a “scientific” way about my tree-loves—to talk, for instance, of the *Ulmus americana*, and describe the ciliated edges of its samara, and all that—you are an anserine individual, and I must refer you to a dull friend who will discourse to you of such matters. What should you think of a lover who should describe the idol of his heart in the language of science, thus:—Class, Mammalia; Order, Primates; Genus, Homo; Species, European; Variety, Brown; Individual, Ann Eliza; Dental Formula,

2 . 2 1 . 1 2 . 2 3 . 3
i — c — p — m — , and so on?
2 . 2 1 . 1 2 . 2 3 . 3

No, my friends, I shall speak of trees as we see them, love them, adore them in the fields, where they are alive, holding their green sun-shades over our heads, talking to us with their hundred thousand whispering tongues, looking down on us with that sweet meekness which belongs to huge but limited organisms—which one sees in the brown eyes of oxen, but most in the patient posture, the out-stretched arms, and the heavy drooping robes of these vast beings endowed with life, but not with soul,—which outgrow us and outlive us, but stand helpless—poor things!—while Nature dresses and undresses them, like so many full-sized but under-witted children. . . .

Just think of applying the Linnæan system to an elm! Who cares how many stamens or pistils that little brown flower, which comes out before the leaf, may have to classify it by? What we want is the meaning, the character, the expression of a tree, as a kind, and as an individual.

OLIVER WENDELL HOLMES.

THE GARDEN IN THE HOUSE.

ARCHES UPON DINNER-TABLES.

SOME will say that these obscure or interrupt the view across the table, and interfere with conversation and sociability; but objections such as these have no foundation in fact. Others again may complain that they cannot be arranged without making holes through the table. But in this they are mistaken; for if each end of the wire which forms the arch be twisted into a flat coil, and the flower-pots (containing the climbing plants) be placed one upon each coiled end, the arch will be quite firm, if it be made of wire of proper strength. Arches may next be charged with being troublesome. I know full well that no really good effect in dinner-table decoration can be produced without trouble; but, speaking for myself and for some amateur friends who occasionally join me in a revel amongst floral decorations, we all consider that when suitable plants are to be procured, we get more “value” for our time in an arch than in any other kind of decoration.



The accompanying engraving is from some sketches of a very pretty arch, which was arranged in the following manner:—Upon the wire were fastened single blooms and pairs of blooms of *Lapageria rosea*, which had been previously mounted upon wires, so that they might stand out firmly, and hang as if they formed part of a growing plant. Three or four long branches of that beautiful climber, *Myrsiphyllum asparagoides*, were then twined over the arch from one end to the other, its bright apple-green leaves having a very cheerful effect; while they also concealed the ironmongery of the arch and the *Lapagerias*. The finishing stroke was effected by very loosely intertwining some long fronds of the commonest, but, at the same time, the most elegant of all the climbing ferns, *Lygodium japonicum*, a species generally sold under the wrong name of *L. scandens*. In this case, the plants of these climbers were in flower-pots concealed under the table, and so also were the pots of the two plants of *Lomatia* which are seen rising from the bases of the arch. If it had not been practicable to put any pots through the table, the pots containing the two climbers could just as easily have been placed upon the table, and concealed with some common fern fronds; in which case, the *Lomatias* could not have been used, unless by cutting them down, and sticking them into the pots of the climbers—though an equally good effect might be obtained by sticking in one or two small fronds of *Pteris tremula*, or large fronds of one of the many varieties of *Pteris serrulata*.

The table upon which this arch was placed was oval-shaped, suitable for a party of twelve. The plant sunk in the middle of the table was *Yucca aloifolia variegata*, amongst the lower leaves of which were inserted some fronds of *Gleichenia spelunca*.

W. T.

The People's Garden Company.—The first annual soirée and ball in commemoration of the incorporation of this company took place, the other night, at the Arundel Hall, under the presidency of Sir H. Johnstone, M.P. The suite of rooms connected with the hall was handsomely decorated with flowers and plants. The object of the promoters is to provide spaces where the people can have healthful and rational recreation, combined with instruction, under the superintendence of the members themselves, apart from those objectionable features to be found in some of the existing public gardens. The garden near Willesden was opened last season, and, though in an incomplete state from want of funds, it proved a success so far as the experiment had gone.

THE KITCHEN GARDEN.

THE TRUE AND THE COMMON SHALLOT.

Few persons, I fear, will share my enthusiasm in investigating Alliaceous matters; in fact, I know that the whole onion tribe—in common with not a few other commendable things—is not by any means in good odour with the many. But I shall, at all events, have one reader who will be interested in the subject—an Irish baronet, who has such a high respect for every form of the onion tribe that his standard of ability in a gardener is his power of producing as great a variety as possible of these delicious esculents every day in the year. The cook may be furious for other edibles, and the fair sex pine for flowers, but the gardener is always safe from the combined attacks of the household if he is good at the onion tribe. I now merely touch upon this subject—one which would require the pen and feeling of a Brillat-Savarin to do it justice—to point out that there are two distinct kinds of plants grown as shallots, and that the true shallot is becoming replaced by a plant distinct as a species, and distinct physiologically. Our most trustworthy gardening books speak of the shallots as varieties of one species. Thompson says, "Much dependence, however, cannot be placed in these varieties, for they are all extremely liable to degenerate in two or three years to the common sort." The fact is, however, that the now "common" shallot is entirely distinct from the true shallot. The true shallot (*Allium ascalonicum*), fig. 1, is, as the name indicates, a native of Palestine. It has round and hollow leaves in close tufts, and rather long conical bulbs growing close together, the outer tunic or skin being of a dull grey, and not shining. It flowers rarely, on a cylindrical naked stem; the flowers are reddish, with long segments, and closely set in a globular terminal umbel, somewhat like those of the chive. It is of a milder and more delicate flavour than the false or common shallot.



1. The True Shallot, natural size. 2. The Common Shallot, natural size.

The common shallot (*A. cepiforme*) cannot be traced to any known country as its native home. It grows in tufts somewhat like the true shallot, but has its leaves inflated at the base, and the bulbs are roundish, and usually little more than half the length of those of the other, of a light chestnut colour, and shining. The flowers of this are white, just like the common onion, but smaller, with longer stamens, and the alternate stamens usually without the lateral cusps that they possess in the common onion, but sometimes there are lateral cusps. Both plants are perfectly easy of cultivation in England; but the common one is the hardiest of the two, and keeps a little longer. The bulbs, as I write this (January 15th), of the common kind are as firm and plump as those of well-ripened tulips; those of the true shallot are, in most cases, somewhat shrivelled and inclined to bud, indicating that it should be planted rather earlier than the other. I am half inclined to think that the common shallot is but a small breed of the common onion, particularly as we know nothing of its early history and native place. It is desirable to give the true shallot a warmer soil and position than the common one requires. I lately tried to procure in Covent Garden some of the true shallot for Mr. Boswell Syme, author of the new

edition of "English Botany," and had some difficulty in finding it. To me it seems most unfortunate that an important member of this most precious family—the very one on which we could most depend to confute the slanderous persons who continually revile everything in the shape of an Allium—is in danger of being exterminated in an age when such matters do not receive the attention they deserve. Oh, lovers of this interesting family—*sea piseus, sea porreau et cape trauilas*—I appeal to you to assist in rescuing from imminent extinction this precious treasure, which, having been in our midst doubtless since the days when Richard of the Lion Heart defeated the mighty Saladin before the walls of Ascalon, now seems in danger of being utterly lost to us for want of a little timely protection.

P.S.—Those to whom this appeal is not made in vain will be glad to learn that efforts are being made to form an Allium Society. A part of the plan is the issue of a monthly journal devoted to the proceedings of the society, and to the use, abuse, defence, and history of this calumniated tribe—on the whole, perhaps one of the greatest blessings that Providence has bestowed on the cold and bleak fields and plains of northern climes.—"Field."

THE KITCHEN-GARDEN FOR DECEMBER.

BY JAMES BARNES, LATE OF BICTON.

ASPARAGUS.—Take well-prepared strong roots of this and place them on a slight bottom heat, with a few inches of soil underneath them. Cover them slightly the first week, but afterwards put three or four inches of healthy light soil, decayed tan, leaf-mould, or sea-sand over them, watering to settle all down amongst the roots. Where sea-weed and sea-sand are at command, dress asparagus beds with them; but where these cannot be had, cover with good manure incorporated with salt.

GLOBE ARTICHOKE.—If these are not already protected about their crowns with litter, fern, or dry leaves, see to the matter without further delay. Also mulch Jerusalem artichokes, for they are much better taken up as wanted for use, than when taken all up at once and stored; and if mulched they can be procured daily without trouble.

BEANS.—Plant these on warm banks or borders. I like best to put some seed into a box or inside a cold frame, intermediate house, or warm corner, and to transplant in open weather in January or February; this plan not only ensures short-jointed prolificness, but the beans are also out of the reach of mice.

CABBAGE OR COLEWORTS.—If intended for winter consumption, they should all be collected into close-sheltered quarters, and laid in thickly, in order that they may be protected if necessary. Under such conditions they can also be easily found after a heavy snowfall.

CARDOONS.—Finish binding up these, and protect them with dry litter or fern.

CELERY.—All that has made its full growth, earth up finally when the weather is dry, and have at hand some protecting materials, such as litter, fern, dry leaves, or evergreen boughs, in case of frost.

CARROTS.—Those sown in July and August on borders, intended to be drawn young for use through the winter, surround with a few short stakes and tree-prunings, or with any materials comeatable, to give shelter. Sow the early horn and Dutch on a slight bottom heat, in rows a foot apart; and sow a row of radishes between, consisting of short tops, early scarlet, or French breakfast.

CAULIFLOWERS.—If there are any stray late-autumn planted ones about, collect them together, and lay them in frames, pits, or home-made turf-pits, to be covered with thatched frames, evergreen boughs, &c.; but see that they are not devoured by mice or rats, which are apt to nibble bits out of the very best white-hearted ones. Give air to young plants placed in winter quarters, and keep them clean and dry during these short days.

CHICORY. Take this up, and blanch it in succession, as required.

CHERVIL.—Shelter and protect a little bit for winter use.

CURLED AND AMERICAN CRESS. Protect a small piece of each of these for daily use; and sow common cress and mustard in succession, in a gentle heat.

ENDIVE AND LETTUCE. Such as are in store for winter use, blanch as required; keep growing crops clean and healthy, by means of frequent surface stirrings and dry dustings with wood ashes. Young late-sown lettuce, now of course small and close to the glass, as they should be, must be well attended to in the way of giving air and dry dustings, or they will mildew and damp off.

MUSHROOMS. For these keep up a moderate humid heat of from 50 degs. to 60 degs. Beds covered with litter must be often looked over, and have the litter turned, or the spawn will soon run out and exhaust itself. Trap woodlice, and prepare materials for succession beds.

SEAKALE.—Continue to place strong-crowned roots of this in frames, pits, cellars, mushroom-houses, under staircases, or in any quiet, warm, dark corner. They must be kept dark, however, or the new kale will be bitter and bad in colour.

RHUBARB.—Take up strong roots of some early variety of this, and place them in any kind of shed, stable, cow-house, cellar, or cave. Nothing will bear more hardship than rhubarb, or produce better or more grateful crops of wholesome stalks, even under difficulties; some should also be protected and covered out of doors with old tea-chests, pots, or boxes.

ONIONS.—Dust with dry wood-ashes those for winter use and spring planting, on dry days, in order to keep them sound between wind and water, and to prevent frost from heaving them out of the ground. Old onions should be kept dry and cold, and those in store should be looked over, and kept clean and free from runaways and decay.

PARSLEY.—This should be kept clean, surface stirred, and dusted with common dry dust and chimney-soot round its crowns; it should also have a temporary fence, about a foot high, placed round a portion of it, covering it at night with thatched frames made of light materials or light hurdles, or green boughs, in order to keep frost from injuring it, and to know where it can be readily got at in the event of a heavy snow fall.

PEAS.—Sow these in the middle of the month, if the ground will admit of it, on a warm border, ridged or banked, to face the south-west, so as to escape the glare of the morning sun and to receive the benefit of his last evenings rays. Any favourite, rather dwarf-growing early variety, such as Maclean's Advancer, Sutton's Ring-leader, Sangster's No. 1, Essex Rival, &c., will answer. I do not approve of sowing peas in November, they are subject to so many casualties during winter after being up, such as depredations from birds, slugs, and mice. They are also liable to be knocked about by cutting winds, and to be injured by severe frosts. Sow just to get them peeping through the earth by New Year's-day, and then protect them by dredging in the evenings, when dry, with dry dust. Sow also about Christmas, on strips of turf placed in a cold vinery, peach-house, pit, or frame, in order to have even crops to plant out at the end of January or beginning of February. These are sure to do well, and to pay for any little trouble in the way of dusting and shelter which may be bestowed on them. A few evergreen boughs placed behind them, will both shade and shelter them.

STRAW MATS.—Have plenty of these in readiness; also thatched frames and hurdles, in case of emergencies.

POTATOES.—Some early sort should now be put in to sprout on some slight hot-bed, such as the front of asparagus forcing-pits, or frames, intermediate houses, &c., for transplanting next month on slight hot-beds.

RADISHES.—Sow these now freely on a slight bottom heat; also on well-sheltered borders, to be covered with litter. Sow a pinch of lettuce-seed with them, and if in drills, sow alternate rows of early carrots with them; the same protection will answer for both, and both crops agree in growth and time of removing.

WOOD ASHES.—Dry wood-ashes should always be kept in store, in old tubs, boxes, &c., for dredging young lettuce, cauliflower, or any thing else subject to canker or mildew, which many things are, during the short, dark days of winter. Nothing that I know of is so effective as dry wood-ashes for preventing such evils,—but they must be dry. They answer, too, as a fertilizer for mostly every kind of plant.

TRENCHING.—Every bit of spare ground, and that which can at all be cleared from crops, should now be trenched; casting the soil up into rough ridges for frost to pulverise it. Take advantage of dry and frosty mornings for wheeling out manures, composts, and for turning the same where necessary. Look to drains, and to the repairing and turning of walks, and, in short, anything in that way that can be done advantageously at this season of the year.

NEW PLANTS.

NERINE PUDICA.—This beautiful addition to this useful and elegant class of winter-flowering Cape bulbs was introduced in 1868 from Grahamstown; it flowered the following year, and a figure of it has been published in the *Botanical Magazine* this season. The flowers, which are more compact than those of the other species, are produced, five and six in number, in pendent heads; they are rose-striped on a white ground—quite a new feature in the genus; scape, a foot high; leaves, narrow and glaucous. The plant, which is a free grower, may be kept in a frame in summer; and in winter, after flowering, it should be ripened off as thoroughly as possible by means of free exposure to light. It should be re-potted before it starts, if necessary, otherwise the seldomer this class of bulbs is shifted the better.

YUCCA TRECULEANA.—A noble Mexican plant, with erect, channell leaves; it is allied to *Y. canaliculata* (syn., *concava*), but the leaves are narrower and more erect, giving the plant a nobler general appearance than that species; where a plant is required for a vase in a windy situation, *Y. treculeana* will be found invaluable. Though known on the Continent, it is new to us. There is, however, a fine specimen of it in the collection of W. B. Kellock, Esq., Stamford Hill. It requires some slight protection in winter.

TINNEA ÆTHIOPICA (African Violet).—Lovers of a perfume like that of violets will be glad of this plant for their stoves; it is a free grower, of a soft, shrubby character, resembling common Privet; its leaves are bright green; and the flowers, which are produced in their axils, are dark purple, and strongly violet-scented, especially in the evening. It will succeed in a greenhouse-temperature in summer, but it should be placed in the stove in winter, when it will flower freely. Though not a particularly striking plant, yet its perfume makes it desirable. It is a native of tropical Africa.

EURYCYCLES CUNNINGHAMII.—This winter-flowering bulb, from North Australia, though not really new, is, nevertheless, not often found in cultivation; its leaves are of a glossy green colour, borne upon a long stalk; the flowers, which are white, an inch in width and campanulate, are produced on a scape similar to that which exists in *Eucharis*. While in a growing state it is fond of water, and it should never be allowed at any time to get quite dried off, or it will start again into growth badly. Those who want plants to furnish flowers for button-holes should try this, as its blossoms are as pure white as those of *Eucharis*, and of a better size for such purposes. J. C.

THE TOWN - GARDEN.

THE GARDEN ON THE ROOF.

BEFORE entering into details as to the mode of enjoying this, the most charming and novel kind of town-garden, let us quote Mr. Charles Reade, in the *Pall Mall Gazette*, on that which must prevent thousands of our readers from forming gardens on modern roofs:—

"The conical roof in a modern house is not merely silly, it is disgraceful to the human mind; it was all very well before gutters and pipes were invented: it was well designed to shoot off the water by the overlapping eaves: but now we run our water off by our gutters and pipes, and the roof merely feeds them; the conical roof feeds them too fast, and is a main cause of overflows. But there are many other objections to conical roofs, especially in streets and rows:—1st. The conical roof, by blocking up the air, necessitates high stacks of chimneys, which are expensive and dangerous. 2nd. The conical roof presses laterally against the walls, which these precious builders make thinner the higher they raise them, and subjects the whole structure to danger. 3rd. It robs the family of a whole floor, and gives it to cats and sparrows. I say that a five-storey house with a conical roof is a five-storey house, and with a flat roof is a six-storey house. 4th. It robs the poor Cockney of his country view. It is astonishing how much of the country can be seen from the roofs of most London streets. A poor fellow who works all day in a hole might smoke his evening pipe and see a wide tract of verdure—but the builders have denied him that; they build the roof for cats, and, the 'curse of families,' they do not build it for men whose bread they eat. 5th. It robs poor families of their drying-ground. 6th. This idiotic blunder, slightly aided by a subsidiary blunder or two, murders householders and their families wholesale, destroys them by the most terrible of all deaths—burning alive. Prejudice and habitual idleness apart, can anything be clearer than this, that, as fire mounts and smoke stifles, all persons who are above a fire ought to be enabled to leave the house by way of the roof, as easily and rapidly as those below the fire can go out of the street door. Now what do the builders do? They side with fire; they accumulate combustible materials on the upper floors, and they construct a conical roof most difficult and dangerous to get about on, but to the aged and infirm impossible. Are then the aged and infirm incombustible? A thousand poor wretches have been murdered in my time by the builders with their small trapdoors and their conical roofs. Thousands more have been destroyed, as far as the builders were concerned; the firemen and fire-escape men saved them; in spite of the builders. The fire-escape can after all save but a few of the builders' victims. The only universal escape is—THE RATIONAL ROOF."

Mr. Reade then goes on to enumerate the many and real advantages of the Rational Roof; but among them we do not find the greatest of all, an excellent site for a garden. The roof-garden may be easily made, and in various ways, as the climate, taste, or means of the owner of a Rational Roof may desire. Nothing can be simpler, for example, than to turn the upper floor into a conservatory. A capital suggestion towards this end is that which has been made by Mr. S. B. Parsons, of Long Island, in the *American Agriculturist*:—

"It is," he says, "within the means of any man who builds a good house to have a garden on the roof, which, during the summer, can be filled with the most luscious grapes, peaches, plums, &c., and in the winter with plants; the beauty of the flowers of which will afford a charm far beyond the trifling cost of their maintenance. A glass roof costs very little more than a tin or slate one. Let the roof, therefore, be covered with glass, and let the upper floor be covered with concrete, sloping gently from the centre to the sides, around which a slight depression in the floor can carry the moisture

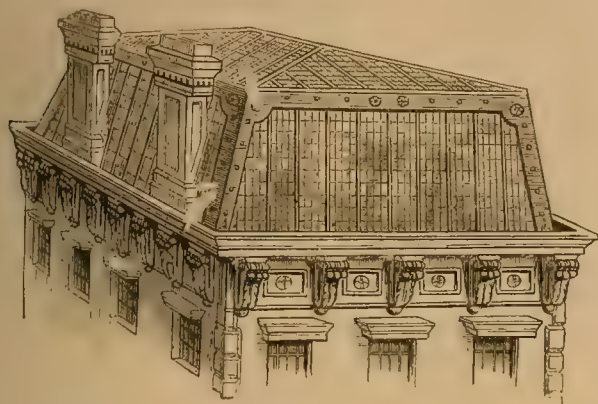


Fig. 1. Roof Conservatory.

or drip into the leaders which pass from the roof of every house to the ground. With this slight expense, a perfect greenhouse may be had. A Mansard roof glazed in this manner is shown in figure 1. Now for heating. Everyone knows that the upper rooms of his house are so warm from the ascending heat of his furnace, that registers are scarcely needed. Let the doors be kept open, and the waste heat of the house will keep the top at the highest desirable temperature. Thus the greenhouse is heated without any extra trouble or expenditure. Its care would be a pleasant recreation for any of the family. The pleasure of cutting one's own flowers, or sending to a friend one's own roses, or camellias, or Black Hamburg grapes, is not to be despised. In case the demands of the counting-house or the drawing-room are too engrossing to allow any attention to flowers, there are numerous florists in every city who would be glad to keep such a place in perfect order for a very moderate compensation. If a little extra strength is given to the beams which sustain the upper story, sufficient earth could be placed there to lay out the whole space of twenty-five by fifty feet as a garden, with winding-walks, carpets of moss and roses, camellias, &c., planted

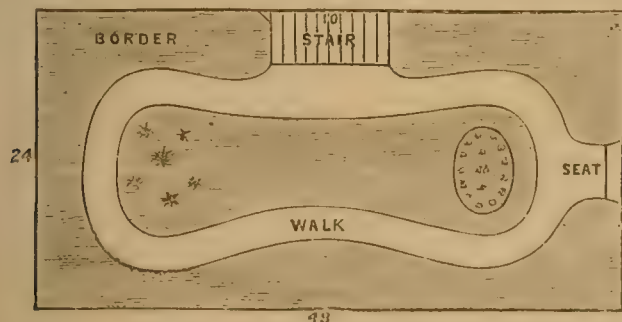


Fig. 2. Plan of Roof Conservatory.

in the soil, as shown in the plan. By this mode the illusion will be complete, and in the middle of winter one may have a tropical landscape. But, for fruit as well as flower culture, the use of pots will be preferable. Let us see what can be done with these. The superficial area of nearly every good city house is more than twelve hundred square feet. This would contain quite an orchard of fertile little fruit-trees. If one wishes no flowers, but fruit only, he can have forced peaches and nectarines at a season when he cannot buy them for less than a dollar each. But if it be desired to have the house filled with flowers through the winter, we cannot cultivate forced fruit. We can, however, have flowers, stone fruit, and Black Hamburg grapes in succession. If the house has been filled with flowering plants in the winter, and there is plenty of yard room, they can be taken out and arranged in groups in the yard as soon as all danger of frost is over. The house can then be filled with peaches, plums, and nectarines in pots, which can be obtained of the nursery-

men ready for fruiting, or prepared the previous year by the florist having charge of the house, and kept in the cellar during the winter. These can remain in the house until the fruit has attained sufficient size to be safe, when they also can be grouped in the yard, where they will grow, and ripen early and well. Their place in the house can then be supplied with grapes in pots which have been retarded by being kept in a cool, dark place in the cellar. These will then bear abundantly during the summer, and, before the flowering plants require to be taken in the ensuing autumn, will duly respond to the tiller in Black Hamburgs and Muscats. Two pounds to each vine, or four hundred pounds of grapes, would be a moderate estimate for the space mentioned.

"Both stone fruits and grapes are easily managed, and a man of ordinary intelligence could soon learn to grow them, even if his life has been passed in the midst of dry goods or hardware; if, however, his own skill fails him, florists are always attainable. Here, then, are new luxuries—flowers, peaches, and grapes—within the reach of every man of moderate means. If the capabilities of this plan and its economy were thoroughly understood by architects and proprietors, the time would soon come when a roof-garden would be considered just as essential an appendage to a house as a bath-room. The demand for care-takers would bring forward a host of candidates for this new branch of industry, and it might furnish an excellent and remunerative vocation for women."

THE PRINCE GARDENER.

A TALE OF TRANSPLANTATION.

WHEN Catherine II. of Russia was about to visit her prime minister, Potemkin, on one of the vast estates she had conferred upon him, the imperial favourite perceived, for the first time, that the estate then in question, the most recent gift of the Empress, a few versts from Smolensko, was very bare in aspect, not being varied by the form of a single tree bigger than a trailing cranberry-bush. The vast domain had been made over to him—the land and its inhabitants—all in one lot; the numerous serfs bringing up his general holdings of that kind of property to over thirty-six thousand. Serfs enough, and to spare—but, then, there were no trees; for it was far easier in many parts of Russia to grow serfs than timber; and this stubborn fact both vexed and puzzled the almost omnipotent minister.

It is very true that at several of his residences near St. Petersburg, and in other places, he had managed, by mere force of will and lavish expenditure, to create *jardins Anglais*—the mania of the day—with their slopes of turf and artificial streams and rustic bridges, despite the opposing forces of the glacial climate; but to create ancestral woods round about the castle-palace which he had hastily improvised at Smolensko was a far different matter. There was not a single forest, large or small, within a couple of hundred versts or so; a distance of not much account in the vastness of the Russian empire, but yet a rather stiffish one for the moving of big forest trees.

And, moreover, there was but a fortnight to spare from the time he had first perceived the barrenness of his lands to the time appointed for the visit of the Empress. Yet Potemkin made up his mind that the estate must, somehow or other, be timbered with majestic trees within that narrow space of time. Prince Potemkin was a very great man, and also a very big man—stalwart as the mighty men of Bashan. In fact, his huge stature led the Prince de Ligne to remark that his person symbolised the vastness of the empire over which his genius presided; and the great, big man, simply determined that the great forest of Slavonka, though two hundred versts to the south-east, should furnish forth the big trees that he required; and within a fortnight, by a lavish expenditure of the sinews of gardening, which are of precisely the same nature as the sinews of war, the thing desired was accomplished, with a day or two to spare. Noble groups of oaks, of gigantic size, and towering firs, those cypresses of the north—and a variety of other trees of noble growth and luxuriant foliage, being made to enrich the bare land round the castle-palace of the great minister.

On the eventful morning of the Empress's arrival, however, to his great mortification, his imperial mistress betrayed neither surprise nor delight. Empresses have spies as well as eyes, and often find the former of much more real service than the latter. In fact, she knew all about the improvised ancestral groves, and where they came from, and how they got there.

The chronicler, after the manner of his class, does not tell us how it was done—those gentry are generally very reticent where one would wish them to be diffuse, and frequently somewhat diffuse where they might well be excused for a little reticence.

One would have liked to be told how a thousand or so devoted serfs, up-dug those lords of the forest, with great holes of earth about their roots; and how a couple of score of the sinewy little horses of the

Don were harnessed to each of the enormous six-wheeled waggons, on to each of which a tree had been lifted by a powerful derrick; and how each tree was supported in a leaning position, and prevented from swaying by a strong and well contrived framework; and how each team of the tough little horses had been lashed along at a gallop, through each relay, for the whole of the two hundred and odd versts. But the chronicler does not tell us either of this, or any other *modus operandi*, contenting himself with insinuating that the Empress herself knew all about it, and that she was by no means startled, as her favourite minister had expected, at the sight of those noble groves where all had been a bare desert, only a fortnight before.

"They look very well," she remarked, with phlegmatic coolness; "but scarcely as well, and will scarcely prove as useful, as the forests of white mulberry which I planted in the Ukraine, to establish a silk-culture. Nevertheless, they look well—quite as well as they did at Slavonka, if not better; especially this big fir with the double stem. I happened to be hunting there a week or ten days ago, and admired it. Slavonka, prince, is an imperial domain. I think even my prime minister might have asked my permission before taking upon himself to remove so noble a stick of timber."

Potemkin's face involuntarily elongated itself, and he was about, as the Empress perceived, to throw himself at the feet of his imperial mistress, and so, with a sudden movement full of that majestic grace which it is said none can assume who are not born in the purple, she said, in that soft, low, and yet stinging voice which makes disgraced favourites tremble:—

"Stay, Prince Potemkin; stay!" said she approaching the table beneath the great forked fir, where a magnificent collation had been sumptuously prepared, a magnum of the priceless imperial Tokay being placed for each of the guests. "Stay, prince," she repeated in the same emphatic whisper, as she seized one of the magnums; "stay, prince. If you persist in flinging your huge body at my feet I will fling this magnum of Tokay at your head."

He was, however, already crouching before her, his grand head prone to earth, like that of a slain giant.

So, putting down the magnum with a grave dignity that made the ladies of her suite long to be empresses likewise, she took her riding-whip in her right hand, and drawing herself up to her full height, and looking every inch an empress, she whisked it swiftly above her head with a rapid wave of her tolerably muscular arm, suddenly bringing it down with a slashing flack across that part of the prince's Hussar pantaloons just where they were strained to the very tightest by his crouching position, saying, with that fascinating grace of manner that sovereigns alone have always at immediate command,—

"Rise up, Prince Gregory Alexandrovitch Potemkin; rise up a knight of the first class, of the Imperial Order of the Two-headed and Four-legged Eagle."

And then Potemkin rose, as a true knight should, appearing perfectly at his ease, bowing, and smiling too—at all events on the side of his mouth next the Empress—and saying, with his hand very properly on his heart, "Your imperial majesty is ever too gracious to the most devoted of her subjects."

And then the whole party sat down to the magnificent collation, but no one said much till the Tokay began to circulate; for the imperial suite, as the handsome young Soltikoff remarked, *sotto voce*, were all "rather flabbergasted."

The Empress herself was the first to revive the conversation, saying, "Potemkin, my dear giant prince, don't be frightened; the trees look ten times better than they did in my imperial forest; especially this great forked fir. You are a most accomplished gardener, Potemkin, and evidently know exactly what ought to be done with noble trees, whether belonging to yourself or anybody else. Their distribution here, round about your splendid schloss is extremely well devised, especially that quincunx of great beeches on the slope, yonder. Nature, Potemkin, Nature unaided, is a mere ignoramus. She had stuck all those grand trees so close together in the forest at Slavonka, that at every bit of a gale they knocked their heads together a *tout rompre*, like great green boobies as they were, for staying there so long. But, I presume, Potemkin, they could not break from their fetters till you, the great gardener-magician, waved your magic money-bag at the end of the ever-persuasive knout, and released them from the thralldom of that wicked untaught fairy, old Dame Nature. Yes; you are a magician. All great gardeners are magicians; it is only they who, by the cunning of their art, can make the desert smile."

"And now I have another idea, prince," continued the Empress, who was always very voluble after a glass or two of Tokay, "Yes, I have another idea; I feel bound to honour the talent you have so strikingly displayed in the formation of these noble groves. The effect is at once grand and charming. It is a masterpiece of its kind; a metamorphosis—glorious metamorphosis! Special capa-

cities such as those here displayed, must be *specially* rewarded. There is an imperial domain in the extreme northern corner of eastern Siberia which is extremely bare of—"

"Your majesty! I supplicate—"

"Do not interrupt me, Potemkin. I was about to state that the domain in question is extremely bare of lofty trees. I am, however, not going to meddle with it just at present. But the present gardener of my Casino at St. Petersburg is evidently a silly little fellow. I have no faith in little men. You are a great, big fellow, Potemkin; evidently strong; and I hereby appoint you head-gardener at the Casino by imperial patent. Time of work, ten hours a day; pay, ten roubles a week. Those are my terms; and, as a favour, the blue aprons, which will be—" and she looked at the colossal dimensions of her new head-gardener—"the blue aprons, which will evidently be costly, shall not be deducted from your wages."

"But, your majesty, I merely caused these lofty trees—"

"Say no more about the *high trees*, Prince Potemkin, or I will make your crime *high treason*," stormed the Empress, in a mock heroic strain, smiling, in her sleeve, at the vile pun she was perpetrating. "Say no more, Sir Prince, or I shall be under the necessity of appointing you, also, stage-manager of all the transformation scenes of my grand opera, with ten hours night-work in addition to your day labours in the gardens of the Casino."

The Prince wisely remained silent, and the imperial party resumed their seats, and took to their Tokay fiercely, and, as we of these degenerate times might think, dangerously. But the chronicler whose record I am transcribing states, with that extreme *naïveté* which distinguishes his order of scribes, "they did not get drunk, because they were so used to it."

H. N. H.

THE ODOURS OF ORCHIDS.

IN connection with this subject, to which allusion is made in your last number, it may be well to direct attention to the varying odour of the common Early Purple Orchis (*O. mascula*). During the day it is slightly fragrant; but towards evening it exhales a smell so unpleasant that it is unbearable in a room. This is the general rule, so far as my experience goes; but there are exceptions: for I have sometimes found specimens which even during the day were unpleasant, and others which were scarcely odorous at night. The perfume of *O. maculata*, never very powerful, is perceptibly stronger towards evening; while the rich aromatic odour of *Habenaria chlorantha* and *Gymnadenia conopsea* becomes overpowering at night. The rare Lizard Orchis (*O. hircina*) is said to have a very disagreeable smell. Probably there is no one order of plants which presents as great a variety in form, colour, and scent, as the Orchidaceæ. Mr. Bateman gives the following list of some of the principal odours which he has noticed among them, with the plants that produce them:—

Cycnoches Loddigesii, honey; *Burlingtonia candida*, citron; *Gongora atropurpurea*, allspice; *Maxillaria aromatica*, cinnamon; *M. atropurpurea*, violets; *M. crassifolia*, noyau; *Epidendrum umbellatum*, angelica; *E. anisatum*, aniseed; *Aerides odoratum*, pomatum; *Acropera Loddigesii*, wallflowers; *Oncidium ornithophorum*, fresh hay; *Bulbophyllum coccineum*, cocoa-nut milk; *Stanhopea grandiflora*, a druggist's shop; *Dendrobium moschatum*, musk. The last-named species, however, appears to me to resemble Turkey Rhubarb in scent, and Professor Reichenbach is of the same opinion.

JAMES BRITEN, F.L.S., *British Museum.*

International Weather and Crop Reports.—Commodore Mauray has just elaborated a plan for the universal extension of the weather-report service, and for the organization of an international system of agricultural estimates, reports, and statistics. The purpose to be effected by his scheme is to give the farmer as well as the merchant in America as full and accurate information as to the yield of the crops in every part of the United States, in England, the basin of the Black Sea, in Egypt, and the Danube, as they have in their own neighbourhoods; and to secure reliability, it is thought the duty of collecting the information should be undertaken by the Governments of the co-operating countries. It is, therefore, suggested that at first a special crop reporter should be assigned to every district of 10,000 square miles in the United States, that twelve reporters should be employed in Great Britain, nineteen in France, one in Belgium, one in Holland, and so on—the machinery of electrical communication being already at hand.

Vegetation on Stone Walls in England.—If the roadside happens to have no hedge, the ugliest stone-fence (such as, in America, would keep itself bare and unsympathizing till the end of time) is sure to be covered with the small handiwork of Nature; that careful mother lets nothing go naked there, and, if she cannot provide clothing, gives at least embroidery. No sooner is the fence built than she adopts and adorns it as a part of her original plan, treating the hard, uncomely construction as if it had all along been a favourite idea of her own. A little sprig of ivy may be seen creeping up the side of the low wall and clinging fast with its many feet to the rough surface; a tuft of grass roots itself between two of the stones, where a pinch or two of wayside dust has been moistened into nutritious soil for it; a small bunch grows in another crevice; a deep, soft verdant moss spreads itself along the top and over all the available inequalities of the fence; and where nothing else will grow, lichens stick tenaciously to the bare stones and variegate the monotonous grey with hues of yellow and red.—HAWTHORNE.

THE GARDEN.

"This is an art
Which does mend nature: changes it rather; but
THE ART IS NATURE."—Shakespeare.

All communications for the Editorial Department should be addressed to WILLIAM ROBINSON, "THE GARDEN" OFFICE, 37, Southampton Street, Covent Garden, London, W.C. All letters referring to Subscriptions, Advertisements, and other business matters, should be addressed to THE PUBLISHER.

All questions on Horticultural matters sent to "THE GARDEN" will be answered by the best authorities in every department. Correspondents, in sending queries, are requested to write on one side of the paper only.

The Name and Address of the writer are required with every communication, though not for publication, unless desired by the writer. Letters or inquiries from anonymous correspondents will not be inserted.

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PUBLIC GARDENS.

PARKS AND PUBLIC GARDENS IN AMERICA.

WHEN starting for the "great country," as Americans justly call theirs, I said to myself, here we break new ground in this as in many other matters; here the necessities of defence from the enemy have not forced men into foul ruts, so narrow that the fresh breeze of heaven is powerless to drive away their pollutions; here, where land is yet so abundant, I shall doubtless find room left in the cities for a few trees or a little verdure here and there to make them more fitting abodes for intelligent beings than the human burrows of old countries; here, with a young and giant nation starting into unexampled growth, untrammelled by the traditions and many evil circumstances that prevail in "old countries," we shall see, if not fine houses or buildings, room enough in the streets for the convenience of business and for the future development of the commerce of the cities. Not so by any means! No "rookery" of old countries is fouler than the tenement houses in New York; no large city I have ever seen in Europe is so devoid of squares or open spaces. Bad as London is, I have never seen such inconvenient interruption of traffic in its streets as I have witnessed in Broadway. In all American cities, with one exception, the streets are long and straight and narrow, and that is all you can say for them. Once I found myself in the street I had been searching for, and, asking for No. So-and-so, was told, "Five miles further on, on the right!" They boast of streets eleven and even nineteen miles long. Is that not a great thing? As for squares, they are few and far between, and when you do find one, it is wretchedly managed, on the good old principle of planting a tree wherever there is room for one. But there is, perhaps, excuse for some of these things. In many cases, when the cities were designed, it would have been rash to suppose they would ever have attained one-tenth of their present size; and if they had as big streets and foot-paths as in the old country, was not that enough? But there are signs that the great cities are beginning to be ashamed of this state of things, and here and there, in some of them, there are indications that the newer portions will be very differently disposed.

There are, however, two distinct kinds of public gardens in which the Americans seem destined to surpass us immeasurably—parks and cemeteries. It is amazing to witness the grandeur and extent of their parks, and to hear of the vast sums they spend upon them; while their cemeteries are as far before anything I have seen in Europe as the tomb of Napoleon in the Invalides is before one of the little cells in Père la Chaise. I was delighted to see such noble parks in such a young country: they augur well for public gardening there when the nation shall have attained greater development. In most civilised countries large cemeteries are sometimes so disposed

that they bear some resemblance to gardens, but in America they are so large and park-like and well planted that they are really public gardens of a high class, and there is none of that disgusting over-crowding of which there is so much in Parisian cemeteries, and also in those of London and many other places. Instead of the bodies being interred as thickly as matches are packed in a box, each family has a small plot of ground (lot) large enough to form a little garden, and in this the burials take place in an isolated manner. In Cincinnati they are even improving on this, by causing all the boundaries of the lots to be hidden beneath the turf, and by not allowing more than one slab or monument to each owner of a lot, on which the names of all the persons buried in it must be inscribed, if they are to be inscribed at all. In this way the unpleasant effect which results from covering a large extent of ground with thousands of monuments will be, in a great extent, removed, and the designer will be able to get very happy park-like effects, and quiet green lawns here and there.

New York, the chief city of the States, is, in some respects, the most disagreeable and filthy city I have ever seen. The famous Broadway is, in everything but in length, inferior to some of the second-rate Paris boulevards, and is, for a great city, a narrow street. There is very little good planting in the central parts of the city—those in which it is most wanted; and what has been done has mostly been in very narrow streets, so that when the Ailantus and other trees grow up, they grow right against the windows, or half fill up the street. The squares are few, and very inferior compared with those of Paris, or even those of London. They are usually crossed by straight walks, or dotted over with common-place trees, so that no good effect is obtained. In the more fashionable parts of the town the streets are clean; but in hundreds of the secondary streets the filth is woful. The people have a good old fashion of throwing all their refuse into the streets, and the municipality allow it to rot there for an indefinite length of time. Dirty streets one often meets with, and ill-paved streets, but to find great boulders of paving-stones rambling away from their places, and allowed to roll about, to the danger or inconvenience of every passing vehicle, and to see whole streets unpaved, or, if paved, hidden from the eye by a thick bed of mud, betrays a hopelessly-abandoned and unique degree of bad management! The New Yorkers certainly "beat all creation" as regards the bad condition of their streets. But in several things the city is very fortunate. Like all the great eastern cities of America, it is built on a noble harbour; and the island on which the city stands is flanked on one side by the wide Hudson River, and on the other by the East River, an estuary, and these form broad, breezy, water boulevards that effectually limit the densely-packed buildings, and have the most beneficial effect on the air and health of their surroundings. Then, again, the Central Park of New York is magnificent, as many already know. There is not much fine gardening in it, rightly, as I think; but, in point of design, it certainly is much better than any park we have in London. There are, in many places, nice, quiet breadths of open grass, and I have never anywhere seen so many great breaks of picturesque, natural rock crop up; fortunately these have been preserved, and now offer the finest positions I know of for planting with rock-shrubs and alpine plants. One thing seemed a mistake—the making of many bridges over roads, with a view to separate equestrians from pedestrians; this is the most expensive and needless crotchet I have ever seen. In the Bois de Boulogne and in Hyde Park we have a far greater number of equestrians, and no such thing is or will ever be necessary. When will the persons who arrange plans for such parks as these learn that park or garden is spoiled in proportion to the number of needless architectural works which it contains? This is particularly the case in a city. There should be no building in a public garden not absolutely necessary, and those that are indispensable should be inexpensive, and, as a rule, concealed by judicious planting.

The Greenwood Cemetery at Brooklyn is very large and beautiful (between 400 and 500 acres), varied in surface and well-planted. It is now, and, let us hope, will always continue, practically a public garden. Prospect Park, at Brooklyn, is also a very noble one, with a prairie-like sweep of open grass, and is generally very well designed. The approaches to and

some of the roads near this new and large park are very broad and dignified; and the whole is truly worthy of the "great country." If other American cities go on in this way, old Europe will soon be left far behind in the matter of public gardens.

(To be continued.)

NOTES AND QUESTIONS ON PUBLIC GARDENS.

Finchbury and Southwark Parks.—At a meeting which took place the other day at the Board of Works, a motion was brought forward to prevent the reselling of any portion of the ground bought for these parks, for building purposes. The principle of obtaining land on the ground of preserving open spaces for the recreation of the people, and then selling it again to an advantage for building, was condemned by some and thought justifiable by others. The question was, therefore, put to the vote, when there appeared for the motion, 22, and against it, 12. As the meeting was, however, for the purpose of rescinding a former resolution of the Board, it required to be carried by a majority of two-thirds of those who were present. There was not that number, and the motion was consequently lost.

Graveyard Desecration.—The most accursed act of vandalism ever committed within my knowledge was the uprooting of the ancient gravestones in three at least of our city burial-grounds, and one at least just outside the city, and planting them in rows to suit the taste for symmetry of the perpetrators. Many years ago, when this disgraceful process was going on under my eyes, I addressed an indignant remonstrance to a leading journal. I suppose it was deficient in literary elegance, or too warm in its language; for no notice was taken of it, and the hyena-horror was allowed to complete itself in the face of daylight. I have never got over it. The bones of my own ancestors, being entombed, lie beneath their own tablet; but the upright stones have been shuffled about like chessmen, and nothing short of the Day of Judgment will tell whose dust lies beneath any of those records, meant by affection to mark one small spot as sacred to some cherished memory. Shame! shame! shame!—that is all I can say. It was on public thoroughfares, under the eye of authority, that this infamy was enacted. The Red Indians would have known better; the select men of an African kraal village would have had more respect for their ancestors. I should like to see the gravestones which have been disturbed, or removed, and the ground levelled, leaving the flat tombstones; epitaphs were never famous for truth, but the old reproach of "Here lies" never had such a wholesale illustration as in these outraged burial-places, where the stone does lie above, and the bones do not lie beneath.—*The Autocrat of the Breakfast Table.*

Victoria Park.—In reference to the dissatisfaction which has arisen in the east of London respecting the covering of the immediate surroundings of this park with buildings, its preservation society's secretaries state, 1st. That the land which now constitutes Victoria Park was purchased by the Crown by virtue of an Act of Parliament passed in 1842. The Act empowered the Crown to purchase 290 acres, and stipulated that one-fourth of the land so purchased should be reserved for building lots, and that the remaining three-fourths should be set aside to form the "park." The object contemplated in the reservation of one-fourth of the entire quantity of land purchased under the Act was to provide a revenue to the Crown from the rents of the ground, leased for building purposes. About 220 acres were retained for the park, and about seventy acres, comprising the outer portion and constituting a "belt" of land surrounding it, were reserved, it being intended that the houses erected on the Crown land should encircle the park. 2nd. From 1842, when the Legislature framed the Act, to the present time, the clause authorising the reservation of the encircling belt of land has practically, to a great extent, remained inoperative. The public have used the enclosed space, no doubt considering it a part of the park, and the proposal to convert this enclosed area into a profitable source of revenue has proved a failure, the land not having let in the advantageous manner that was anticipated, and the greater portion of the original seventy acres still remaining an open space. 3rd. The thirty years which have elapsed since Victoria Park was first laid out have produced a marked and striking change in the east of London. The fields and open spaces which existed in 1842 no longer remain, but have given place to a dense mass of street, lanes, and alleys, teeming with a hard-working, industrious population. The space which sufficed for the wants of the people thirty years ago is too small for their present requirements. It is therefore fair to ask Parliament to abandon the right to build upon any portion of the open space surrounding Victoria Park, in order to give that space to the people for their hard-earned relaxation and enjoyment.

THE TWO PATHS.

THE TERRACE GARDEN.

It is commonly believed that we have now arrived at a wonderful degree of horticultural excellence as compared with other nations; this is probably the case, but nevertheless we are just reaching a stage from which we can get a clear conception of how very little we do that is really creditable, and of how many absurd things are perpetrated in the teeth of the very simplest laws of true taste.

The terrace garden is a strong case in point. It is most unfortunate that in the present stage of our horticultural progress we are blessed with a number of landscape gardeners, who, having had few opportunities of acquiring a love for nature except where she is trained into true geometrical proprieties, and having little or no knowledge of art, fix their minds upon the terrace garden as the acme of perfection in garden design. It is the one tangible thing, about the propriety of which there can be "no mistake." Hence the many violations of that repose and grace which should characterise the immediate surroundings of country residences and villa gardens. Terrace gardens are made in all sorts of positions. Considerable expense is incurred in the removal of masses of earth, where it would

have been in much better taste to have left the ground as it was; and an immense amount of trouble is taken to produce ponderous eyesores, which our descendants will be at considerable cost to remove, should they desire to peacefully inhabit the same abodes. Undoubtedly we may here and there find associated with some princely mansion, and where the sweep of pleasure-grounds is so wide that terraces seem merely to form a resting-place for the mansion, a terrace garden not offensive to taste; and we know that in some cases the nature of the ground commits us to the style. But we also know that even in connection with the most princely mansions terrace gardens are often not only made where they are not required, but where they are positively destructive of the beauty of the scene. The costliest and most pretentious delusion in all ornamental gardening is the making of an elaborate terrace garden in a place where, from the size of the grounds or the portion of them devoted to ornamental gardening, the terracing and geometry, and



all their accompaniments, constitute the chief or only features. The house and garden in the accompanying illustration are situated near York, in a pretty undulating district. It is not a place from which the ground sweeps widely away from beneath the terraces, but nearly the whole is occupied by the three banks, &c., shown in our woodcut. It is not the owner who is to be blamed for thus disfiguring the fair face of nature. We understand that he acted on the advice of "a very good landscape gardener." It would have been pleasanter to have described this place as a relic of the past, but it is not so. It surprised me when I beheld it for the first time this summer, growing like a big fungus on what last year was a pleasant meadow. If things go on in this way the truth of the expression that "God made the country and that man made the town" will not be so apparent as it has been. We fill the valleys of once fair districts with foul smoke, and sit among the cinders; but this some do for money, and many for life's sake; but that rational beings should, for their pleasure or amusement, place under their eyes for life such scenery as we have figured is indeed disheartening.—*Field.*

The Abelia.—These form a small group of ornamental shrubs belonging to the honeysuckle family, and are chiefly natives of N. India, Japan, China, and Mexico, bearing opposite leaves and handsome tubular flowers. They are less known in gardens than many subjects which have no claim to beauty, and, placed in suitable positions, are capable of producing most pleasing results. *A. triflora*, one of the seldomest seen, is a native of high mountains in N. and W. Kumaon in N. India, where it is called kumki. It bears a profusion of flowers, of a pale red or rosy colour, deliciously sweet, and arranged in threes, forming corymbs. In some of the warmer parts of the south this may succeed as a shrub. Near London it succeeds perfectly on south walls in light, well-drained soil, and well trained out and spread over garden walls forms a beautiful object. *A. floribunda*, from Mexico, bears rich purple-red flowers, in drooping leafy panicles. In some of the warmer parts near the coast it may be grown as a shrub, but generally it will thrive best on a wall, and like the preceding, it forms a very ornamental wall shrub, as does the Chinese *A. uniflora*. In this species, however, the flowers rarely occur singly, as the name would imply, but in threes, and arranged in a somewhat closely set panicle. *A. rupestris* is a very charming dwarf shrub, which we have seen covered with rose-coloured flowers late in the autumn in Devonshire. There are various other species; but the preceding are the best of the introduced kinds. They were at first considered stove and greenhouse plants, and in cold parts of the country the temperature of the greenhouse or conservatory may often be necessary for them; but if we possessed only *A. triflora* and *A. rupestris*, all open-air gardens in the southern parts of these islands might be highly embellished by these charming shrubs.

A New American Boulevard.—A forty-mile boulevard, 100 feet wide is, it is said, about to be built along the Hudson River.

THE THAMES EMBANKMENT.

BY NOEL HUMPHREYS.

THE most noble of the recent additions to the splendour of our British Babylon is, undoubtedly, the Thames Embankment. Its river face is so grandly simple, that it utterly dwarfs all the works of the kind, even the long-vaunted quays of the Seine; while those of the Liffey, in Dublin, once held up as a model to the imperial capital, sink into insignificance.



Thames Embankment, 1860.

It is, perhaps, well that the first designs of embanking the Thames, and the creation of noble riverside roadways, as proposed by Colonel French and by the celebrated painter, John Martin, some forty years ago, were utterly scouted by the officials of the day, and by the good public also, as wild and Utopian schemes. That they were so scouted, is not, perhaps, regrettable, as the carrying out of such projects at that time would scarcely have been done so thoroughly and on a scale so grand as now, though Waterloo Bridge had already been

the best one, though any amount of authority might be adduced in justification of the course pursued. In the first place, we find that only one or two kinds of trees have been planted along the whole course of the great new roadway—a most unpardonable overlooking of the great variety of noble trees well suited for the purpose and the situation, a judicious selection from among which would not only have secured greater diversity of effect, but have secured a vast increase of beauty at the same time.

As examples of noble trees that should have been found along the line of the great water-wall, of which we are so justly proud, the following may be named out of a score or more, all of which are suitable for the purpose:—The noble *Gleditsia* should have been one of them. It is a much finer tree than the well-known *Robinia*, retains its foliage in perfectly green condition till very late in the autumn, and, if well planted, often attains the height of eighty feet. The great Norwegian Maple is also a tree that would do well, and form a fine contrast with commoner trees. There is also the pyramidal variety of the common London Plane; and then comes the *Ailanthus glandulosa*, which thrives well in towns. Also the flowering Ash (*Ornus europæa*), and the *Celtis occidentalis*, and the Tulip tree, which last is quite at home in London; and there are many others equally desirable. Secondly, as regards planting trees along the line of the Embankment there is a principle of still greater importance than variety of foliage to be observed: it is the leaving of open spaces at certain distances; so that, ever and anon, glimpses of the noble buildings which we hope to see ranging east and west from Somerset House, may be obtained by the spectator with striking effect.

The accompanying woodcut shows how grandly the aspect of fine architecture meets the eye when the view is flanked by foliage. But with a continuously-planted avenue, such a view can only be obtained at each end; so that when the projected



Thames Embankment, 1871.

completed with such a breadth and grandeur of style as led critics to call it a work worthy of the Pharaohs.

When the mean houses which now show their backs to a spectator on the great roadway and gardens shall have been replaced by a line of stately edifices worthy to continue the noble effect of Somerset House, nothing so grand of its kind will exist in Europe, unless the rumoured project of embanking the Neva should be made to surpass it. The annexed sketch of old riverside buildings, taken just before they were demolished to make room for the great Thames wall, may serve to remind those who have already forgotten them and their likes, that we have now something very much better in their place; and that, in the embellishments of London, we are moving in the right direction, though slowly.

The system of planting adopted on the Embankment is not

straight and uninterrupted row of high-growing trees is completed, it will, as seen from the river, form a far-stretching green wall, entirely concealing from view the long range of grand public buildings which are, at no very remote period, destined to form the finest feature of the Embankment.

The spoiling of our noble Thames Embankment near the Houses of Parliament—that is to say, at its most important point—by allowing it to be narrowed by several private gardens, shut out after our too common exclusive practice by an ugly dead wall, affords a good illustration of the ignoble selfishness that too often characterises us. Nowhere except in Britain would a few wealthy individuals be allowed to spoil what is probably the noblest point of view to be found in any city. There is certainly nothing equal to it in Paris, or in any other city with which we are acquainted. One would, at first

suppose that intelligent and wealthy individuals, who have country seats to retreat to when tired of the town, would use their best efforts to prevent such mean disfiguration of a noble national work, instead of holding out for their "rights." The latter, however, seems to be their only aim. The case is thus alluded to in the *Graphic* :—

"The report of the Commissioners of Woods and Forests throws some light upon the history of the ugly dead wall which has been permitted to disfigure the Thames Embankment for some five hundred yards eastward of Westminster Bridge. This wall, as is well known, cuts off a considerable space of the land reclaimed from the shore of the Thames, which is now laid out as private gardens for the convenience of certain persons residing chiefly in Richmond-terrace and Whitehall. These favoured individuals are lessees under the Crown at rents greatly below the present value of their holdings; but to these advantages it has for some reason been thought proper to add that of enjoying ornamental pleasure-grounds in the heart of London at rents so low, that they can only be regarded as nominal. For example, the Marquis of Westminster has a considerable portion for a term of thirty-four years at a rent of £3. 2s. 6d. per annum; Sir John Ramsden another portion for fifty-one years at £2 a year, and so forth. The entire space thus cut off from the public for one or two generations does not appear to produce £50 a year to the Crown; and it is absurd to suppose that there would have been any difficulty in inducing the metropolitan ratepayers or their representatives to pay a much larger annual sum for the sake of adding this valuable space to the ornamental pleasure-grounds of the metropolis. It is at least certain that these gardens have been let for a consideration infinitely below the real annual value of the land. The excuse, we believe, is that the Crown lessees, being cut off by the Embankment from access to the river, were entitled to some compensating advantages. The lessees, however, have not been deprived by the Embankment of one foot of ground included in their leases; and the privilege of access to the muddy shores of the Thames had long ceased to be a practical advantage. If they were to be compensated for the loss of this, there would certainly have been no injustice in limiting the compensation to a strict estimate of its money value, as is customary when land is taken by railway companies under compulsory powers of purchase. Though it is probably now too late to get rid of the dead wall, it is to be hoped that the dealings of the Commissioners with the Crown lessees will even yet engage the attention of Parliament; but the fact is, that the whole system pursued by the Commissioners in dealing with the Crown rights urgently demands inquiry."

We trust it is not "too late to get rid of the dead wall," and that this scandalous example of injury done to a magnificent public work for the gratification of a few may be one of the last of its kind.

THE FLOWER GARDEN.

DUTCH COTTAGE-GARDENS.

BY NOEL HUMPHREYS.

THERE are many striking peculiarities about the dwellings of the working classes in Holland which are well worthy of the attention of travellers, who generally, however, make very short work of their tour through that interesting little country; hurrying from the picture galleries of Amsterdam to those of the Hague and Haarlem, to the great canals of commercial Rotterdam, and leaving themselves no time to spare for the study of the home life of the poorer orders, which presents many points of great interest.

It is, for instance, a *sine quâ non* with the working Hollander that his dwelling, however small, shall be entirely distinct and separate from any other. It thus happens that where space is valuable the width of the entire house very often does not much exceed that of the front door, so that a bed of ordinary size nearly fills a room, only leaving a narrow passage to a back apartment of similar dimensions, and sometimes to a second and third, in like manner. Even in the so-called blocks of buildings which have been recently erected in and near the large towns, the separate principle is strictly observed; each little slice of a house being surrounded with a garden, without which a Dutch artisan, however humble, could not exist; for the love of flowers in Holland is not confined to the great bulb-growers, whose hyacinth and tulip fields are reckoned by the acre, but it also pervades the general population. It is

true that there no longer occur epidemic manias for mere varieties—such as black tulips or yellow hyacinths—but there exists a steady, general love of flowers, for their beauty rather than their mere variety, which is a much more satisfactory state of things.

The formation of the soil of the Dutch Netherlands is peculiarly favourably to bulbous plants, especially many of those from the Cape, which are so difficult of cultivation with us. The universal substratum of sand, in many places at less than a foot below the surface, affords the unusual combination of thorough drainage with continuous moisture in a way that is most beneficial to the class of plants referred to, which appear absolutely to require a deep bed of sand immediately beneath the rich surface soil in which they are planted. Sand, indeed, seems the one great necessity of many kinds of bulbs. This was curiously exemplified in the well-known story of the Guernsey Lily, so called, it is said, on account of its European *début* on the sandy shores of that island. A vessel having a large number of those bulbs on board (the first importation) was wrecked on that dangerous coast, and the following spring the sands of that side of the island were studded far and wide with the rosy heads of flower of that elegant liliaceous plant, which will not flower with anything like such luxuriance under the most careful greenhouse treatment as it did that spring on the bare sea sands of Guernsey.

The garden soil of Holland, is an entirely artificial creation, possessing the vital sand element, which, as we have said, is similarly favourable to many, if not most, classes of bulbous plants; and I have seen the *Ixia*, the *Sparaxis*, and many of the rarer Cape bulbs expanding their dazzling flowers in a Dutch cottage-garden, while they reject all the blandishments and caresses of an English gardener, refusing to display their beauties in anything more than such a shabby fashion as renders them hardly worthy of culture in our soil and climate. A thoughtful consideration of the natural advantages of these Dutch cottage-gardens may, however, lead us eventually in the gardens of our English homes to the more successful culture of those dazzling Cape flowers, which (as Schiller finely said of flowers in general) may more especially than any others be called "the stars of earth."

THE WILD-GARDEN.

COPSES, HEDGEROWS, LOW THICKETS, ETC.

OUR wild flowers take possession of the stiff, formal, and shorn hedges that seam the land, often draping them with such inimitable grace and beauty that half the conservatories in the country, with their collections of small red pots, and small mean plants are horrors, compared with a few yards' length of their blossomy verdure. The Wild Roses, and the Purple Vetch, and the Honeysuckle, and the Virgin's Bower, clamber above smaller, but not less pretty, wildlings, and throw a veil of graceful life over the mutilated shrubs, reminding us of the plant-life in the nest-like thickets of dwarf shrubs that one often meets on the high Alpine meadows, where you may gather flowers after they have been all browsed down on the turf—small islets of little trees in a sea of grass. Next to the most beautiful Alpine vegetation, there is, perhaps, in the world of plant-life, nothing more lovely than the delicate tracery of low-climbing things wedded to the bushes in all northern and temperate regions of the earth. Perishing like the grass, they are happy and safe in the earth's warm bosom in winter; in spring they peep up to look at the sun as the buds swell in May, and soon after, finding the bushes once more enjoyable, rush over them as joyously as children from school to a meadow of cowslips. Over bush, over brake; on mountain or lowland copse, holding on with delicate but unyielding grasp, they toss their blossoms in the breeze, and engrave themselves for ever on the mind as the central type of graceful loveliness. Then, in addition to climbing Pea-flowers, *Convolvulus*, &c., of which the stems perish in winter, we have the great tribes of wild vines, noble in foliage and often in fruit, the Virginian-creeper, looking even happier when garlanding the homes of men than in its native woods, and blushing as deeply before its winter death on the British cottage or copse, as on the rocks of the Hudson or the cliff-walls of Niagara; the numerous Honeysuckles, from coral red to pale yellow, all beautiful; and the *Clematidæ*, rich, varied, and lovely beyond description, from those of which each petal reminds one of the wing of some huge tropical butterfly, to those with small flowers borne in showers like drops from a fountain jet, and often sweet as Hawthorn blossoms, with a host of others too numerous by far to name.

This type of vegetation may be trained and tortured into ten thousand forms in gardens, but never will its full beauty be seen until we entrust it to the garlanding of shrub, and copse, or hedgerow, fringe of dwarf plantation, knots of rough shrubs, &c. All to be done is to put in a few tufts of any desired kind, and leave them alone, adapting the kind to the position. The large, flesh-coloured Bindweed, for example, would be best in rough places, out of the pale of the pleasure-ground or garden, so that its roots could not spread where they would be unwelcome; while a delicate Clematis might be placed beneath the choicest specimen Conifer, and allowed to paint its rich green with fair flowers. The common Everlasting Pea, trailing over a graceful young Deodar about ten feet high, was one of the most chaste combinations I have ever seen. In nature, we frequently see something of this kind, as for example, a Honeysuckle clambering up through an old Hawthorn tree, and then struggling with it as to which should produce the greatest profusion of blossoms—but in gardens not yet. Stupidity will say that this cannot be done in gardens; but it can be done infinitely better in gardens than it has ever been done by nature; because, for gardens we can select plants from a hundred climes, and effect contrasts, in which nature is poor in any one place in consequence of the comparatively few plants that naturally inhabit one spot of ground. "This is an art which does mend nature—changes it rather: but the art is nature," is peculiarly applicable here in gardening matters. People seldom remember the art itself is nature; and foolish old laws laid down by dim-seeing old landscape-gardeners are yet fertile in perpetuating the notion that a garden is a work of art, and therefore we must not attempt in it to "imitate wild nature."

Old stumps and old trees, &c., may of course be embellished in the most charming way with this type of vegetation. Sometimes, where there are large and bare slopes, a capital effect may be obtained by planting the stouter climbers, such as the Vines, Mountain Clematis, stronger Honeysuckles, &c., in groups or masses on the grass, away from shrubs or low trees; while when the banks are precipitous, or the cliffs crop forth, superb effects may be gained by allowing a curtain of climbers to fall over them.

Endless charming combinations may be made in this way in many spots near most country houses. The following is a list of suitable plants for the purpose:—

Ampelopsis	Cynanchum acutum	Lycium
bipinnata	monspeliacum	europaeum
cordata	Dioscorea Batatas and	Medicago
hederaea	any other hardy	falcata
tricuspidata	species	Melospirum
Apios	Habroslava	canadense
tuberosa	tamoides	virginicum
Aristolochia	Hedera (all the finer	Passiflora
sipho	varieties of Ivy,	carolina
tormentosa	both green and var-	Periploca
Asparagus	iegated)	gracilis
Broussoneti	Jasminum	Polygonum
Boussingaultia	rachiflorum	compersum
basiloides	officinale	Roses in great variety
Calystegia	revolutum	Rubus
dahurica	Lathyrus	hirsutus
pubescens	graminiflorus	Smilax, hardy kinds
Cissus	latifolius	Tamus
orientalis	rotundifolius	communis
Clematis	tuberosus and	Tropaeolum
Flammula	others	pentaphyllum
montana	Lonicera	spectabile
Viticella, and other	Caprifolium	Vinea
varieties	confusa	Vitis, various
Convulvulus, in var.	flava	Wistaria
Coronilla varia	japonica	frutescens
Cucurbita perennis	Periclymenum	sinensis.

CONDUCTOR.

TREES IN TUBS FOR TERRACES.

WE are no admirers of trees in tubs on terraces. They are always somewhat expensive, and rarely ornamental objects. It is considered correct taste to use them in geometrically laid-out terrace gardens. We deny that it is good taste, and could point to many terraces where their absence is no blemish. A row of trees in tubs is no more necessary to the effect of the best type of terrace or geometrical gardens than a row of balloons; but, as the taste for employing them exists, we here simply attempt to guide it in the right direction. The culture of orange, bay, and other trees in tubs is a Continental custom, and much more desirable in parts of Northern Europe, where few evergreens can be grown in the open air, than in Britain. It is, as a rule, very much better performed on the Continent than and those who adopt it should know the conditions essential to here; success, as proved by the long practice of Continental cultivators. Although we now often see handsome specimens of hardy evergreens grown in tubs in this country, tender subjects alone were kept thus when the system originated. It was found that the oleander and orange trees could be grown very well by

storing them in any sort of half-lighted, frost-proof structure in winter, and placing them in the open air in summer; and hence these plants became very popular for that purpose. The most important thing to bear in mind as regards their culture is that all the growth of the shoots should be made in the open air, and this is annually proved by the best Continental growers. If that point is well observed, the culture of such subjects is simple enough. Let us next select suitable kinds for British gardens.

The first place must certainly be given to the Laurustinus, because, while furnishing a good effect as a mere evergreen, it also blossoms sweetly in winter, when flowers are scarce. By using this as a terrace plant, and housing it during the winter, we add a valuable ornament to the conservatory or even the house, for it may well be kept in-doors for a short time while in the full flush of bloom in winter. In places where the plant is sometimes killed out of doors, or does but poorly, it would be all the better and more attractive grown in this way; and as it flowers in our dull, wet winter, the bloom on the plants under glass opens full and well. Indeed, it is well worth growing as a winter-flowering conservatory plant in districts where it does not bloom well out of doors. This, like most subjects grown in tubs, is usually trained as a standard, with a compact, roundish head. The shrub is trained in this form to a great extent by the Belgians. In summer the plants should of course be allowed to stand out of doors, and receive thorough waterings as they require them, letting them remain in the open air till late in the autumn, when they may be taken in-doors to a cool house of some kind, be it orchard-house or conservatory, provided that they are placed in some position where their beauty may be seen when in full perfection. When out of flower they ought to be trimmed in, and then kept in a cool house till all danger of severe frost is gone, when they may be placed in the open air again. It is of importance that their spring growth does not start till they are placed in the open air; therefore we think an out-house of some kind would not, after all, be the worst place for them for a few weeks before they can be turned out. As to soil, slightly enriched turfy loam will do capitally.

The bay-tree (*Laurus nobilis*) stands next in point of merit for this purpose. Although its flower is not attractive, its associations and fragrance, and the fact that it is in some districts killed to the ground by a severe frost, should make us prefer it. We know places where a bit of bay barely survives out of doors, and many others in which it has more than the freshness and vigour, if not the height, of the immense old specimens in Count Borromeo's garden on Lake Maggiore; and in the former it might be welcome grown as a terrace plant. There is certainly little to plead in favour of growing evergreens in tubs in places where they grow well, and are not frequently killed, in the open air.

The Portugal laurel is frequently grown by us on terraces; and from its handsome foliage merits some attention, though we think not so much as the foregoing. This, too, occasionally gets cut down to the ground, even in mild districts; and plants in tubs should not be left exposed in very severe weather. We have seen this and other trees trained as standards and planted on a terrace, a tub being placed round the base of each, so as to make us believe that the specimens were grown in them. As it is to the effect of the head, and not of the tub, we ought to look, this is merely waste of ingenuity.

Wherever the climate permits of it, it is much wiser to grow trees in tubs that require a warmer climate than ours, rather than those that are common in our shrubberies. We believe that in many of the southern parts of this country the orange may be grown well in the open air in summer. Those who doubt that can decide the question by seeing, on some summer or early autumn day, the condition of the orange trees at Holland House, Kensington, some of which are as healthy as the best usually seen on the Continent, although they have to endure London smog, as well as atmospheric conditions by no means so favourable as occur in many parts of the south and west of England.

As a flowering-tree for tubs there is nothing to equal the oleander, which is rarely or never seen in good condition in England. On the Continent it is frequently kept in cellars and dark places, and put out in summer to flower profusely. When the specimens are old and well-grown, like those in the gardens of the Luxembourg at Paris, they are very fine. The oleander has several real claims to be grown thus. It is an exotic of an uncommon and distinct type; unlike the orange, it flowers well in the open air, and it is of the most vigorous constitution. Both it and the orange should, when placed out of doors, have as sunny and well-sheltered a position as possible, and their culture would hardly be worth attempting further north than the midlands.

Pittosporum Tobira, a deliciously sweet greenhouse evergreen shrub, lives in any dark or half-lighted place during the winter, and flowers freely in summer. It is not of growth free enough to form a terrace tree, but it deserves to be abundantly grown, and, when large, will do on terraces, in pots or tubs. Among the various other

plants that we have seen tried in this way, those that did best were *Justicia Adhatoda*, *Jasminum azoricum*, *Olea angustifolia*, and *Edwardsia grandiflora*. These were all fine, and the Madeira jasmine very sweet and graceful. These, like the preceding, may be kept perfectly well in winter, sheltered by any shedlike structure, secure from frost. Those, however, having means of advancing them to the specimen stage in greenhouses would do well to take advantage of it.

MELIANTHUS MAJOR.

This plant requires somewhat peculiar treatment to fully show its singular and beautiful grace of foliage and habit. In a greenhouse or conservatory, where it grows freely, it usually grows too loosely, running up to the glass if planted out; and, whether planted out or not, being usually in an unclean state. The leaves, too, are flimsy when the plant is grown in-doors; in the open air they are quite firm, and withstand storms and rains well. The right course with the plant is to treat it as a hardy herbaceous one, planting it in a warm, sheltered, and sunny nook in the pleasure-ground or flower-garden, in deep, sandy, well-drained loam. It will be cut down by the winter frost, but in early summer will shoot up strongly again, and



Melianthus major (after Vilmorin).

prove throughout the summer and autumn one of the most attractive objects in the garden. Afterwards no culture or care is required, except, perhaps, in cold places, half a foot of leaf mould or ashes over the roots in winter. We have, however, known it to withstand very severe frosts about London without suffering. The plant is not difficult to increase from seed, and well-established old tufts will bear careful division. In the open air we have not noticed it flower in this country; planted out in the conservatory it flowers freely enough. The bloom, however, is not ornamental. It is when grown as a spreading bush, from 2½ to 4 feet high, that its highest effect is shown. For the above charming and life-like portrait of a specimen well-grown in the open air we are indebted to MM. Vilmorin & Co., of Paris.

THE SEA HOLLIES (ERYNGIUM).

The different species of this genus are by no means uninteresting in a botanical point of view; but that they have a claim far beyond their botanical interest, every one who has seen any of them cultivated must admit. They possess many points that are essential qualifications of useful border plants. They are of a good perennial character, and there is no tendency among them to ramble in the promiscuous manner that some of even our best border plants do. They are all but independent of stakes, having, with few exceptions, sturdy stems capable of carrying their own weight, unless in very exposed situations. Their duration extends over months; the rich, metallic glow which many species present lasting for many weeks; and, as a final qualification, I may add that their beauty does not cease with life, but after due maceration and all the nice little manipulations with which those who skeletonize foliage are well conversant, the leaves—but more especially the involucre bracts—form a most interesting item

in those groups, to which the very appropriate title is usually applied of, "beautiful in death."

To begin at home, where those sort of silicified billows, in the form of great sand mounds, abound on our coasts the true Sea Holly (*Eryngium maritimum*) is to be met with, deep rooting, so deep that I have never yet succeeded in lifting the entire root, it mattered not how deep I might delve; nor is this to be wondered at, when we remember that the sand waves are accumulative and accumulating, and that the plant has, year by year, to push upwards, in order to keep its head above the fluctuating level. Dwarf in habit, rarely rising above twelve or fifteen inches, its peculiarly bluish-white foliage and stems form a nice contrast to the more lively-coloured vegetation with which it is surrounded. Although a denizen of our sea coasts, it is quite amenable to cultivation in any ordinary garden soil. The first difficulty overcome, namely, that of removal with anything like a good root, it soon establishes itself; and I may here append a remark that is applicable to every species of *Eryngium*—that they all possess deep, strong roots, devoid of many fibres, and are, hence, very impatient of removal, even where this is done with the greatest care. Such being the case, seeds or seedling plants should be secured, and, when fairly established in pots, planted in their proper positions where they are to remain in the herbaceous border.

Besides the true Sea Holly we have another species, *Eryngium campestre*, or field Eryngo, which may, perhaps, be still met with in one or two of its few native habitats. Similar to the former in height, it differs chiefly in its more divided leaves; and, although not to be despised as a border plant, it does not possess such well-marked distinctive characteristics as the former.

Having thus introduced to your notice our native species, I shall now offer a few descriptive remarks on those that are not indigenous, dividing the genus into three groups: the first containing species with undivided, heart-shaped, or slightly lobed leaves; the second, those with divided leaves; and the third, those with long ciliated foliage.

And first, in regard to merit in the whole family, unquestionably stands the *Eryngium alpinum*, a native of the European Alps, but not, as may be implied from its name, of a remarkably dwarf habit. Sometimes it raises its inflorescence to a height of even three feet. Its involucre leaves are of an intense blue colour, very much divided, and also of a larger size than those in any other species; herein consists its true specific character, as well as its intrinsic beauty. Another point by which it may be recognised, even in a young state, is by its long-stalked, heart-shaped leaves. I mention this fact, as there is often considerable difficulty in getting the true species. In this country it rarely matures perfect seed—hence it is not likely to become a common plant; old-established tufts, however, will bear careful division. To get good specimens they must remain some years in the same place. There is not in the whole range of herbaceous plants a more beautiful object than a finely developed plant of *Eryngium alpinum*, when the stems and floral leaves, after the summer sun, get "deeply, darkly, beautifully blue," till they at last, in August, look as if they had been dipped in blue ink.

Botanic Gardens, Hull.

J. C. NIVEN.

(To be continued.)

Rockwork at Chatsworth.—The stupendous rockwork at Chatsworth, again, always appeared to me a most monstrous waste of good honest material and labour. It is very costly and expensive; but one of the least of nature's cliffs would overshadow it utterly. Its artificiality cannot cheat one who knows what rocks are in the fissures of the hills; and he looks upon it, at best, with the same sort of foolish wonderment with which he looks upon the wooden puppets in the Dutch gardens at Broek.—D. G. MITCHELL.

A Russian Winter Garden and Palace of Ice.—Nowhere could the charms of a winter garden be more fully appreciated than in the midst of the snows which enwrap the landscapes of Russia during several months of the year, especially in the neighbourhood of St. Petersburg. An attempt was made in the winter of 1740 to create, with a rough kind of imperial magnificence, a winter-garden on the banks of the frozen Neva. It was determined that the chief feature of the garden should be a palace of ice; and the plan was carried into effect, as such matters are in Russia, by sheer contempt for the word "impossible." The ice palace was built with huge blocks of ice sawn square, and trimmed just after the fashion of free-stone. Of these huge quadrates of ice the walls of the palace were entirely constructed. The building contained several spacious corridors artificially warmed, which were filled with flowering plants, constantly renewed, and also many apartments richly furnished with chairs and tables, and even fire-places, the bedrooms being very luxuriously fitted up; but whether for show or use is not recorded. Neither is it told whether the Empress Anne, in accordance with whose august whim the icy halls were constructed, ever honoured one of those sleeping-apartments by passing a night within it. It is stated, however, that she was much delighted with the appearance of the structure, both externally and internally, as also with the appearance of the hardy northern pines and other frost-defying evergreens which for a time were made to afford the strong contrast of their rich dark green to the lawns of snow, out of which they seemed to grow. The promenade became, as a matter of course, the rage—especially by night, when the palace was illuminated, which is said to have produced a most charming and fairy-like effect; a report which may be well believed, as the semi-transparent walls themselves must have emitted from the lights within a soft moon-like brightness, which, blending with the light of the external festoons, and lines and stars of coloured lamps, necessarily produced a softly dazzling effect, which, among the winter snows of Russia, must have gratified the devisers of the display.—H. N. H.

AGAVE TELEGRAPHICA.

TO THE EDITOR OF "THE GARDEN."

Cauntton Manor, November 27, 1871.

SIR,—In the spring of this year my mind was perturbed by a proposition, emanating from the postal powers, to erect a series of telegraphic poles upon the road which passes at no great distance in front of my house; and while my anxiety was at its height I received from a benevolent friend, who, as a lieutenant in the Royal Engineers, was engaged in supervising the work, the appended attempt to alleviate my sorrow. My reply was that I thought this beautiful plant would succeed best in my soil if it were "pegged down and layered," and I am thankful to say that it has been so treated.—Your obedient servant,

S. REYNOLDS HOLE.

"Cambridge, April 3, 1871.

"MY DEAR SIR,—Knowing you to be pre-eminent as a horticulturist, I beg to bring to your notice a magnificent species of the Aloe tribe (*Agave telegraphica*).

"This highly-ornamental plant flourishes best by the side of roads and on railway embankments, and I can strongly recommend it to your notice, feeling that it would succeed admirably at the edge of the high-road at the foot of your lawn, where it would be seen to great advantage from your drawing-room windows.



"A philanthropic Government is actively employed in propagating this rare and deservedly-admired plant, and should you desire to have a few specimens, I am empowered to supply you with them at the expense of the country, and to plant them in suitable situations.

"The *Agave telegraphica* is a native of Great Britain, but has been successfully acclimatized in all parts of the world. It succeeds equally in all soils, and remains in flower all the year round.

"We have hitherto been unsuccessful in our endeavours to raise it from seed, but a large stock is now at the Government nursery-gardens, and the plants sustain no injury from being moved at their full growth.—Believe me, yours truly,

"HERBERT JEVILL, L.R.E."

Androsace lanuginosa.—This beautiful and free-growing member of a very diminutive and slow-growing family, grows as freely as the most vigorous verbenas in the College Botanic Gardens at Dublin. Doubtless, this to some extent is due to the climate. It is a plant very easily managed; all it wants is a sunny warm aspect

in sandy soil. It grows freely from cuttings and seed, which ripen in the autumn; in a suitable situation it lasts many years in the open air. When once established, it is well to peg down the trailing shoots, which root freely and soon make a nice mass; indeed, without any care, I have had plenty of young plants from rooted pieces. Cuttings should be grown without artificial heat, just under a hand-glass, with air at the top, or slightly raised at the east side. I would strongly recommend this charming plant to all those living in mild and moist districts and near the sea, as we have nothing in our gardens more beautiful for the margins of borders or for the rock-garden.—JOHN BAIN, *Dublin*.

GARDEN STRUCTURES.

IRON versus WOOD.

THAT the days of the use of wood for hothouse purposes are numbered must be apparent to everybody, though there are in some parts of the country examples of old hothouses which appear almost indestructible, so good was the timber used, with the present style of building wooden-structures, and with the best management as to painting, &c., from twenty to thirty years appear to be the limit of their endurance without a thorough repairing. Houses in nurseries afford the best examples of the evil, and if any person whose memory will carry him back thirty years will call to mind houses built about that time he will find many of them irreparably decayed and all on the "road to ruin."

Six years ago an amateur friend put up a large orchard-house, contracting for the woodwork and finding the glass himself. The wood was yellow deal of sufficient scantling; but though the house has received six coats of paint in the interval, the feet of some of the rafters and of most of the sash-bars have rotted off, and the putty has crumbled away so that the roof "rains in like a sieve." To put this house into working order next spring will cost at least £20, as every square of glass must be taken out, not a difficult matter by the way, and both rafters and sash-bars will have to be spliced. Bad as much of the timber now used really is, the putty and paint, if possible, are worse. Upon old houses you may find putty as hard as cast-iron; but that was the produce of manual labour, when whiting, red-lead, and linseed-oil were the ingredients used, well incorporated by a mallet and hand kneading. Now the refinement of invention has given us mills to grind putty in; and instead of the antiquated notion of wasting oil and red-lead, the whiting is ground principally in water, and with the most inferior oil, and consequently never becomes hard.

A short time back we had occasion to cover up during severe frost some recently glazed cold pits, using wheat straw for the purpose, with tarpauling over it. The straw contained a little corn, that attracted a shoal of mice, but when it was exhausted they attacked the putty, so that it was stripped off for yards together. We complained to the builder, one of the most respectable in the trade, but he gravely informed us that "putty ought not to get hard," and, sure enough, it does not. We have unfortunately, in these adulterating days "shoddy" in everything, and that which we have just described is the shoddy system of horticultural building. On the one hand, in our mind's eye, we look to houses not built ten years unmistakably decaying; on the other we can go back to houses built of iron and copper half a century ago, which are still good for another half century to come. Look at the iron houses at Sion House, two or three in the gardens of the Royal Horticultural Society at Chiswick, those at the Royal gardens at Frogmore, and though they have done good service, they will stand good for many years to come. But there is a good deal of what may be called "shoddy" even in some of the metallic houses; as those made of zinc are scarcely better than wood, while rolled or pressed sheet-iron is infinitely worse than either, and a combination of iron and wood inferior to both separately. But what matters that? such structures will be preferred by many, because they are cheaper than really superior buildings, which though but little dearer in the first cost would stand for centuries.

Now, what are the objections to iron for hothouse work? First, its expansible and contractive properties under varying atmospheric changes; and, secondly, its superior conducting properties for either heat or cold. The expansion, so far as the fracture of horticultural buildings is concerned, is more imaginary than real; for though on a scorching hot day we have sometimes found sashes and doors difficult to move while they would be equally loose on a cold, frosty night—we have never, in a fifty years' experience, seen a fracture in the iron work, either from expansion or contraction. The action of these upon the glass is, however, a different matter. If the glass is glazed at all tightly, and the putty used is good, on a frosty night the iron contracts, and the tight square is crushed into pieces; while,

on the contrary, on a hot day, if the putty is what it ought to be, the tight square is rent in twain by the expansion of the iron. To avoid these causes of breakage you glaze loosely, the iron expands, and the glass falls out; or, possibly, the putty cracks, the water follows, and "drip" is inevitable. We speak in these cases from actual experience, which leaves us to regard putty and drip as inseparable companions. The expansive putty, brought out a year or two back, and with which the grand station of the Midland Railway Company was glazed, is, we fear, little better than that in general use; for, on several occasions recently we have seen upon the platform unmistakable evidence of drip, though it was not raining at the time, while the roof of the St. Pancras Station is a specimen of rents and patches.

Felt and india-rubber have both been tried as a remedy for some years past, but drip, drip, drip, constitutes the complaints against them; while the non-conducting influence of the materials used is nil. Passing, then, to the conducting properties of iron, that cannot be denied; and the remedy for it appears to be to use no more iron than is absolutely necessary, and to expose as little of that to the direct action of the atmosphere as possible.

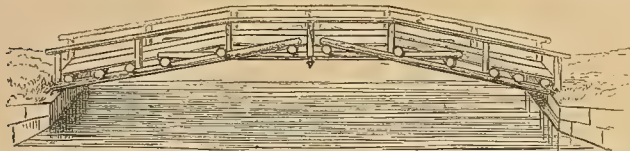
In the house which was exhibited by the Imperishable Hothouse Company at the Nottingham show of the Royal Horticultural Society, this end was attained with, perhaps, greater success than that which attends most other systems of construction; for the inventor in this case, not only limits the iron used to the necessary quantity without waste, but, as far as possible, covers that which he does use with glass, by which its expansive, as well as conducting properties, are, in some measure, nullified. In this new system of glazing, in short, the glass forms the outer coat of the house, like the slates of a roof; a plan having many good points.

Bromley, Kent.

P. G.

A RUSTIC BRIDGE WITHOUT NAILS.

At the International Horticultural Exhibition, St. Petersburg, in 1869, I saw an ingenious method of making a rustic bridge. In addition to its rustic and truly picturesque appearance, it possesses the singularity of being put together without a single nail, bolt, or mortice, the whole structure being supported by the beams being made to cross each other in a peculiar manner. [It is needless to ex-



plain this arrangement, as a glance at the accompanying illustration will be sufficient to show how it is effected. I strongly recommend country gentlemen to copy this simple mode of bridge-making, and I can testify to its fitness for garden scenery.

E. ANDRE, in "*L'illustration Horticole*."

THE ARBORETUM.

THE WILLOW AS A TIMBER TREE.

THE old adage, "give a dog a bad name and hang him," never had a more apposite application than in the case of the willow. Gilpin (once looked upon as an authority on forest trees) asserted that the willow did not harmonize well with British timber-trees; and succeeding writers have reiterated the statement without examining its accuracy. There is a saying that a willow-tree would buy a horse before an ash tree would buy a saddle, an assertion fully borne out in this case by experience. The common pollard willow, dotted along the margins of streams is such a well-known and ungraceful-looking tree that somewhat unconsciously we have got a bad opinion of willows as objects in a landscape—but mutilate our stately oaks, ashes, or beeches in the same way, and where would their beauty be? The willow has never received fair treatment as a forest tree, simply because it will bear more ill-usage than any other tree. Few people have ever seen a willow plantation in its prime, say after having been forty years planted and properly cared for; those who have seen such a plantation will not readily forget its beauty, any more than the owner can forget its profit. The willow, when in perfection, is "a thing of beauty"; and those who have possessed well-grown specimens

of it have seldom cared to have them cut down until decay had set in, and the willow soon decays after reaching maturity. To speak in trading phraseology, it is a tree which brings a quick return for invested capital.

Low, in his survey of the county of Nottingham, states that so very valuable are willows as plantation trees that at eight years' growth they yield in poles a net profit of £214 per acre, and in two years more he states that they would probably have yielded £300 per acre. In page 1520 of Loudon's "*Arboretum Britannicum*," it is stated that a cutting planted by Mr. Brown, of Hetherset, Norfolk, became in ten years a tree of thirty-five feet in height and five feet in girth; and in the same work a tree is mentioned at Audley End, Essex, of twenty years' growth, which was fifty-three feet high and seven feet six inches in girth. I, myself, saw six trees felled in 1869, near Southwell, Notts, which, after thirty-eight years' growth, unitedly yielded 232 feet of measurable timber, which sold on the spot for 1s. 2d. per foot; and the six trees did not occupy more than eighteen square yards of land.

To grow willow trees in perfection they must be planted closely, say three feet apart each way, or 4,840 to the acre would not be too close for the first eight or nine years, when they might be thinned out to half that number. The thinnings would find a ready sale for general farm purposes. At the end of sixteen or twenty years they might be reduced to 1,210 trees, or six feet apart each way, which would generally afford ample space for their full development. The time to fell such a plantation must depend very much upon circumstances. No unvarying rule can be laid down, but it is better to cut too early than to allow them to stand too long; for, as before stated, when the willow has reached its best it speedily decays. Its duration may be said to range from thirty to fifty years; but whenever dead branches begin to show themselves there should be no delay in cutting down. In felling willows do not think of leaving a few selected trees in the hope of obtaining larger timber, for after having been so crowded and then suddenly exposed they would almost invariably perish. If heavier timber is desired, plant more openly at the first.

I will now endeavour to arrive at an approximate value of an acre of such timber at its prime, say after having been planted forty years. There is plenty of evidence to show that it is not an uncommon thing for a willow-tree at thirty years of age to yield forty-five feet of measurable timber, or at the rate of $1\frac{1}{2}$ cubic foot per annum. The experiments of the Duke of Bedford and others proved this to be the case. I will not, however, reckon upon such great results, and will further assume that 110 trees out of our 1,210 are worthless, being a much greater margin than would be probable, and that in forty years we only produce one-third of the above, or half a foot instead of a foot and a half per annum. We shall then have 1,100 trees, containing an average of twenty cubic feet each, or 22,000 feet, worth, at the lowest computation, 1s. per foot, or £1,100, the produce of an acre of such wood in forty years, leaving the two thinnings to cover the cost of labour, which would be more than sufficient for that purpose. This is no fanciful calculation, but one fully borne out by the experiments of men whose words cannot be doubted. It cannot, however, be too often repeated that the willow will not arrive at perfection in swampy, undrained land. Willows grow freely on the slopes or tops of exposed hills; indeed, there are few situations in which they will not grow, but in no place so badly as in water-logged land. For timber trees the *Salix fragilis*, or some of its kindred varieties, of which there are not fewer than twenty or thirty under cultivation, should only be employed, some of the lately introduced varieties being not only vigorous growers but extremely beautiful. It must also be borne in mind that all willows grow more vigorously from cuttings than from rooted plants; and, therefore, rooted plants only should be employed when immediate effect is desired.

It may be asked to what use is willow-timber put when grown, and where would a market be found for it? There is no wood in greater demand than sound willow; it is light, smooth, soft, tough, will take a good polish, and does not easily burn. It will bear more pounding and hard knocks without splinter or injury than any known wood, and hence it is used for cricket-bats, and, whenever it can be obtained, for the floats of paddle steamers, "strouds" of water-wheels, break-

blocks for luggage and coal trucks, the sides and bottoms of carts and barrows, where wear and tear are greatest. To the wood-turner it is almost invaluable, and were it grown as timber, and obtainable, it would be used for very many purposes to which foreign timber is now applied, and that, too, with considerable advantage both to producer and consumer.

WITBY.

CULTURE OF FOREST TREES.

A FINE and well-developed forest tree, be it oak or elm, beech or chestnut, is a possession often thought beyond price by its fortunate owner; yet who thinks of creating such a specimen by means of culture commonly applied to things of more ephemeral interest? We devote our utmost skill to the management of fruit trees, but we plant our forest trees without bestowing other labour or expense than that involved in making a hole in which the young tree is thrust; and if the soil is free from stagnant water, and possesses the mineral constituents of fertility, the tree thrives, and in due season becomes an object which we may admire for the grandeur of its proportions, or utilise for many economical purposes; but if the land be poor, or, as is often the case, already exhausted by the growth of timber upon it, the tree makes slow growth, and in its maturity only exhibits a half-developed, decrepid specimen, but little satisfactory to its owner and an object of small commercial value. Exceptionally fine timber is thus very much the result of a chosen combination of suitable materials, or elements, in the soil in which the trees have been placed; but the composition surely of such colossal oaks as we find, for example, in Lord Bagot's park in Staffordshire, proves that it is seldom that the mineral constituents of a soil are so happily combined, and so far disintegrated and decomposed, as to be available for the support of trees for the centuries during which they build up their massive fabrics by a wonderful process of elaboration, largely sustained by the great inorganic storehouse beneath them. It will be readily seen that the practice I wish to inculcate has necessarily a limited application. Where planting is pursued extensively, however advantageous the employment of any inorganic elements deficient in the land on which trees are to be planted might be, the expense attending the preparation of the land and their application would be incommensurate with the possible gain in timber; but when fine trees are wanted to adorn a park or to embellish the lawn of a mansion, then I would certainly advise that adequate preparation should be made. As a general rule the employment of rich organic manures is undesirable, luxuriance of growth is induced, a mere dressing of humus is soon exhausted, and ultimately trees suffer for a few years from the loss of that pabulum on which they first fed and depended. The noble specimens of coniferous trees at Dropmore are examples of the good results that proceed from a judicious preparation of compost for forest trees. The Panshanger Oak is another instance, although the preparation of the soil was rather accidental than designed. We find in different parts of the country grand trees that have attained an altitude above their compeers, a bulk in massive timber surpassing the dimensions of ordinary trees, whose branches, flung out far and wide, are themselves equal to the attenuated trees in a thick growing wood. The Beggar's Oak in Lord Bagot's park is a notable instance of majestic grandeur in a tree. The great beech at Buckhurst Park, Kent, though beyond its prime is still a noble tree.

Such trees are not only objects in which their owners feel a just pride, but they are regarded throughout a wide district as conferring a distinction on it, and are visited and admired by thousands of people great and small.

Belvoir.

W. INGRAM.

AMONG THE BIG TREES IN CALIFORNIA.

The passage of the great American desert which is crossed on the way from New York to San Francisco is, perhaps, the best preparation one could have for the startling verdure and giant tree-life of the Sierras. Dust, dreariness, alkali—the earth looking as if sprinkled with salt; here and there a few tufts of brown grass in favoured places; but generally nothing better than starved wormwood, that seems afraid to put forth

more than a few small, grey leaves, represents the vegetable kingdom in the plains of the desert region. Where the arid hills—worn with horizontal lines by the waves of long-dried seas—are visible, a few thin tufts of alders and poplars mark their hollows; while willows fringe the streams of undrinkable water which course through the valleys. A better idea of the country can scarcely be had than by imagining an ash-pit several hundred miles across, in which a few light-grey weeds, scarcely distinguishable from the parched earth, had sprung up, regardless of drought.

As the train ascends the Sierra, there are long covered sheds, which guard it from the snow in winter—dark-ribbed tunnels. Dawn broke upon us as we were passing through these; and, looking out, we saw such a change from the Salt Lake scenery as one experiences in passing from a hot dusty road to a cool, green, ferny dell. Dust and alkali, dreariness, harshness of arid rock and hopelessness of barren soil, are seen no more. Near at hand a giant pine rushes up like a huge mast, while in the distance they are grouped in stately armies of tree grenadiers, filling the deep valleys and cresting all the wave-like hills till these are lost in the distant blue.

On the very summit of the Sierra Nevada the vegetation is not luxuriant; there, as elsewhere on high mountain chains, is the frost that burns and the wind that shears. When you see a solitary pine that has been bold enough to plant itself among the boulders and rocks of the high summits, it is usually so contorted that it looks as if inhabited by demons; while here one has succumbed to the enemy, and you see a few blanched branches sticking from a great, dead, barkless base, lapped over the earthless granite. But go a little lower down, and most probably you will find a noble group of *Picea*, startling, from the size and height of the trunk, though looking much tortured about the head by the winds that surge across these summits—the mast-heads of the continent. Snow falls early and falls deep on the Sierras, and the roots of the higher trees are often covered with it to a depth of from six to twenty-five feet. Near the rail, and near frequented places, thick stumps of pines, six to fifteen feet high, may be noticed; these are the trees cut down when the snow is high and thick and firm about the lower part of their stems. But if the nights are bitterly cold, the sun is strong in the blue sky far into the winter months, so that the snow is melted off the tree tops, and the leaves of the pines live, in golden light, long into the winter. All the pines that grow near the summit must resist the most piercing cold.

The golden light of the sky and the blue of its depths, and the purity of the fresh mantle of snow, are not more lovely in their way than the robe of rich yellow lichen with which the stems and branches of the pines are clothed. Imagine a dense coat of golden fur, three inches deep, clothing the bole of a noble tree for a length of one hundred feet, and then running out over all the branches, even to the small dead twigs, and smothering them in deep fringes of gold, and some idea may be formed of the glorious effect of this lichen (*Evernia*). It is the ornament of the mountain trees only; in the valleys and foot hills I did not notice it.

To the flanks of the western slopes of the great chain of the Sierras one must go to see the noblest trees and the richest verdure. There every one of thousands of mountain gorges, and the pleasant and varied passes of every vale that runs with its streams and rivers, and from top to bottom of every one of the innumerable hills, is densely populated with noble pines and glossy evergreens—an ocean of huge land waves, over which the spirit of tree-life has passed, creating giants. The autumn days I spent among these trees were among the happiest man could desire. Every day a glorious sunshine, and the breeze as gentle as if it feared to hurt the long-dead trees standing here and there leafless and, perhaps, barkless, but still pointing as proudly to the zenith as their living brothers. Wander away from the little dusty roads, crossing, perhaps, a few long and straight banks of grass and loose earth—dead monarchs of the wood, now rendered back to the dust from which they once gathered so much beauty and strength—and fancy willingly reminds us of the mast-groves of the *Brobdignags*, quite cut away from little worlds and little people. There is little animal life visible, with the exception of a variety of squirrel, ranging from the size of a

mouse to that of a large ferret, the graceful Californian quail, and occasionally a hare or a skunk. Everywhere vegetation is supreme, and in some parts higher effects are seen than in the case in the most carefully-planted park or pleasure-ground in the most favoured climate. This results not more from the stately pines (not often crowded together as in the eastern States, but with perfect room for development, and often near the crest of a knoll, standing so that each tall tree stands clear against the sky) than from the rich undergrowth of evergreens with larger leaves that form a smaller picturesque forest beneath the tall trees. Grand as are the pines and cedars (*Libocedrus*), one is glad they do not monopolize the woods; the evergreen oaks are glossy, and form such handsome low trees. One with large shining leaves, yellowish beneath, and long acorns sitting in thick cups, covered with a dense and brilliant fringe of fur, was the most beautiful oak I ever saw; but most of the evergreen oaks of California, whether of the plains or hills, are very ornamental trees. One day, in a deep valley darkened by the shade of giant specimens of the *Libocedrus*, I was astonished to see an *Arbutus*, about sixty feet high, and quite a forest tree. This is Menzies' *Arbutus*, commonly known by the old Mexican name of the "madrone"; and a very handsome tree it is, with a cinnamon-red stem and branches. Here and there, too, the Californian laurel (*Oreodaphne*) forms laurel-like bushes, and tends to give a glossy, evergreen character to the vegetation. Shrubs abound, the manzanita (*Arctostaphylos glauca*) and the *Ceanothus* being usually predominant; while beneath these and all over the bare ground are the dried stems of the numerous handsome bulbs and brilliant annual flowers, that make the now dry earth a living carpet of stars and bells of joyous hues.

Those who have not visited the high lands of California can have no idea of the size and majesty of the trees. It is a mistake to suppose the *Sequoia* (*Wellingtonia*) is such a giant among them; several grow nearly or quite as high, and it is very likely that in such a climate all the pines known in gardens would attain extraordinary dimensions. There was a small saw-mill near where I stopped for some days, and several yokes of oxen were always occupied in dragging pine logs to it. The owner never thought of bringing anything smaller to this than a log three or four feet in diameter in its smallest part, and usually left one hundred feet or so of the portion of the tree above this on the ground where it fell, as useless. At a future time we may have the pleasure of speaking of some of the big trees individually, and conclude now by asking what it is that causes the tree-growth to be so noble there. There can be no doubt that the climate is almost the sole cause. Soil has very little to do with it. I have frequently noticed the trees luxuriating where there was not a particle of what we call soil, and, indeed, in places where twenty-five feet or so of the whole surface of the earth had been washed away by the gold-miners. A bright sun for nearly the whole year and a sufficiency of moisture from the Pacific explains the matter. This should draw our attention to the fact that, in ornamental planting, and especially in the planting of coniferous trees, we pay far too much attention to supplying them with rich and deep soil and far too little consideration to the capabilities of the climate in which we have to plant.

CONDUCTOR.

BASE OF THE GRIZZLY GIANT IN THE MARIPOSA GROVE.

It is impossible to contemplate this vast trunk, painted by the unerring pencil of the sun, without falling into a train of reflections on the vastness of its dimensions and the far-stretching period of time during which it has stood in its solemn grandeur; while nations, and even their histories, have passed away. This towering monument of the mightiest kind of vegetation has towered aloft in its native valley on the Sierra Nevada some two thousand years or more; the age-rings of its younger congeners having been counted up to thirteen or fourteen hundred. The Grizzly Giant, therefore, may possibly have been a living entity even before the Great Roman Republic had reached its zenith, and while its rival, Carthage, was still a power to be dreaded; and the energetic Cato, in hope rather than conviction, was thundering in the Senate, "Delenda est Carthago." It was still growing when the great Republic was drifting into the Empire, and when the great first Cæsar fell at

the feet of Pompey's statue; and still growing, "ohne hast, ohne rast," when Augustus donned the imperial purple, and Virgil and Horace poured forth their classic strains to adorn and immortalize his reign. The "big tree" went on increasing in strength and stature while all the line of emperors who succeeded the first came and went—mere short-lived pigmies in comparison to this tree-giant of the Californian woods—ever towering upwards, and growing in magnificence, while Pliny was cataloguing and describing the noblest trees of the Old World, utterly ignorant that they were dwarfed beyond compare by a far-off forest lord, standing in unrivalled grandeur of growth, in an unheard-of ravine in an unheard-of land.

For long centuries afterwards, the Grizzly Giant of the Mariposa Grove still remained a secret to the botanists of the then civilized world, and none were able to divulge the secret of its being, for the best of all reasons—that none knew it. Extraordinary as it may seem, too, it was not till 250 years after the discovery of the great western continent by Columbus, that the secret of its existence was discovered, and that one of the greatest wonders of the vegetable world suddenly became known to European science. Indeed, without the accidental discovery of Californian gold, which filled the land with explorers from all parts of the world, the wonders of her forests, valleys, and mountains, might have remained unrevealed for still another century.

It is pleasant to note in concluding this brief notice of one of the biggest of the "big trees," as they are popularly called in California, that Mr. Watkins, of San Francisco, the successful photographer of the Grizzly Giant and many other noble objects in the wonderland of the Sierra Nevada, has been substantially honoured and immortalized by the bestowal of his name on Mount Watkins, one of the loftiest of the grand masses that overtop the striking scenery of the Yosemite Valley. The circumference of the Grizzly Giant is 90 feet 7 inches near the ground, and 64 feet 3 inches at eleven feet above. The figure in the engraving standing at the base, to define the scale, is Galen Clark, a well-known Californian forester, a man some inches over six feet, and stout in proportion. The Grizzly Giant is one of the noblest of the *Sequoias* (*Wellingtonias*) in a grove of those enormous trees known as the Mariposa Grove, in the Sierra Nevada. H. N. H.

[The illustration on the opposite page has been drawn by Mr. Noel Humphreys from a photograph by Watkins, of San Francisco, and engraved by William Hooper.]

NOTES AND QUESTIONS ON TREES AND SHRUBS.

The New Forest.—Notice has been given by the Commissioners of Woods and Forests of an intended application to Parliament during the coming session for a Bill dealing with the disafforestation of this Forest. The notice is the same in effect as was given about this time last year.

Planting Conifers.—The chief fault in reference to this matter is, that in almost every place Conifers are planted much too close, and at equal distances apart. I would not plant any nearer each other than fifty feet, and they should be the spruce, and others of a pyramidal form. The more robust and spreading kinds I would plant from eighty to three hundred feet apart, excepting in some few instances. My plan would be to group a few of the most handsome growers distinctly by themselves, and scatter a few of the same kinds at certain distances off. Pinetums, in general, as now planted, will in a few years become mere groves, in which individual beauty will be entirely lost. If I could have planted all the trees here as I wished, there would have been no crowding; but I had little or no control in the matter until of late years, when the evil had become too apparent to be concealed; for where too thick, they soon began to spoil each other. There is another thing that particularly requires attention, and that is: whenever a tree begins to form two or more leaders, the contending ones should be removed as soon as perceived—the sooner the better. The magnificent Douglas fir here, now over one hundred feet high with one stem, would have been forked eight feet from the ground if I had not pruned it. When Conifers become forked, their beauty, I consider, is gone. This evil is bad enough in a plantation, but wretched in the case of a single tree.—*PHILIP FROST, Droghda.*

Planting Trees.—Many persons, when recommended to plant, reply: "Of what use is it to plant at my age? I can never hope to see my plants become trees." This sort of answer does not at first sight appear surprising, if we suppose it to come from a person of sixty or seventy years of age; but we often hear it even from men of thirty or forty. In either case such an answer is the result of a vulgar error, founded on mistaken and prejudiced notions. We shall prove its incorrectness by matters of fact. In the year 1830 there were many sorts of trees in the arboretum of Messrs. Loddiges which had been planted exactly ten years, and each of which exceeded thirty feet in height. There are also at the present time (December 1834) many trees in the Society's Garden at Chiswick which have been only ten years planted, and which are between thirty and forty feet in height. Why, then, should any one, even of seventy years of age, assign as a reason for declining planting that he cannot hope to live to see his plants become trees? A tree thirty feet high, practically speaking, will effect all the general purposes for which trees are planted; it will afford shelter and shade, display individual beauty and character, and confer expression on landscape scenery.—*LONDON.*



BASE OF THE GRIZZLY GIANT (33 FEET IN DIAMETER), IN THE MARIPOSA GROVE.

INSECTS, BIRDS, DESTRUCTIVE ANIMALS, &c.

HURTFUL INSECTS.

WE wish it were in our power, by a single short definition, to give our readers the means of distinguishing between hurtful and innocuous insects. But it is not possible. In mammals, we can tell by the teeth whether any species is carnivorous or herbivorous; and at first sight it would appear that we should be able to do the same with insects by the parts of the mouth. If herbivorous, we should set them down as hurtful; while those that are carnivorous must be regarded as our friends, for they principally feed on vegetable-devouring insects. Many difficulties, however, stand in the way of our determining which belong to one class and which to the other. There is first the different stages through which insects pass. Many of our foes, like moths or butterflies, may be very destructive in their grub or caterpillar state, and perfectly harmless in their perfect condition. Then, many of our friends, like the ichneumons, only serve us in the dark. They are parasitic in their larval state, living in and consuming the inside of our grub foes; and in their perfect state having nothing in their structure to show that they can injure other insects. Other classes, such as beetles, locusts, &c., have the same habits and structure both in their larval and perfect states, and these are the only ones which furnish, by their structure, during either period, a guide to their functions during both. Yet, again, supposing we were to restrict ourselves to insects of this kind, and to try to separate the carnivorous from the vegetable feeders, all we could do would be to separate those furnished with means of offence from those not provided with them, that is, the raptorial from the non-raptorial; but the latter are not all vegetable feeders. A large proportion of beetles in that category are carnivorous or omnivorous, only the flesh they eat is not living, but dead; they are, in fact, scavengers, and, as such, our excellent good friends. But it is not easy to separate even the raptorial from the non-raptorial.

The chief characters which any one would select as indicative of a raptorial life, would be keen sight or scent, to enable the insect to detect its prey; speed, to pursue and overtake it; and powerful weapons of offence, to kill and rend it in pieces; in other words, large eyes or antennæ, powerful wings or long legs, and strong mandibles. These are indeed possessed by most hunting insects; but, at first sight at least, not alone by them. The locust, for instance, which is not a hunting insect, has large wings and powerful leaping legs, and its eyes are not small, nor its mandibles weak. That is an instance of a vegetable feeder with a structure which appears to have all the characters of a predacious insect. We say *appears* to have them, for on careful study of the structure of each of its organs we shall find that their adaptation is only apparent and not real; in fact, they are not suited to a predacious life, but only to that which the locust follows. The eye, although actually large, will be found to be only very moderately so when compared with the size of the head, and the facets of which it is composed are extremely minute. Although the eye is perhaps not a fourth of the size of the eye of the rapacious dragon-fly, it has probably as many or even more facets, that is, eye-tubes (an infinite congeries of which go to make up the eye). Now, it is a fair and legitimate inference that the size of the facet regulates the power of vision. The dragon-fly carries, what we may compare to a supply of Rosse's telescopes, while the locust has only a battery of tiny opera-glasses. So the mandibles of the locust, although large, strong, and solid, are short, blunt, and buried in the mouth—admirably adapted for browsing but not for seizing; and the wings, although broad and large, are not long, and scarcely large in comparison with the size of its body. The wings of many raptorial beetles are twice the length of the body, while those of the locust are less than its own length. Everyone knows that it is length of wing and not breadth that gives speed, consequently the flight of the locust is slow, lumbering, and not sustained, the creature constantly dropping down and starting again. And, finally, the legs are like those of the kangaroo, the anterior being small and weak, and the posterior only adapted for great leaps; a mode of progression better

adapted for escape than attack. So will it, on examination, be found with all vegetable-feeding insects which appear to bear weapons of offence. The stag-beetle has great mandibles, but they are not adapted for cutting. Many of the timber-borers have the most wonderful cutting implements. We have seen a leaden gas-pipe which had been actually cut through by the mandibles of a longicorn, in Rio Janiero; but the position of the powerful mandibles is not adapted for attack; they are either directed downwards and towards the breast, or in some other way better suited for the cutting of wood than seizing and tearing a prey.

But supposing us to be capable of intuitively seizing and rightly appreciating the value and purpose of each organ (which seems too much to expect from any un-practised mind or eye), and so classing every insect either as endowed with a predacious organism or not, we are not yet done with our difficulties. Paradoxical exceptions, which could only be likened to the occurrence of herbivorous-carnivora or carnivorous-herbivora, from time to time meet us; and although they are not very frequent, still one can never say *à priori* whether or when they will occur, and of course they throw a shade of uncertainty on all deductions. Thus one of the chief carnivorous tribes of beetles (the Carabidæ), which possess every true character of predacious insects, contains within it a species called *Zabrus gibbus*, which has been found in its larval state to be most destructive to young wheat, climbing up the stalks and eating the heads of the shoots. Then among the small Hymenoptera, some of the Chalcididæ which are so useful as internal parasites in destroying grubs of moths and butterflies, do not attack insects but plants. It is one of these (the *Megastigmus pini*) which has rendered abortive so many of the attempts made by collectors to send home good seed of the *Picea nobilis* from California.

We could give other instances of these anomalies, but we imagine we have said enough to satisfy our readers that there is no royal road by which to learn to distinguish between insect friends and foes. Nothing but experience will do it satisfactorily. Still, something may be affirmed in a general way, subject to the qualifications, doubts, and exceptions we have just indicated. Thus, all moths and butterflies may be regarded as enemies. In the larval state they all feed upon vegetables or matter of use to man. Most of the four-winged flies (Hymenoptera), deducting wasps, hornets, &c., are friends. Dragon-flies are friends. They are the eagles and hawks of the insect world. Locusts, grasshoppers, &c., are enemies. The two-winged flies are a family divided among themselves. Some being, like the ichneumons, parasitic on the grubs of other insects, but probably a still larger proportion, in some way or other, are hostile; some are annoying and injurious to our cattle, and others destructive to our vegetables and our food. Beetles are a mixed host. All the weevils (Curculionidæ), slow-moving beetles, with long snouts, are vegetable feeders. The click beetles and their allies, are wire-worms or are timber-feeders. Those with very long antennæ (long horns as they are commonly called) are timber-borers. Those with little clubs or knobs at the end of their antennæ, are scavengers, and consequently, friends; but these must not be confounded with another tribe of clumsy, lumpy beetles, with a few small leaves placed at right angles to the end of the antennæ. These are the cockchafers, which, it is unnecessary to say, are formidable enemies. The lady-birds are friends, feeding on the green-fly. A group of them, differing in having velvety instead of shining backs, are vegetable feeders, but they occur only in small numbers in this country. The group known as Devil's coach-horses, long black ear-wig-looking things (Staphylinidæ), are friends, either carnivorous or scavengers. And lastly, the black beetles (Carabidæ)—not the black beetles of our kitchens, which are cockroaches, and although scavengers, generally regarded more as foes than friends, but the hard, black, or metallic-looking beetles, which the gardener often finds under stones, or clods, or running about preying upon other insects—these are good friends, to be cherished and protected accordingly.

In our next we shall proceed to details, following no particular order, but presenting, as may be most convenient for us, the life-history of those species from the attacks of which cultivators chiefly suffer.

A. MURRAY.

NOTES AND QUESTIONS ON INSECTS, BIRDS, ETC.

A Good Precaution against the Turnip Fly.—Turnip culture in this district is conducted invariably upon the ridge system; and the only means I use to secure a crop, in spite of the fly, is to supply that pest abundantly with its favourite food—the white turnip. This I manage to do by having a third canister fitted on the centre of my turnip drill, and the seed intended for the fly—very fresh white seed—is deposited upon the ground between the crop-bearing ridges. It is covered up by the fine earth, which is displaced by the coulters, and, being slightly covered, vegetates earlier than the crop. Even when the crop consists of white turnips, it has been only slightly damaged, the extra quantity of food supplied to the insect having rendered its ravages comparatively harmless.—*E de T.*

Picea nobilis destroyed by Larvæ.—Some time since a very fine specimen of *Picea nobilis*, which was then apparently healthy, suddenly died, and on examination I found the trunk from the ground to within six feet of the top, completely honeycombed by the larvæ of the goat-moth. The tree has lately been cut down, and a portion of the trunk about six feet long split up, and from the piece no less than thirty grubs were taken out, so that the whole tree probably contains two hundred at least. None of the other trees have been touched, but the ravages seem to be entirely confined to this one tree.—*S., in Field*.—[This is the first instance we have met with of the goat-moth attacking conifers. As neither it nor the *Picea nobilis* are easily mistaken, we must assume the fact to have been as stated; but it would have been more satisfactory had the writer afforded the means of verifying his knowledge and his accuracy. In default of that we should be glad to know whether any of our readers have ever met with a similar occurrence.]

Insect-Killing Plants.—An Adelaide paper has recommended the planting of Larkspur for attracting and destroying such grasshoppers as partook of it, a circumstance which has induced me to say that for these thirty years past I have read both here and in America that planting Hemp where Cabbages were growing would prevent caterpillars from infesting the crop. I therefore planted a row of Hemp to every four or five rows of Cabbages this year, but owing to the lateness of the season few butterflies made their appearance. My Hemp grew seven feet high; and, at last, butterflies did come, and caterpillars too, more than ever I knew before; but, even where a stalk of the Hemp had fallen right across a Cabbage plant, it in no wise prevented the ravages of the caterpillars, and the result was the destruction of the whole crop. So much for Hemp as an insect-destroyer. I hope the Larkspur may not prove equally ineffective. I have been told that when dried and powdered it acts as a household vermin destroyer.—*JAS. SPALL.* [We are afraid that the Larkspur would be as harmless to insect life as the Hemp. We know of no well-authenticated instance where any insect has been injured by feeding on a poisonous plant. We have received specimens (pulled in life, and sent home in spirits) of the Ordeal Bean of Old Calabar, with the caterpillar of a moth feeding on it. At the same time it would be most unphilosophical to reject any recommendation without examination merely because it seems absurd in our eyes. So far the Larkspur recipe has this in its favour, that one of its nearest allies, Hellebore, has really been found useful against the Gooseberry and Cabbage caterpillars; but then we cannot compare the effects of an extract or powder made from a plant with its effect when living. The Hellebore is in powder. The insect-killing powder is the dried pollen of a species of *Pyrethrum*, and thus we are without any parallel to warrant us in believing in the virtues either of living Larkspur or living Hemp, Hellebore or *Pyrethrum*.]

THE IN-DOOR-GARDEN.

OLD STUMPS OF TREE FERNS.

TREE-FERN stems must be included among subjects that are as useful dead as alive. Great numbers of tree ferns are imported from the Antipodes, and a very large percentage of them perish on the way, while others do so before they can be established in this country. At first these old and dead stems were kept as objects of curiosity, or sometimes thrown on one side as useless; but, as the illustration shows, no objects are capable of being more gracefully used, either in the stove, greenhouse, or hot, or cold fernery. The rigid, enduring, yet open and moisture-retaining texture of the dead stem, renders it an admirable support for other ferns. By placing a stemless fern on the top of it we get the effect of a young tree fern, while tiny seedling ferns of various kinds and sizes often spring spontaneously from the moist surface of the old stem. In planting ferns on these stumps, the first thing to do is to obtain pieces of the required height and size. The tree ferns usually imported are very tall; and as it is impossible to establish a new crest on an old and dead stem nearly equal in size to what its own had been, it is best to cut the stems into two or more parts, and to select portions from fifteen to twenty-four inches high. On stumps of that size we can establish crests in proportion to their height; and this is also about the size that can be most agreeably examined when placed on the bench of a fernery or stove, and also the most convenient for removal. Having chosen the stump, the next thing is to place it firmly in a pot. Its base should be cut level, placed on the drainage, and padded round firmly with turfy peat, silver sand, chopped moss, &c., or whatever mixture may be thought most congenial to the plants it is desired to establish. Previously to being placed in position the top ought to be cut level, and then scooped down for two or three inches, so as to permit of placing a little suitable soil in the hollow. If the stump be a thick one, and selected to support large-growing ferns like *Lomaria gibba*, the centre may be gouged more deeply; but numbers of ferns will thrive in a very shallow concavity. The stump should be in proportion to the size of the fern it has to bear, the most vigorous kinds being placed on the largest stumps as a matter of course. The fern is planted on the apex in the ordinary way, a young, thriving plant

being selected; if a creeping fern, one or more bits of the rooting stem might be pegged down on the apex, and they will soon begin to crawl over it and down the sides.

This plan of growing ferns would be very attractive if even we could only establish one kind on the crest of each stump; but we may have a variety of interesting and graceful, if smaller, seedling ferns cropping out from the stem beneath the crest, and a varied and vigorous crop springing from the surface of the pot in which the stump is placed. Thus there are three distinct ways of cultivating ferns in the case of each portion of a stump potted as advised, while the pot itself may be hidden or partially hidden by creeping saxifrage or *Lycopodium denticulatum*, placed round the edge and allowed to hang over the sides. If the most vigorous fronds spring from the pot and from the top of the stem, a most interesting sight is afforded by the minute seedlings that crop from the surface of the stem itself. The stems being kept in a moist state, these seedlings come up self-sown; but where even the smallest collection of ferns is grown it will be easy to shake a few spores of the most graceful kinds over the surface, and in due time the young plants will appear in groups, or crowds, or isolated specimens. It need hardly be said that the greater the variety of young plants on the stem, the more pleasing the result will be.

As to the kinds of ferns to be planted on the crest, those with running or creeping stems, like the hare's-foot fern, thrive best, creeping



all over the stem and pot, too, if permitted; but the effect in this case is scarcely so good as when some graceful kind, like the *Nephrolepis*, arches its fronds from the crest like a miniature tree fern. It is, however, best to have some with creeping stems and some of the type figured in the illustration. Of bold and strong-growing ferns that may be grown in this way, *Lomaria gibba* is probably the best. As tender and hardy ferns may be thus grown, the conservatory as well as the hothouse proper may be embellished with these exceedingly graceful and interesting objects. They need not be grown there, but they might be removed thither in summer or autumn. The plants would not suffer in a shady position, provided the stems were kept moist, which they always ought to be.

In tastefully-arranged ferneries there is no occasion to place the stump in a vase or pot of any kind, but simply on a piece of rock-work or on a bank. In cases of this kind great care should be taken to select a satisfactory position for the stumps, as, of course, they could not be moved about at will like those in pots. By a satisfactory position we mean one in which they would not only thrive, but in which they could be well attended to and conveniently seen, if possible, from more than one side. If a number were arranged in such a position, one could afford to have them at various elevations above and below the eye; if but one or two specimens only, it is

desirable to place them near or slightly above its level, so that their general effect may be seen to the best advantage, as well as the minute spray of verdure on the stems. There is no reason why they should not be used with like good effect in some shady moist nook of the out-door fernery or the rock-garden. In this case hardy kinds should, of course, be selected; and if we had nothing but the common *Poly-podium*, which is so often seen growing on boughs, we need not be short of a subject for the top of the stem; while moss and seedling ferns and minute trailing plants may be established on the stems in the same way as in-doors.

The only difficulty that can arise is the procuring of a sufficient number of stumps. Nurserymen who import tree ferns generally lose a great many more than they desire, and therefore are sometimes well supplied with defunct stems, but these are very seldom at hand in private gardens. We believe that when this mode of cultivating ferns becomes sufficiently known, there will be a demand for these objects that will make it worth the while of some sagacious colonist to send us home a shipload or two, and they may yet be sold by every nurseryman. Doubtless many of them lie dead and useless in various parts of the world.

Field.

SARRACENIA CULTURE.

As *Sarracenia*s are found wild in Florida and the adjacent regions of North America, it is at once obvious that they do not require, nor will they long exist in, that excessive heat, especially in winter, to which we often see them subjected. Through the months of September, October, November, December, and January, I find a temperature, by night, of from 45 deg. to 50 deg., and by day, from 50 deg. to 55 deg., to suit them best. By the middle of April, I give them 5 deg. more warmth, and through May, June, and July, I give them 65 deg. by night, with a rise of 10 deg. by day; of course in very hot weather the temperature will run higher, but they get plenty of air day and night. They are kept near the glass, and a thin shade is used in sunny weather.

The way in which I propagate them is by division of the crowns with a sharp knife. The compost I pot in is a good

has a tendency to induce a softer growth in the pitchers, which causes them to die off much sooner. During the growing season I water every day, and in winter twice a-week.

All the varieties make growth at two seasons of the year; the different forms of *flava*, *purpurea*, *variolaris*, and *rubra*, make their principal growth in spring, and then a second growth in autumn, but this latter is much inferior to that which is made in spring. The two forms of *Drummondii* are just the reverse in this respect; they make their principal growth in the autumn, and only a much smaller growth in spring. For many years, I used to pot all the kinds indiscriminately at the end of February, but under this treatment the two varieties of *Drummondii* never succeeded near so well as the other kinds. It therefore occurred to me that perhaps it would be better to defer potting these sorts until just before they commenced their autumn growth, and I found that this had a marked effect upon them, by inducing a much finer growth. I also, at this season, give them copious waterings every day, just as much as I give to the other kinds in spring. I always keep them standing on either level slate or wooden shelves kept continually damp; they will not succeed if the atmosphere around them is dry.

I would strongly advise those who may be commencing their cultivation to procure thoroughly-established plants, as there is great uncertainty in imported ones. The sorts I cultivate are these:—*S. rubra*, which is extremely rare; the flowers scented equal to Russian violets; *S. purpurea*, and a variety much finer in its veinings; *S. flava*, three varieties, quite distinct from each other; *S. variolaris*; *S. Drummondii rubra* and *Drummondii alba*, the latter variety being very scarce.

Southgate.

T. BAINES.

[Our illustration, sketched at Southgate House last summer, represents one of the many superb specimens of this remarkable genus that have been grown by Mr. Baines.]



Sarracenia flava.

fibrous peat, broken about the size of pigeons' eggs, to which are added one-sixth of chopped sphagnum, and sufficient silver sand and crocks, broken to the size of horse-beans, to keep the soil open. On no account are the plants allowed to remain more than twelve months in the same soil, however fresh it may appear; for if left a second season, the soil will be certain to become sour, and then the roots rot as fast as they are made. When re-potting, shake them clean out. I do not approve of pans placed under the pots; and never syringe overhead, as it

Tabernamontana coronaria fl. pl.—A quarter of a century ago this formed a leading exhibition plant. The flowers, though smaller, are not unlike those of the *Gardenia*, pure white in colour, and are produced in bunches of two to five, and are sweet and admirable for bouquets. The plant is a very free-growing one when it gets suitable soil and plenty of heat—but still it is not an easy matter to produce a dwarf, compact, well-furnished specimen. It is readily propagated by cuttings of the half-ripe or mature wood, though the first is preferable; and the best plan is not to trim the cuttings to a joint in the usual manner, but to cut them at two inches long, so that the growing buds may be brought as near the surface of the soil as possible. Put them in either singly in thumb pots, and, after plunging in brisk bottom heat, cover with a bell glass; or put them ten or twelve in a four-inch pot, and then cover them. A mixture of peat and loam with some sand, surrounding the cuttings with sand, will be the best medium in which to strike the cuttings. When properly rooted, which will be in about six weeks, inure them gradually to full air, and then begin to grow them on. The best compost in which to grow them will be found to be rich, fibrous loam from which the fine soil has been removed two pecks, flaky leaf soil half a peck, peat the same quantity, with a quart each of crushed charcoal and sand, all thoroughly incorporated together. If the newly-struck plants are vigorous and well rooted, they may be removed at once to well-drained four-inch pots, sinking them so as to bring the branches close to the soil. Pot firmly, and if afterwards the plants can have the benefit of a bottom heat of 80 degs. to 90 degs., they will be all the better for it. This will start them into vigorous growth, and the side shoots will make rapid progress. The atmospheric temperature necessary to the best results will be a mean of 70 degs., rising to 80 degs. or even 90 degs., with sun heat on bright days, and with plenty of atmospheric moisture. When the pot is full of roots, reduce the supply of water for a week or so, and place the plants close to the glass, so as to ripen them a little, then cut the shoots back to within two joints of the base, and, instead of two, you will soon have four, six, or more shoots. In this way you get what may be called a foundation for your specimen, and then the plants may be allowed to grow on for the remainder of the season. After they have been stopped and begin to grow again, the plants may be removed to an eight-inch pot, using the same compost, and continuing the treatment as to heat and moisture. If you want the young plants to bloom, that object must be effected by attending to the ripening process early in the autumn. The growth must be brought gradually to a stand, and then by free exposure to the full sun the wood must be thoroughly matured. This effected, the temperature

of the intermediate house, 50 degs. to 60 degs., will be sufficient through the winter, and the season of blooming may be governed by the time at which you introduce the plants to a brisk growing temperature. If, however, the object is to make a handsome specimen, blooming the second season must not be thought of. Instead of that, cut your plants boldly back in February, and so soon as the young shoots make their appearance take the plants out of the pots, remove such of the old, inert soil as you can without destroying the roots, and then pot them on into pots of suitable size. The same summer treatment as to bottom heat and a brisk growing temperature may be continued, but at the same time the plants must have all the light possible, so as to induce a short, stubby growth, and hence rampant shoots may be stopped with the object of making side spurs; but this stopping must not take place later than the end of July, or the growth will not be matured. If these directions are properly attended to, the end of the second season of growth should show a plant that will furnish handsomely a twelve-inch pot; and once formed, the plants will continue to grow steadily for many years. With established plants the only care necessary is to stop rampant growth and encourage the formation of spurs; for, as the plants bloom from these small shoots, we cannot have too many of them. I have omitted to mention that weak manure-water may be given when the pots are full of roots and the plants in free growth, and also at the time when the blossom buds are swelling. The plants are subject to the attacks of insects, which must be subdued in the usual manner.—A.

Tradescantia discolor.—When tastefully trained, this fine old plant has a beautiful effect either in the stove, warm conservatory, or greenhouse. A plant of it here, in the form of a pyramid about four feet in height, has been very much admired, and as its lower branches quite cover the pot, nothing could be more graceful than it in appearance, its variegated foliage being thus shown off to much advantage. For making up a collection of fine-foliaged plants for exhibition, this *Tradescantia* will be found to be very useful when trained on wire or sticks, as a pyramid. Smaller plants of it will likewise be found to be suitable for table decoration; for some of the leaves acquire quite a reddish tinge with age, and the beautiful variegation exhibited by the younger foliage is seen to perfection under artificial light. The plant, if in well-drained pots, is very easily grown in any light, rich soil.—WM. TILLERY, *Welbeck*.

THE FRUIT GARDEN.

STRAWBERRY CULTURE.

THREE main points to be observed in strawberry-growing consist in digging deeply, planting early, and manuring heavily. The site having been chosen, the ground should be trenched at least two feet deep; but, if the subsoil will admit of it, three feet would be better, and each spit or trench should be well covered with manure. I have used all kinds of fertilizers, and, for heavy land, I find horse manure the best; but, on light soils, cow or sheep dung is better. I layer the plants, if I can, in sixty-sized pots the first week in July, and plant them out the first week in August. By this system I have better fruit the first year than any I get afterwards; indeed, by generous treatment in the way just described, I have had Sir Charles Napier with 370 flowers on a plant the first season. The proper site for early strawberries is a south border; but for general crops open quarters are best. The finest strawberries I ever grew were planted on a piece of ground that had been under seakale for twenty-five years. But in such a case as this no dung must be applied, or you will only have foliage instead of fine fruit. When the plants are in readiness and the ground trenched, I proceed first to set out the rows three feet apart. I then plant with a trowel the balls entire, treading the ground firmly and evenly, and finishing off by giving the plants a good soaking with water.

Strawberries, planted in the manner just described, make one's heart rejoice every time one passes them. They are not the little miserable things one generally sees planted in October, which half perish during the winter. No; my plants are strong and vigorous, all of one size, and in July any individual plant is a model in its way of luxuriant growth.

The sorts which I cultivate are Keen's Seedling, Sir Charles Napier, Black Bess, British Queen, and Dr. Hogg. Take advantage of a dry day in March, and with steel forks fork the ground lightly over, leaving it in a rough state, and, just when the flowers expand, mulch with long litter, to keep the fruit clean. When colouring, I place stakes round the bed

four feet high, and on these I put nets in such a way as one can go underneath them without taking them off.

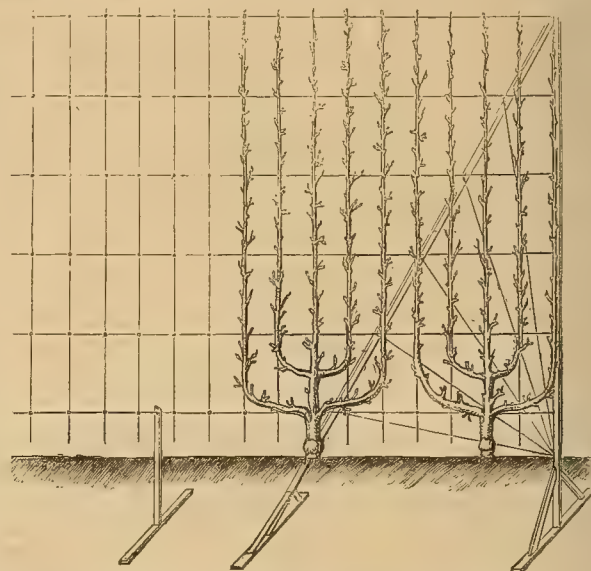
Selection, I should mention, is, in the case of strawberries, as necessary to success as in that of turnips. So particular, indeed, am I in regard to this point, that when the fruit is ripe, I mark all the best pots with small stakes, so that my stock is always improving. After fruiting is over, the plants are gradually hardened off, and the first week in May they are planted out, especially for runners. By this means I get plants a fortnight or three weeks earlier than I otherwise would, which is an advantage. In fine, open autumns, in addition to runners I have also a few dishes of fruit, the flavour of which, however, lacks that freshness which makes the strawberry such a general favourite.

Burghley.

R. GILBERT.

IMPROVED FRUIT TRELLISES.

THIS subject now appears to be receiving the attention it deserves. Properly done, these trellises are as much before the old wooden trellis in appearance as a graceful cutter-yacht is before a canal boat. And not in appearance only are they superior. They are practically everlasting; they are not expensive; they are better for the trees, and they do not waste labour in continual repairs. We fear the firms who put them up are not sufficiently alive to the importance of selecting the strongest and best form, and hence think it right to reproduce some illustrations from "The Parks and Gardens of Paris,"

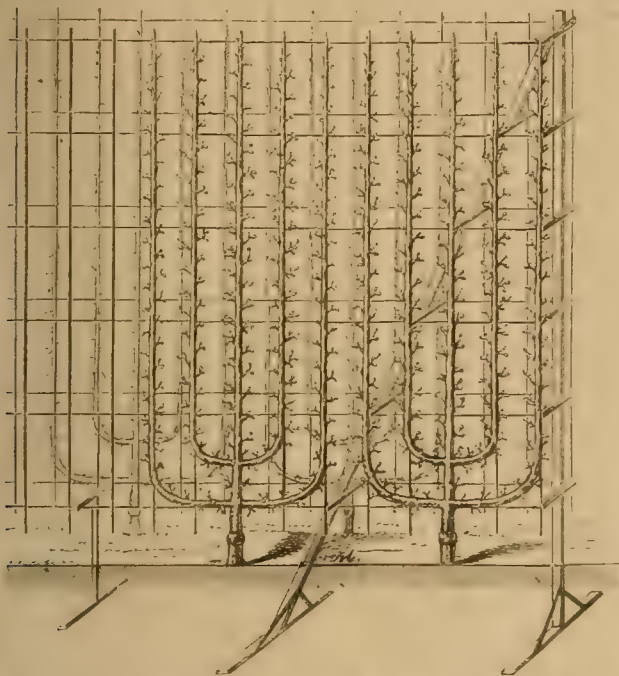


Trellis for Pear Trees: ten feet high. Uprights and stays of T-iron; horizontal lines, slender galvanized wire; vertical lines, pine-wood rods, half an inch square and painted green: to these the ascending branches are trained.

showing what the improved trellises are. So far as we have seen there is still too great a tendency to rest satisfied with the low six-foot or even five-foot trellis; this is much too low for the full development of a fruit tree. It necessitates the unwise repression and mutilation of the trees, which is too often relentlessly pursued.

The illustrations and footnotes make further description needless. There are various other modes of making good trellises, but decidedly none better than this, of which there are many hundred yards in the Government kitchen-garden at Versailles. Nothing can be neater alongside garden walks than fruit-trees trained on these trellises. There is no shaking about of rough irons or wooden beams, no falling down or loosening of the wires; the fruit is firmly attached and safe from gales, the wood is fully exposed, and the trellis, when well covered, forms an elegant dividing line in the garden. The best way to place them is at from three to six feet from the edge of the walk, and if in the space between the espalier and the walk a line of cordons could be established without difficulty, the effect and result would prove very good indeed. In some cases where large quantities of fruit are required, it

may be desirable to run them across the squares at a distance of fifteen or eighteen feet apart. The principle is quite simple, the proof of which is that the trellises at Versailles were erected by the garden workmen. The mode of employing the uprights of pine wood painted green and reaching from the top of the trellis to within six inches of the ground, is not a common one, though very desirable where the erect way of training the shoots is practised. The reader will readily perceive that this system combines the advantages of the cordon and the large tree. Of course many other forms, or any form, may be used with this system of trellising, with slight modifications to suit different kinds of trees or different forms. The double trellis shown is simply a modification of the single one, and is not only desirable where space is limited, but also for its economy, for one set of uprights supports the two sets of wires simply by using cross-bits of iron about eighteen inches long,



Double Trellis for Pear Trees: ten feet high. Uprights and stays of T-iron; horizontal lines, slender galvanized wire; vertical lines, pine-wood rods, half an inch square and painted green; to these the ascending branches are trained.

and at the desired distance apart. However, the engraving shows this at a glance.

The distance between the upright rods of pine wood is of course calculated for the training of the branches of this particular form of tree. But the same trellis will, with slight modifications, serve for various forms of trained trees.

Amateur Grape-Growing.—This has become quite a profitable pursuit in some parts of Cheshire. The first case to which I will allude is that of Mr. Cooper, a retired tradesman, who manages his vines with the assistance of a man-of-all-work. In an ordinary lean-to house, planted about seven years ago, he has Black Hamburgs trained to the roof, and Muscat Hamburgs on the back wall, with other kinds led up pillars. These vines had done, I was informed, remarkably well from the commencement. The erection of the house, heating, and border-making, were all carried out under his own supervision, and the crop this season has been magnificent, each bunch averaging about two pounds' weight, with berries large and fine. Mr. Cooper commenced grape-growing solely for the pleasure which he would derive from watching and attending to his vines with his own hands; but, being so successful, he has been induced to combine profit with pleasure, and his grapes at the present time command the highest price of any in the Manchester markets. A span-roofed vinery more recently erected by him is now carrying its third crop. This is planted with Foster's Seedling, Mrs. Pince, Muscat of Alexandria, Alicante, and Lady Downes; and here I also found first class grapes, fine both in bunch and berry, and beautifully coloured, some of the bunches weighing from four to five

pounds. Mrs. Pince has not, however, for some reason or other, done so well as the other varieties. Encouraged by Mr. Cooper's success, a span-roofed vinery has been put up by another amateur-grower, everything as nearly as possible having been carried out as in the first case, with the exception of the border, which consists entirely of an old, decomposed heap of couch grass that had accumulated in the corner of a field, and the crop as I saw it this season has been all that could be desired. Some of the bunches of Muscats could not weigh less than five or six pounds each. Had these growers only succeeded in producing ordinary crops, their expectations would have been realised, but I was informed that out of this house, which is only 30 feet long by 15 feet wide, forty pounds' worth of grapes had been sold each season, a statement which I can well believe, for even at our largest public exhibitions I have never seen finer fruit than that produced on this couch-made border.—E. WELSH, Nantwich, Cheshire.

Men like Pears.—Men often remind me of pears in the way of coming to maturity. Some are ripe at twenty, like human Jargonelles, and must be made the most of, for their day is soon over. Some come into their perfect condition late, like the autumn kinds, and they last better than the summer fruit. And some that, like the Winter-Nelis, have been hard and uninviting until all the rest have had their season, get their glow and perfume long after the frost and snow have done their worst with the orchards. Beware of rash criticisms; the rough and stringent fruit you condemn may be an autumn or a winter pear, and that which you picked up beneath the same bough in August may have been only its worm-eaten wind-falls. Milton was a Saint Germain, with a graft of the roseate Early Catherine. Rich, juicy, lively, fragrant, russet-skinned old Chaucer was an Easter Beurre; the buds of a new summer were swelling when he ripened.—OLIVER WENDELL HOLMES.

NOTES AND QUESTIONS ON FRUIT-GARDENING.

A Worcester Fruit Farm.—Mr. Varden has worked out the idea of a fruit farm on a vast scale, near Pershore. His estate is 250 acres. Of this about 140 acres are planted with fruit trees. These include 60,000 gooseberry bushes, 100,000 currant trees, and about 6,000 plum trees, to say nothing of hundreds of pear, apple, and other trees. The extent of the farm may be imagined when we mention that for weeks during the fruit season Mr. Varden has sent off four or five tons of fruit a day. One lot of currants sent away on one day to one customer weighed seven tons.

North Aspect of Fruit Walls.—With me the Morello and Kentish cherries are always larger and finer on a north aspect than on any other, and I have likewise had the May Duke, Burgundy, and Elton grow with good show under the same circumstances. The Florence and Late Duke varieties keep very late with me when netted up, as well as red and white currants and Warrington gooseberries. I find that the Winter Nelis pear, when ripened on a north aspect, is of good flavour and keeps late. By having this variety ripened on south, west, east, and north aspects, a succession can be had in season for two months. Some kinds of plums are likewise excellent with me on north aspects, especially the Golden Drop greengage and Ickworth Imperatrice. The latter hangs till quite shivered, and is then delicious; and, when gathered before the frost injures it, can be kept in the fruit-room for months. WM. TULLER, Walsley.

A Hint to Owners of Large Gardens.—It would be an excellent plan in country places to cause the gardener to raise an annual batch of the very best kinds of pears, plums, apples, cherries, &c., for planting wherever it might be thought desirable, as well as for giving away to labourers, cottagers, &c. A present of a few good kinds of fruit-trees to such people might at the end serve them infinitely more than double the amount spent in other matters. For the young trees would grow into good specimens within a few years, and then yield annually many times their original cost. This one would have the additional pleasure of knowing that, while the homes of poor people were made the more interesting and attractive, a very desirable addition to their material comforts would be made at the same time. All the sunny walls of labourers' cottages, &c., should be covered with fruit-trees, and even the north walls might be covered with Morello cherries, or early summer pears, like Summer Delight; and, even the very roofs might be covered with valuable fruit in many instances. Thus, of course, applies as well to every species of out-office or other wall surface. Apart from the profit to be derived, nothing would add more to the appearance of all these structures. If, as suggested, the stocks were raised and grafted by the gardener, the cost of the trees need not exceed a penny or two each.

Profitable Fruit Culture.—Fruit culture can only give profitable results under the following conditions:—Firstly. A method of cultivation and training must be adopted that, with a given surface of land, will yield the maximum result in the shortest space of time. To this end we must renounce all the tany systems of cultivation adopted by those who, looking on fruit culture only as a pleasing amusement, make difficulties for the purpose of overcoming them, and turn and twist trees in all kinds of fantastic shapes, thereby making profit to form. Secondly. We must only grow fruits of the finest quality in cases where they have to be sent a long distance to the places of consumption. In fact, this kind of produce, having a pretty high intrinsic value, can be sold at a sufficiently large profit, although it has to bear a heavy charge for packing and carriage before reaching the consumer. If, on the contrary, those latter charges which are always the same, no matter what the value of the produce may be, are added to the prime cost of fruit of medium quality, there will be no longer the proper proportion between the cost of production and the expense of packing and transport that will yield a sufficient profit to the grower. Thirdly. We must only cultivate such really choice kinds of fruit which are adapted to it, and to cause to pass on without any very large amount of attention, in which case the net profits will of course be large.

THE GARDEN IN THE HOUSE.

TRUMPET-SHAPED FLOWER-VASES.

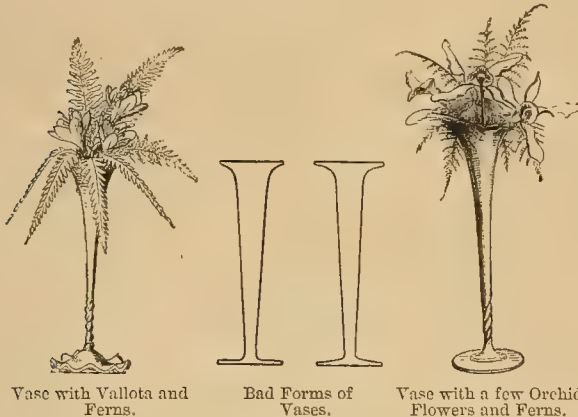
THIS simple form of flower-vase has always been a favourite with me. If I were compelled to restrict myself to any one form of vase, this would be the kind which I should choose before



Trumpet-shaped Glass Vase, with Flowers and Trailing Fern, surrounded by Water Lilies.

all others. At the same time, I should like to point out which particular variety of trumpet-shaped form I prefer. It is that in which the height is not less than three times, and not more than four times, the diameter of the foot; in which the diameter of the top does not exceed the diameter of the foot; in which the lowest part of the stem is about one-eighth of the diameter of the foot; and in which the size of the tube increases almost imperceptibly through the lower half, and more decidedly up to seven-eighths of the height, above which it should open out into a nearly flat mouth. Such vases as these are pleasing objects to the eye even without any flowers in them; and this is mainly owing to their not having any straight lines. Contrast the gracefulness of outline of the three vases dressed with flowers with the stiff, ungainly forms of the two without flowers; and then I feel sure you will agree with me in thinking that, as there are no straight lines in nature, so there should be no straight lines in flower-vases.

One great advantage afforded by trumpet-shaped vases is that they require so few flowers and leaves; another is, that they are so quickly and easily dressed; last not least, they show off choice flowers most effectively.



Vase with Vallota and Ferns.

Bad Forms of Vases.

Vase with a few Orchid Flowers and Ferns.

In the accompanying illustrations the largest glass was three feet high. Its top was filled with clean moss, which surrounded the well-washed roots of a strong plant of *Lygodium japonicum*, the fronds of which hung down and trailed upon the table-cloth. Into the moss were placed three splendid flowers of the dark-red *Hibiscus rosa-sinensis* and a few fronds of *Gleichenia dichotoma*. At the base was a ring of the flowers and leaves of our common white water-lily (*Nymphaea alba*). The glass containing the blooms of *Vallota purpurea* was ten inches high. At the back were two fronds of *Lastrea decurrens*; on one side, a frond of *Davallia elegans*; and in front, a four-parted frond of *Gleichenia flabellata*. The glass with the three blooms of an *Odontoglossum* was nine inches high, and the fern-fronds in it were those of *Hypolepis distans*. This vase was made of ruby glass, a material which shows off some kinds of flowers to great advantage.

All these glasses can be procured from most of the London glass works, where they are kept in stock, together with a smaller size of ruby colour about five inches high. This smaller size is of great use to me when the size of the table necessitates large dishes of flowers; for instance, in the middle of a round table large enough for eighteen people to dine at, a raised bank of moss, studded with white camellias and cerise geraniums, looks exceedingly well, the more so if a tall, trumpet-shaped vase rises from the centre; but it looks better still if the circular bank is surrounded by a ring of these little ruby vases, each containing two small pieces of Maidenhair fern and one spray of white *Bouvardia*. The points of the large fronds, used as a fringe to this mossy bank, should lie on the table-cloth between the ruby glasses. W. T.

Orchids for the Sitting-Room.—Orchids are not as yet very generally used for the decoration of apartments—a use for which many of these beautiful plants seem pre-eminently adapted. That they are used for the decoration of the dinner-table occasionally we know, but it is a rarity to see any orchid used in drawing-rooms; and yet we have many species that will make a vigorous growth out of doors during the summer if placed in a sheltered position; and we know of instances in which some of the more common species have been well grown in Ward's close cases for many months together. Some orchids bloom after their growth is matured, and finish flowering before they again commence growing; and these are the best to employ for the sitting-room, as they can be again transferred to the orchid-house before they commence their growth, and there is comparatively no danger of their being injured. To these last belong some of the cool *Odontoglossums* and *Oncidiums*, *Cœlogyne cristata*, *Lycaste Skinneri*, besides many of the glorious *Cattleyas* and *Lælias*. *Cœlogyne cristata* is one of the finest of all orchids for in-door decoration, and during the past very severe winter we repeatedly used a fine plant, with thirty or forty spikes, for the especial decoration of the dining-room, and occasionally for the front hall. Under gaslight this is one of the loveliest objects imaginable, the white colour of the flowers being dazzling in its purity under artificial light. The temperature of the orchid-house in which this plant was placed last winter frequently descended to 38 degs., or only 6 degs. above freezing-point, and yet this plant is uninjured. Another Indian orchid, *Aërides odoratum*, we had last winter in an ordinary lean-to, the temperature of which descended frequently to 40 degs., and probably lower. *Crotons* succumbed to this treatment, but two small plants of this *Aërides* are as healthy as ever, and are now growing and flowering vigorously. It would be folly to recommend Indian epiphytes, as *Phalænopsis*, *Vandas*, &c., to be removed to the house in the winter season; but with many of the *Odontoglossums*, *Lycastes*, &c., this may be done with impunity if due precautions are taken in frosty weather to prevent the plants being frozen in transit. *Lycaste Skinneri* and its many beautiful varieties will last for weeks together in an ordinary sitting-room, the temperature of which does not sink below 40 degs.; and the same may be said of *Odontoglossum Alexandræ*, *Oncidium nubigenum*, and many other species of orchids from the cool summits of the Peruvian Andes. During the summer months there is little danger to be feared if the plants are set in a sheltered position in the room, and not subjected to cold, cutting draughts; but in the winter we would strongly recommend the use of close cases; while for small plants, such as *Sophronitis grandiflora*, *S. cernua*, *Cypripedium insigne*, *C. venustum*, &c., common glass-shades will suffice to protect them from cold draughts and the aridity of the atmosphere, which last is most to be feared in sharp frosty weather. The compost in the pots should be allowed to get comparatively dry before they are removed to a lower temperature, there being several degrees of difference in temperature between soil that is wet and dry. The following is a list of orchids suitable for the decoration of the sitting-room:—*Lycaste Skinneri*, *L. cruenta*, and *L. aromatica*; *Cœlogyne cristata*; *Oncidium nubigenum*, *O. Phalænopsis*, and *O. cucullatum*; *Cattleya citrina*; *Lælia alba*, *L. autumnalis*, *L. furfuracea*, and *L. anceps*; *Barkeria spectabilis* and *B. Skinneri*; *Sophronitis grandiflora* and *S. cernua*; *Ada aurantiaca*; *Odontoglossums*, many species, *O. Alexandræ* and *O. Pescatorei* being amongst the best for the purpose.

Fontenelle and his Asparagus.—He had a great liking for asparagus, and preferred it dressed with oil. One day a certain *bon vivant* Abbé came unexpectedly to dinner. The Abbé was very fond of asparagus also, but liked his dressed with butter. Fontenelle affirmed that for a friend there was no sacrifice of which he did not feel himself capable, and that half the dish of asparagus he had ordered for himself should be done with butter. Whilst they were talking, waiting for dinner, the poor Abbé falls suddenly down in a fit of apoplexy. Upon which Fontenelle instantly springs up, scampers down to the kitchen with agility, and cries out to his cook, "The whole with oil; the whole with oil, as at first!"

THE KITCHEN-GARDEN.

STORING OF ROOTS.

It has long been customary to take up Jerusalem Artichokes, Carrots, Beet, Parsnips, Salsify, Scorzonera, &c., and to winter them above ground. If in small quantities, they are stored in sand in a cellar or dark shed. If in large bulk, they are clumped, or placed in ridges out of doors, and protected against severe weather. Onions and Shallots are generally placed on shelves or benches in lofts or store-rooms.

Respecting the Jerusalem Artichoke: I have always found it best to leave the roots in the ground, where no frost ever injures them. I always cut off the stalks in December, leaving a foot or more in height standing, in order to indicate where the rows are, and mulch with litter or leaves; fern or green bough prunings are laid over the litter, &c., to keep the wind from driving it about. In March I trench out all the Artichokes, turning in the mulching, rubbish, tops, or stalks, and replant with whole moderate-sized tubers, four feet apart from row to row, and two feet plant from plant. After replanting, such as were fit for use were stored in a cold, shady place, and the small and refuse were kept for poultry and pheasants, for which they make good and wonderfully well-appreciated food.

Carrots should be allowed to get quite ripe, and to have entirely finished their growth, previously to taking them up, and particular care must be taken in the storage of them, as they are very liable to heat if stored together in large quantities. Where carrots are grown merely as a garden crop, and only in sufficient quantities for the supply of the establishment—to maintain firmness, crispness, flavour, and colour, they are best stored out of doors in a cold, shady aspect in thin ridges. Cover the latter with a little loose dry straw, then with some wood faggots, and let the whole be thatched over. Thus managed they will keep till the next summer free from growth and excellent in quality; while, if placed in sand and in a cellar, by New Year's-day, or sooner, they will be found to have begun to grow, after which they are tough and tasteless, with a heart like a stick. Young carrots after the French fashion are, however, what I like, and it is quite possible to have them all the winter, and, indeed, the whole year round. Let them be sown in July and August, and mulch them lightly, previous to frost setting in severely in December, with straw, pea haulm, fern, evergreen boughs, &c.; you will thus have capital young carrots every day during winter; sow again in September and October on light hot beds, and you will have them for early spring. Indeed, as I have stated, young carrots may be had every day in the year by means of successional sowings. Where old carrots are stored in large quantities, pitch some hurdles strongly staked four feet apart, place some faggot-wood in the bottom, then fill up to the top of the hurdles with carrots, finishing them off in the form of a roof at top. Place a faggot upright every eight or ten feet apart, in the middle of the ridge; barricade the sides and top with faggots, thatching the roof only. The circulation of air thus secured prevents fermentation, and keeps all sweet and sound. Of course, if severe weather sets in, the outside faggots should be covered with straw, fern, heath, or furze, in sufficient quantity to keep out frost; for carrots out of the ground will not stand that without injury.

Beet will withstand a good deal of frost; but if allowed to get much frozen, it loses both flavour and colour. I have always, therefore, made it a rule to take it up early in December when quite ripe, and to lay it in thickly in some sheltered corner, covered with earth an inch or two up the leaves. Thus stored, it maintains its natural properties unimpaired.

Parsnips are always mild in flavour, and otherwise excellent, if allowed to remain where they grow, and taken up as required for use; but when taken up and exposed to the atmosphere, if only for a very few days, their good properties are gone—yes, gone. They get yellow, and so strong in taste as to be generally disliked. Besides, if taken up and stored in sand, except in a very cold aspect, parsnips soon begin to grow, and then their taste is as bad as that of a rank green potato.

Scorzonera and Salsify, also, always retain their natural flavour and qualities if left in the ground where they grow, and mulched sufficiently to ward off severe frost, previously to winter setting in.

Turnips, when young, crisp, and sweet, are delicious. Late-sown free-growing bulbs suffer more from frost than others. I therefore always pull and use them as long as I can, looking out for frost and then pulling a quantity before being frozen. I then lay them in thickly in a sheltered spot, well covering both tops and roots.

Amongst culinary vegetables few are more useful than the onion, which is in daily request both by poor and rich; and to be able to have it in perfection at all seasons is a desideratum. As regards storing onions, that is done in various ways. An important point is allow-

ing them to get really ripe before storing them; and for harvesting them a dry day should be chosen. Pull, and tie them in bunches of eight, ten, or more, together, according to size; then take them away, and hang them up at once on the rafters or beams of open sheds, or in well-ventilated lofts. In such situations they will dry gradually and thoroughly. As the wet days of winter come on, a portion might be taken down and roped, if approved of—that is, as all know, strung on straw or other bands, and then hung up; or they may be topped and cleaned, and placed on loft-shelves and benches. But, for many years I never took further trouble with my crops of onions than to pull, and tie them in bunches of convenient sizes, and hang them up as just described, taking portions of them down now and then as required for use, and I have always found them to keep well until the following summer's early onions were ready for culinary purposes. I do not approve of onions being pulled, topped, and disrooted, and then allowed to lie on the ground exposed day and night, turned about and bruised, and then taken to some loft-floor, shelves, or benches. Thus treated, many are apt to show blotches and to decay early, and they have also a tendency to run or start into growth, which at once deteriorates their quality. Besides, onions exposed, after having been pulled, to sunshine, rain, and wind, get so hot and strong, that having anything to do with them is most unpleasant.

JAMES BARNES.

WORKING IN THE WET.

THIS is as improvident as it is cruel. Let me not be misunderstood. A summer shower hurts no healthy man, and there are occasions—such as the planting-out season in May or June—when to cease working because of a passing shower might involve the loss of weeks, perhaps of a season. It is not of such exceptional working in the wet that I now write. In summer little harm comes of getting slightly wet if one but continues to work or walk. Colds are caught by standing or sitting still in wet clothes. But what should be avoided is working in continuous rain at any season, or getting wet at all in cold weather. I have known gardens where such rules as the following prevailed:—When too wet to hoe, digging was ordered, and when the ground became so sodden as to render this almost impossible, the earth holding on to the spade like birdlime, the spade was exchanged for the scythe. And it was never considered too wet to mow. I have seen men come off lawns with their shoes full of water and their clothes sticking to their backs. Such exhibitions are, however, now rarer than they once were—thanks to mowing-machines, greater independence among workmen, and more humane management among masters. Still, I believe, working in the wet is by no means extinct in many gardens. I have said that such work is cruel and improvident. It cannot be needful to prove the first. Rain penetrates into the system, and undermines health, and health is the working man's capital.

Working in the wet is, moreover, the dearest of all work, and the worst. If performed on the ground it is worse than useless. Earth moved in a wet state runs together, adheres somewhat like molten metal, and becomes, in a measure, equally stubborn and barren. Trampling on the earth in a wet state is likewise highly injurious. It breaks down the texture of the soil, hinders the free percolation of water, and drives or shuts out the air. Even planting in the wet, so much advocated by some, is not to be commended. The earth fits in more closely around the roots, and the roots take a kindlier, speedier grip of it when applied to them in a comparatively dry state. True, water is a capital consolidator of the soil. But it does its work best thus:—First of all lay the earth in position in a dryish state, and then let the rain or watering-pot dash the mellow soil into every nook and cranny. But let the rain convert it into a sticky mortar first, and mark the difference—you will need no other evidence against the impolicy of working in the wet.

Then, as regards other work, such as that on walls or on grass, working in the wet is the dearest of all work. The discomfort is a hindrance to the worker. There is no end of stoppages, countless fragments of time lost in cloud-gazing, weather prognostications, peevish complainings, &c. In a word, the physical stamina is washed out, and the result is little or no work. Fortunately, working in the wet in well-ordered gardens is as unnecessary as it is wasteful. With ordinary forethought it may easily be avoided. Inside work abounds in most gardens. Most of it, too, is helpful to the

work outside. So much, indeed, is this the case that, in a large establishment with much glass, I have always difficulty in getting the outside men to assist under glass in wet weather. The answer is generally, "Very well, master; but we have stakes, labels, pegs, &c., that will soon be needed for so-and-so;" and the men are generally right. Each is held responsible to provide in foul weather everything that is needed in his department when it is fine, if enough of wet weather be found for the purpose, and, singular though it may seem to many, it is seldom that this is the case. The experience of many years thus comes to the aid of humane management to give emphatic testimony to the fact that there is no necessity for working in the wet. D. T. F.

Raising Potatoes from Seed.—The following observations by Mr. George Such, in the *American Gardeners' Monthly*, on raising potatoes from seed will probably prove interesting to many who think the process is attended with any difficulty. Mr. Such's garden, which I had the pleasure of visiting last autumn, is on the sandy soil of New Jersey, near South Amboy, enjoying, of course, a good deal more summer heat than we do; but there can be no doubt that by beginning early, quite as good a result could be obtained in England. W. R.:—"Mr. Patterson, to whom Englishmen are indebted as the originator of many good potatoes, gives it as his opinion that the production of new varieties from seed is attended with so much labour and expense that it should be undertaken by the British Government, and not by individuals; and the supposed difficulties could hardly be more absurdly exaggerated than they are in a late number of a well-known English horticultural journal. Now, the simple fact is that it is an easy matter to get a tolerably good crop of potatoes within five or six months from the time the small seeds are sown. I have now in my cellar more than two hundred varieties of potatoes, very many of full size, all of which were produced from seed taken from the potato ball a year ago. It was said to be Early Rose, fertilized with white Peach-blossom and other varieties. The seed was sown about the end of March, just as tomato seed is sown. It germinated readily, and the little seedlings were soon pricked out into pans. In fact, the plants were treated precisely the same as tomato plants, except that they were moved to a cooler position than tomatoes required. Towards the end of May the potato plants were set out in rows, just as potatoes are usually planted, plenty of room being left between the rows. Only this difference was made—very important, however, I think—the potato plants were not set on the level of the ground, but four or five inches below it, like celery in trenches. They soon struck root vigorously into the good soil that had been prepared for them, and grew rapidly, the soil being gradually filled in as fast as the strength of the stalk seemed to admit of it. By the end of June the trench was all filled in to the level, and after that only one slight earthing-up was given. In August the potato vines were as large and flourishing as if grown from sets. In this month, too, the first of the potatoes were dug, and from that time others matured, some varieties being early and some late, until the last of October."

THE PROPAGATOR.

Grafting Azaleas.—It is by means of grafting that varieties of Azaleas, both new and old, are increased. As regards stocks, two varieties have been in general request: the one, the old *A. rosea* elegans; the other, the newer, *A. Sir Charles Napier*. There is some diversity of opinion as to the suitability of these two stocks; some growers resolutely hold to the one—some to the other. Certain it is that, in point of habit, Sir Charles Napier seems admirably adapted for the purpose, having a stiff, sturdy habit, and wiry wood. In order to prepare stocks for grafting, cuttings should be taken at the proper season, potted off singly into small sixty-sized pots, and grown on till they are from ten to twelve inches in height, and as thick in the stem as the small end of an ordinary tobacco-pipe. New Azaleas are, as a rule, received from the Continent in September and October, and it is then grafting is generally performed, or as soon as there is sufficient young wood on the newly-obtained plants to furnish scions. The stem of the stock is divided by an horizontal cut from four to six inches from the bottom, as the case may be, and, by inserting the knife at the top, a cut is made in a downward direction. The scion is prepared by having both of its sides sliced off, so as to fit into the vertical cut made in the top of the stock. It is inserted, and tied closely together by means of a piece of bast, then placed in a moist, close heat, and thus circumstanced very few indeed fail to adhere, i.e., if the barks of both stock and scion are nicely fitted together. In this way any variety can be rapidly increased, if sufficient stocks can be had on which to operate.—R. D.

Tree Carnations.—Plants of these to furnish "button-holes" or flowers for other decorative purposes, should be kept cool and clean until Christmas, when they should be placed in gentle heat in order to induce them to make shoots for cuttings, which will be found to strike root readily on a slight bottom heat. After having struck, they should be potted off immediately into thumb-pots, giving them two shifts into larger sizes before the first week in June, when they should be put into thirty-two sized pots for flowering. Pot them firmly in loam mixed with rotten cow-dung, and afterwards place them in beds out of doors.—C.

Lapageria rosea.—This fine climber is planted out in the Lea Bridge Nurseries, and bears hundreds of seed-pods about two inches long, and nearly an inch through. Each pod furnishes from fifty to a hundred good seeds. It is curious that these pods were all produced by the late autumnal flowers of the year. It is so every year. The summer flowers that one would expect to be the most fertile do not produce seed-pods; the October and November flowers do. From the seed an abundance of vigorous young plants may be raised; but if the seed be not sown soon after arriving at perfection—as soon as fit to gather, in fact—it will prove of very uncertain germination. If kept over till the succeeding spring, it may not grow at all. This, with like cases, points to the fact that we often lose a great deal by keeping seeds, it may be six or nine months, for the arrival of spring. Sometimes the little plants of *Lapageria* bloom at six inches high, and when eighteen months old.

NOTES AND QUESTIONS ON PROPAGATION.

Case for sending Growing Plants to Distant Countries.—At a meeting of the Edinburgh Botanical Society Mr. M'Nab placed on the table a small case of plants, received from Dr. Mueller, of the Botanic Garden, Melbourne. This case contained seven species of plants, all established in pots previous to being sent away. It is rarely that we see comparatively soft-wooded plants brought home in such good condition, and in so simple a manner. The case was 105 days on the voyage, and the plants were only once watered, but had occasionally sprinklings of fresh water over the cotton covering. This case, which may be easily lifted with one hand, was kept on deck during the voyage, and so placed that no salt water could reach it. It is thus constructed: A rough unplanned old box, 13 inches long, 11 inches broad, and 6 inches deep, has two upright pieces of wood, 16 inches long and 2 inches broad, nailed, one in the centre of each end of the box, and a piece in the same breadth and thickness nailed across the top, giving it a ridge appearance. Over this a piece of thick unbleached cotton is stretched, and firmly tacked down. The ends are likewise covered with the same material. From the great success and simplicity of this case, costing not more than 1s. or 1s. 6d. altogether it will be found of great benefit to amateurs wishing to take out or bring home a few choice plants. The pots containing the plants fill the box, and are kept from moving by having a little damp moss introduced between them, and also over the surface of the pots. In the ordinary Wardian cases, which are usually filled with soil, the plants are turned out of pots and planted in the earth, often only a few days before being sent away. In such instances no new roots can be formed. This would require a period of three or four weeks, whereas, in the case of well-established plants sent in pots, a few hours' notice previous to removal is all that is required. The light which the cotton allows to penetrate, and the air which reaches the plants through its fine meshes, seems to be more favourable for the preservation of delicate or soft-wooded plants, both as regards colour and substance, than the ordinary heavy air-tight Wardian cases, which not unfrequently prove injurious to tender plants, by causing them to become pale and much drawn up.

Packing Seeds for Long Sea Voyages.—The seeds of all the haws or crataegues may be exported to any colony with the greatest certainty by packing them in casks with a little sawdust mixed with the seeds. It is customary with nurserymen and others who raise thorns from seed, to bury the haws for some time, so that the pulp may rot off, and also for the purpose of saving time and ground. The rotting that the haws undergo in their casks or boxes will serve the same purpose, and the seeds will be ready to sow when they arrive. Seeds of a dry character must be exported very differently from these, or they will never reach their destination alive, and, in fact, not a few require special treatment. Some seeds—like those of *Berberis*, for instance—should be sent dry, the seeds washed from the pulp, dried, and packed in the usual way in strong, dry papers as seedsmen do, and they will travel safely if kept in a dry place. Cranberries should also be cleaned out and sent as dry seed. Blackberries should be washed out as strawberries are, and the same treatment will suit the *Arbutus*. Of sloes and like plants, the stones may be sent packed in single boxes, or little casks or jars. They should, however, be mixed with dry and finely-powdered charcoal. Laurel is a difficult seed to export. The most practised hands have tried and failed with it. This also applies to the Portugal laurel. Perhaps the best way to send these would be to sow the seeds on the surface of the soil in a Wardian case, where they could vegetate; or, better still, to raise them an inch or two, and then plant them thickly together in a Wardian case, as we have seen cork oaks packed for Australia. The wild roses may be sent with safety—seed to be extracted from the hips and dried. Siberian crab seed will go as well as apple seed, and in the same way—the pips sent out in dry packets, just as nurserymen send us our vegetable seed. But all those seeds that are to be kept dry should be kept away from the moist, pulpy ones—quite isolated, in fact, or farewell to the dry seeds. Some people, in taking out seeds, put a bag of pulpy moist tree or shrub seeds in among them; then the "damp" spreads, and parsnips, peas, and pelargoniums come out so much mould. Ivy will come equally well from seeds dried or sent out in the pulp like the hawthorn fruit. There is no difficulty in sending the seeds of conifers; they are "dry" seeds, and merely require to be kept free from damp. Chestnuts are very difficult to send. No doubt the best way is to sow them in the Wardian case, or raise them beforehand, and plant densely in it; but this is sending plants, not seeds. Oaks are rather difficult, and should be raised and sent as described above in the case of the cork oak.

THE HOUSEHOLD.

SALADS.

In the materials for a good salad are sweetness, crispness, and tenderness. Negatively, a salad must neither taste strong, feel tough, nor eat hard. To make a good salad, then, the first step is, begin by packing all those positive excellencies into our material. How is this to be done? Certainly not by growing lettuces and endive on any out-of-the-way, poor bit of ground or border, as is too frequently done. No, nor by permitting the plants to crowd and smother each other in the seed-beds until they are ruined for life. Nor yet by rude, rough removals, or ruder plantings and neglect afterwards. On the contrary, to grow perfect salading, the plants should receive no check on their journey from the seed-leaf to the salad-bowl. Quick growth clothes both lettuce and endive with all the qualities indicated. To promote and sustain this quickness of growth the soil must be deep, rich, light, moist, and, to a certain extent, warm. In other words, to make first-rate salading, our lettuce and endive must receive the highest cultivation; and truly there are few things more worthy of it. Hardly anything that our gardens produce is more enjoyable or wholesome than a good salad. It is therefore high time that the sententious axiom, "What is worth doing at all, is worth doing well," was applied to its cultivation. High culture applied to lettuce speedily tells, and assuredly pays. Neither have we long to wait for results. The plants rush along well-laid lines of growth, and plump up into rich, juicy, massive sweetness, as if impatient for a "header" into the salad-bowl. Much depends upon cutting them at the ripe moment. There is a tide in lettuce as in the affairs of man, which, taken at the flood, leads on to the good fortune of a perfect salad. That tide is the moment when growth is compacted into solidity—when every tender leaf and stem is brittle as glass, charged with rare virtue, and filled to overflowing with good flavour and rich juices. Having secured it at the right moment, we must have a care that it is not ruined on its passage, full of risk and danger, from the garden to the salad-bowl. Lettuces should be handled with clean hands, no leaf should be roughly crushed nor soiled with dirt; every bruise lets out juice and lowers the quality; and dirt on lettuces is ruin. True, it can be washed off after a fashion; but water washes out the flavour. Pitch them into water for an hour! Ah! horror of horrors! Almost as well pass them through the fire. The water sinks in through the lettuce, taking out its rich juices, and occupying their vacant place.

The superiority of Continental salads is owing simply to their being grown in a perfectly clean manner, and gathered exactly at the right moment. To hope to gather good salads in winter in the open air in our climate is madness; those who depend in winter on unprotected material exposed to lacerating hail, and chilled by heavy cold rains, cannot have good salad material for months at a time.

D. T. FISU.

NOTES AND QUESTIONS ON THE HOUSEHOLD.

Preserving the Tomato.—In America the "canned" tomatoes are quite as good in winter as the fresh ripe fruit is in summer. The following simple American method of preserving them is worth noting. It is from the *American Agriculturist*:—"Having sometimes failed with glass jars, we now use tin cans, 10 inches long and 4 inches in diameter (cut from a sheet of tin 10 by 14 inches, and cheaply made). A hole, say 1 inch in diameter, is left in one end. The tomatoes, in large quantities at a time, are cooked well, as for the table, but without salt. They are poured into the cans hot, and a bit of tin well soldered on. We put up fifteen to forty cans at a time, and call in a tinsmith to do the soldering, as we have a large number of cans ready at a time. Thus closely sealed they will keep perfectly a month, a year, or five years. Send the emptied cans and set them away dry, and they can be used several times with a little help from the tinsmith to smooth the heads."

Food Value of Fruits.—Fruits are used as a staple food in many warm countries; but in most parts of Europe they are regarded chiefly in the light of luxuries. Deprived of their stones or seeds, they contain often not more than 5 per cent. of solid matter. They are very poor in albuminoids; but they are usually rich in sugar, and many of them contain much acid. There is the greatest variation in the relative amounts of pectose, sugar, and acid, in edible fruits. Berries contain, as a rule, more acid than stone fruit. The grape contains from 13 to 20 per cent. of sugar; the cherry only 1 per cent. In the peach there is about 9 per cent. of soluble pectin and gum, whilst the gooseberry includes only 2 per cent. of these bodies. In the common fruits the percentage of free acid varies from a mere trace to about 3 per cent. The pear is almost always free from acids, whilst the currant often contains three times as much free acid as sugar. The grape is probably the best fruit adapted for the sick. As heat-and-force producing foods, 5½ lbs. of grapes, 6½ lbs. of apples or cherries, 10½ lbs. of currants, and 12½ lbs. of strawberries, are equal to one pound of starch. The dietetic value of the fruits is chiefly due to their fine flavour and their abundance of saline matter.—Dr. CAMERON, in *Irish Farmers' Gazette*.

Hip Jam.—Collect the hips from the rose-bushes when ripe, boil them in water until they become soft enough to be easily crushed, and press them through a very fine sieve. Take an equal weight of sugar to that of the fruit, boil the hips, when pulped through the sieve, thoroughly with the sugar, and put the jam into a large stone jar. It is liable to ferment a good deal, and, therefore, requires space. When taking any out for use, mix and stir it up well with a little white wine, and add sugar to taste if required. This jam is excellent, either for eating alone as a sweetmeat or for making sauce.

A Fortune from the Salad-Bowl.—It stands on record that a noble Gaul having tied the guillotine at the end of the last century, and finding himself without cash in this country, contrived to pick up not only a living but a competency by taking to salad-making as a profession. This is how it came to pass—we abridge from Brillat-Savarin:—A French *coiffeur*, named D'Albignac, was dining at one of the most fashionable taverns in London, when he was addressed by a party of dandies who occupied the table next to him with a request to mix a salad for them, coupled with a polite compliment upon the proficiency of the French nation in the art. D'Albignac, with some hesitation, consented, and, being provided with the necessary ingredients, was very successful. In the course of the proceedings he entered into conversation with these people, and in answer to their questions he frankly avowed his position; consequently they felt justified in asking his acceptance of a five-pound note, which he accepted without much pressing. The dandies asked for his address, and a few days afterwards he received a request to go and mix a salad at one of the biggest mansions in Grosvenor-square. D'Albignac saw his opportunity, and was not slow in availing himself of it. Providing himself with some choice condiments, he went, and was eminently successful. He was paid in proportion to his success. In a short time his reputation began to spread, and all the people of fashion in the capital of the three kingdoms were dying to have a salad mixed by the French gentleman—the fashionable salad-maker, as he was called. He soon set up a carriage (or, curricule) to go about in, and a footman to carry a mahogany case containing choice ingredients to mix salads with, such as vinegar of various flavours; oil with or without the taste of olive, &c. Later he supplied similar cases ready fitted with ingredients, and sold them in hundreds. In the end he amassed some 80,000 francs, with which, the guillotine having been superseded in his native country, he retired thereto, where he lived happily ever afterwards.

THE AMATEUR'S REMEMBRANCER.*

In-door Department.—The most enthusiastic lover of hardy plants and the free air will now be glad to avail himself of the delicious shelter and genial clime which glass enables us to create in our gloomy winter climate. Although the frost may bite, and wind pierce without, the winter-flowering greenhouse Heaths, the gay and pretty Persian Cyclamens and fresh-opening Chinese Primroses are displaying their tender charms as willingly as if it were the sun on some balmy mountain meadow that had induced them to blossom, and not the gardener's art. In greenhouses or small conservatories sufficient fire-heat should be applied to keep out frost or dispel damp, and air should only be given in the middle of the day when the weather is fine. On front shelves, the pretty early flowering plants just named, and other things of that kind will serve to maintain a certain amount of gaiety, which will soon now be greatly increased by the introduction of such plants as *Dielytras*, *Deutzias*, *Kalmias*, *Azaleas*, *Roses*, *Hyalcinths*, and other Dutch bulbs, which will be coming forward in forcing pits. Lilies of the Valley, *Mignonette*, and things of that sort, wanted for succession, should also now be placed in gentle heat, as should likewise the sweet Indian *Daphne*, Persian *Lilacs*, and anything of that sort which may be brought easily into flower by the application of a little artificial warmth. Prime and dress creepers, tie out *Pelargoniums* intended as specimens for particular purposes, and shift forward *Cinerarias* into the pots in which they are to flower. Cover pits and frames at night when frosty, and remove dead leaves or anything likely to engender mould.

Fruit and Forcing Houses. The pine-apple grower must now keep plants swelling off fruit as near the glass as possible, and the atmosphere a little drier than it has been, in order to brighten the colour and increase the flavour. Succession plants should be kept growing without check, and should have a little air given them on all favourable opportunities. For cucumbers a temperature of not less than sixty-five degrees should be maintained at night, and about seventy during the day-time. Where early potatoes are a desideratum a few Ashleafs may be put in a gentle hot-bed to start preparatory to being planted hereafter in pits or frames. Vines may now be pruned and cleaned ready for forcing where grapes are wanted early, and, if not already done, mulch the borders in which they grow with rough litter.

Flower-Garden.—Where the small-flowered *Chrysanthemums* have been bedded out they will soon require to be cleared away and the beds filled with bulbs or spring flowers, or thrown up rough for spring and early summer planting. Although the great majority of flower-gardens are now bare of plants or interest of any kind, that is the cultivator's own fault, for many of the evergreen alpine plants of the *Sedum*, *Saxifrage* and *Sempervivum* families look as well now, where properly grown and arranged, as at any other season. In fact, the mossy *Saxifrages* now present a fresher verdure than at any time during the whole year. *Roses* may now be planted as well as stocks

* Complete general calendars, written by some of the most able gardeners in the country, are published in "THE GARDEN" in the first issue in each month.

for budding on next season. Some of the more tender of the tea kinds might be lifted and laid in a dry, warm, sheltered situation, where they can receive some protection from frost. Sweep up fallen leaves, and by neatness and order in some measure make amends for the want of floral beauty.

Fruit and Kitchen Garden.—Draining, trenching, and deep digging may now be advantageously carried on in both these departments, wherever such operations are necessary. Now, when fruit-trees have shed their leaves most kinds may be pruned and nailed, and where new plantations have to be made no time should be lost in making them. When planted a good mulching of rotten dung placed over the roots will be of advantage, and stakes should be placed to standards to secure them against wind-waving. Stems of old trees may be cleared of moss by means of a good dredging of quicklime put on when the bark is moist; but the most effectual remedy is thorough drainage. This is also a good time for root-pruning such sorts as are growing too vigorously, and, on that account, forming wood instead of fruit-buds. In the kitchen-garden no satisfactory returns need be expected without deep cultivation and liberal applications of manure. Therefore, nothing capable of being converted into plant food should be lost. If not already done, fork up the surface of asparagus beds, and apply to them a good coating of manure, or sea-weed, where that can be obtained.—J. M.

SOILS, MANURES, &c.

PEAT.

To procure good peat is, in most places, an exceedingly difficult matter. I have myself traversed square miles of heath-clad mountain land, and could not find a barrow-load of peat worth taking home; and the same may be said of other soils. The kind of soil that is wanted for storing, whether it be peat or loam, is that which is so rich in vegetable matter that when the earthy particles are shaken out a tuft of it will be almost like a sponge. This, laid up a few months for the active vegetable matter to decay, constitutes the pabulum upon which the very finest plants are grown. With those who have the chance of selecting their own soils, the proper course to pursue is to go to the different places where they are to be found, and examine them till the desired quality is met with, then send carts and harvest the best. Recollect, soils do not deteriorate by keeping; peat, if kept dry, will remain good a number of years. Peat, to be of the best quality, should not be more than two inches thick, firm in texture and fibry, the upper surface covered with dwarf heath, the under resting on sand. This will generally be found in upland positions; but in dry seasons excellent peat for storing may be procured from lowland situations. Peat when brought home should be carefully looked over, divesting the upper surface of all rough herbage, and the lower of sand; then place it in ridges, two turves together in the shape of the letter A, so that the air can act well upon it; and, if early in the season, there let it remain till the rains of autumn make it necessary to stack it, if it is not wanted for use before the following summer; and it is better not to use it before that time. Or build some turf pits with it, which may be turned to good account, if for no other purpose than protecting lettuce or cauliflower plants. Thus arranged, it would be so well exposed to the air that it will be much improved. Should it not be required in this way, it is best to stack it in ridges four feet high, three feet wide, and tapering to a single turf at the top. In forming the stack, place the turves somewhat apart, so as to admit of air circulating freely among them; and if the peat is stacked fresh from the common it is best to insert an air drain in the centre. Sometimes, old pea stakes or pieces of wood are placed between the layers; it matters little, indeed, how it is done, if air can find its way freely through the mass. When peat is used fresh from the common—which should never take place in a well-regulated establishment—it will be found an excellent plan to char the outer surface. One of the best supplies of peat I ever had was from a common from which all vegetation had recently been burnt. In charring peat the turves should be cut into pieces three inches wide, as then the parts will be equally heated, which is not the case if the turf is placed on the stove whole. The charring may be done in various ways, according to the conveniences at hand; and, if carefully performed, it will answer as well as the thorough aeration which results from proper storing, while by it all insect-pests, and roots, and seeds of weeds, will be destroyed. A.

SOCIETIES, EXHIBITIONS, &c.

ROYAL HORTICULTURAL SOCIETY (DECEMBER 6TH).—This, though not distinguished by any specially important feature, was an interesting meeting. Among the more instructive objects shown was a pretty batch of Cyclamens, in brilliant bloom, which had only been sown on the 28th day of January of the present year. When these charming plants can be grown to a blooming size almost as quickly as an annual, no greenhouse should be uncheered by their lovely flowers, which start up so profusely in winter and spring. Some beautiful blooms of *Ipomæa caelestina* were shown under a glass. Some cones of *Picea nobilis*, gathered from a specimen fifty-eight feet high at Sir John Sebright's, in Hertfordshire, were remarkable for size and evidence of perfect health. A rare *Yucca* (*longifolia*) was exhibited from Mr. Wilson Saunders' garden. A good many *Chrysanthemums* were shown, some among the best we remember seeing being staged by Mr. Shrimpton, gardener to Mrs. Doxatt, Putney Heath. Berry-bearing plants were not by any means good, Mr. Standish being first. His group consisted of *Pernettyas*, *Aucubas*, *Skimmias*, and *Cotoneasters*. Some graceful dwarf Conifers were shown, such as the *Retinosporas*, including the elegant *R. lycopodioides* and *Taxus coriacea*. From Mr. Pragnell, of the Castle Gardens, Sherborne, came a well-varied and excellent collection of vegetables. A new winter radish was shown from the Society's Gardens at Chiswick, which had been raised from seed brought from California by Mr. Robinson. It was shown in poor condition, but, nevertheless, received a first-class certificate. Further trials, will, however, be necessary to prove its value in this country, and also to test its distinction. Mr. George Johnston sent two superb Cayenne Pine-apples, to which a special certificate was awarded. A new Grape, named Waltham Cross, huge in berry and large in bunch, was shown by Mr. William Paul in excellent condition. Messrs. Lane, of Great Berkhamstead, again sent a collection of their noble Grapes, to which a special certificate was given. A very graceful species of *Asparagus*, viz., *A. decumbens* was shown by Mr. Standish; and a rich deep crimson Cyclamen, named Queen of Crimsons, came from Mr. Goddard, gardener to Mr. Little, of Twickenham. This last received a first-class certificate. From Messrs. Veitch came several plants of a yellow-fruited *Capsicum*, called Yellow Gem. These were admirably grown on single stems of a foot or so high, and each was furnished with from eighteen to twenty-four fruit. A fine collection of hybrid *Solanums*, covered with berries, from Mr. Williams, of Holloway, had a special certificate. Mr. Williams also exhibited a variety of *Lycaste Skinneri*, with two flowers borne so closely together that they almost resembled a double flower.

Royal Botanic Society.—The spring shows of this society for next year are announced to take place on March 13th, April 10th, and May 8th; the summer shows on May 22nd, 23rd, June 19th, 20th, and July 10th, 11th; all two-day exhibitions.

International Fruit and Flower Show at Glasgow.—A great fruit and flower show is to take place here in the second week of September 1872. At a meeting of gentlemen nominated to organise and carry out the undertaking, it was unanimously resolved that subscriptions to the amount of £1,000 should be collected, and that a prize schedule should be issued forthwith, in which prizes to about that amount should be offered. A committee was also appointed to look out the most suitable place for holding a show of the character decided upon.

Royal Horticultural Society.—The days on which the meetings and shows take place for next year are as follows, viz.:—January 17th; February 14th; March 6th, 20th; April 3rd, 17th; May 1st, 15th, 16th; June 5th, 6th, 7th, 19th; July 3rd, 17th; August 7th, 21st; September 4th, 18th; October 2nd; November 6th; and December 4th. It will be seen that there is a two days' show in May, and a three days' show in June, the latter being the special fête of the season. At this, we observe, some five gold medals and as many silver ones are to be awarded for new plants. The society's provincial show, schedules for which will be issued early in the year, is to take place at Birmingham, in, we believe, the beautiful grounds at Aston, belonging to Mr. Quilter, on whose hearty co-operation, we feel sure, all concerned may fully rely.

Royal Horticultural Society of Ireland.—The condition of this society according to the last annual report, is both encouraging and satisfactory, the council being enabled, after discharging all liabilities, to invest a further sum of £1,000 in Government stock, leaving a balance in the bank to current account of £68. 5s. 6d. In revising the schedule of prizes for 1872, the council has also made considerable additions both to their number and value; and has decided to discontinue the private winter exhibition of fruits, provision being made instead for a great public fruit-show, to be held in October, which it is hoped will prove both publicly interesting and of much practical value. This society owes much of its prosperity to its active, able, and most courteous secretary Mr. Ambrose Balfie.

Manchester Botanical and Horticultural Society.—It has been thought desirable to hold monthly floral and horticultural meetings in connection with this society, similar to those held at South Kensington, a plan which we should be pleased to see carried out in other great centres of horticulture. The meetings in question are to be held in a suitable room in Manchester, and the subjects exhibited are to be submitted to a competent committee. First and second class certificates and commendations are to be awarded, at the discretion of the majority of the members present, to the novelties exhibited, according to their merit. As the success of such meetings will, of course, mainly depend upon exhibitors, we trust that they will aid the society's efforts in this new direction with their hearty co-operation. It is proposed next year to hold these meetings in February, March, and April, then come the summer shows at the Botanical Gardens, and then there will be three more town meetings in September, October, and November, for the support of which there is doubtless abundant material in and about Manchester. We wish the movement every success.

THE GARDEN.

"This is an art
Which does mend nature: changes it rather; but
THE ART IS NATURE."—Shakespeare.

All communications for the Editorial Department should be addressed to WILLIAM ROBINSON, "THE GARDEN" OFFICE, 37, Southampton Street, Covent Garden, London, W.C. All letters referring to Subscriptions, Advertisements, and other business matters, should be addressed to THE PUBLISHER.

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HAMPSTEAD HEATH.

THE public has every reason to be satisfied with the opportune additions to the number of our London Parks which have taken place of late years—beginning with the Regent's Park, secured to the public and laid out during the Regency; and followed, after a somewhat long delay, by Victoria Park, for the use of the extreme eastern suburbs; and Battersea Park, for the transpontine districts of the south-west. As a fitting continuation of these steps in the right direction, whatever may have been their shortcomings, we have at last, after many efforts, secured Hampstead Heath as a noble outlying park for the rapidly-growing suburbs of the north-west.

This beautiful stretch of undulating ground, from the higher portions of which a vast panoramic view of London is obtained, in the midst of which rises in misty grandeur the noble dome of St. Paul's, has been thoughtfully and picturesquely described by Leigh Hunt and several other popular writers. The scene is, in fact, well worthy of thoughtful contemplation; it is as grand as that celebrated view of Rome, with the vast dome of St. Peter's in its midst, that is obtained from the Sabine Hills, which border the far-stretching Campagna to the south-east. In fact, our Hampstead view of the great modern metropolis is far more impressive than even that of Rome from the Sabine Hills, inasmuch as from that spot we are enabled to look upon a teeming centre of human wealth and power, still in a state of rapid and unexampled progress, instead of upon one of decadence; and yet, we were very near losing the privilege of possessing a spot hallowed by a thousand historic associations, and seeing it covered by smug villas, whose Cockney gardens and their enclosing walls would have shut out the noble view for ever—at all events, during the running off of leases for ninety-nine years.

Fortunately, an Act of Parliament has secured the most picturesque piece of ground within half-a-dozen miles of London, and only just in time. For, doubtless, the "lord of the manor," in the exercise of fully-admitted territorial rights, which at present remain undisputed, would have turned it to the best account in whatever manner the most lucrative results could have been obtained, which would, undoubtedly, have been by letting out the whole space in small plots on building leases to speculative builders. This desecration has been prevented by the spirited vote of £45,000 by the House of Commons to rescue this ancient playground of Londoners from absorption by the lord of the manor and the builders.

The public, who has grown a very big, strong boy, has struggled hard for his old playground and won it, and the next thing to be considered is, "What will he do with it?" The *Times* (after blaming the delay that has taken place since the acquisition of this new public property) has very wisely suggested that plans for imparking and laying out this beautiful site to the best advantage shall be obtained at once from our most eminent landscape gardeners, and the best plan acted upon without further delay. It will require the utmost taste and discretion to manage the arrangements of the new plantations, walks, and drives, in such a manner as, while ministering to the enjoyment of the public, they shall not interfere with those wild beauties of the scene which form its most attractive charm.

NOEL HUMPHREYS.

THE KITCHEN-GARDEN.

SMALL GARDENS.

As a savings bank for scraps of time there is no institution in which the cottager, the artisan, and even middle-class man can better invest his leisure hours than in the garden; for, apart from the life-invigorating occupation which it affords, there is attached to it profit in the shape of a supply of fruits and vegetables; and the value of fresh, well-cooked vegetables, in a health-giving and sanitary point of view, can scarcely be overrated.

Passing over the essential elements, viz., light, heat, air, and moisture, without which plant-life cannot exist in a healthy state, we come to the rotation of crops. The true theory of plants not succeeding for two or more seasons in succession on the same ground is that the soil becomes exhausted of the food necessary for the particular plant; and this is proved by the practice of the London market gardeners, who manure their ground so very heavily that they care nothing for rotation. The late Rev. H. Smith, of Lois Weedon, near Daventry, grew wheat upon the same land for upwards of twenty years without manure, but then he had an inexhaustible store of the mineral constituents of the wheat crop in the subsoil, and a small portion of this was brought up every third or fourth year, to maintain the fertility of the soil; and in that way Mr. Smith considered he could go on growing wheat upon the same plot for hundreds of years. The small gardener may not have such a store of plant material to resort to, and, therefore, systematic rotation is his most certain resource. For the purpose of simplicity, and to make the rotation clearly understood, I append the annexed diagram, which we will suppose represents a plot forty yards by fifteen yards, or just one eighth of an acre:—



This I would divide into four equal proportions, numbered one to four, and of the three divisional lines, the centre one should be an asparagus bed, and the two other lines, respectively, rhubarb and seakale. The marginal dotted line would be planted with fruit-trees, say, pyramidal apple and pear trees, at ten feet apart, with two gooseberry or currant trees between each pair. Around the outer margin a row of strawberries may be planted, or herbs or flowers. In each row of seakale and rhubarb three compact-headed apple, pear, or plum trees might be placed, without interfering injuriously with the under crops.

Now, in the rotation which I propose there is one special provision that must be made, and it is this: Never sow peas or runner-beans nearer together than eight to thirteen feet apart; and in this way, as each division of the plot is thirty feet wide, two rows of these vegetables may be sown in each, without the same crop coming upon the same land more than once in five or seven years. This will give eight rows, or seven successional crops of peas and one of scarlet-runner beans, which will be ample for any ordinary family. These crops arranged, the next consideration is the rotation, and those crops we divide under three heads, viz.:—*Deepeners*, *Improvers*, and *Exhausters*. Thus, No. 1 will be cropped with celery, carrots, parsnips, and onions, all of which require a deeply-trenched soil; a catch crop of radishes, lettuce, and a row or two of early cauliflower, being taken before the celery need be planted. No. 2 will have cabbage, cauliflowers, turnips, and spinach, followed by coleworts (small cabbage) directly the other crops are removed. No. 3 will contain broad beans, leeks, and early potatoes; these crops being followed by savoys, curled broccoli, Brussels sprouts, and similar winter greens. No. 4 will be stocked entirely with late potatoes in rows three feet apart, interlined in July with winter broccoli or other brassicas; broad beans may be dropped in with the potatoes at a yard apart, from which a fine crop may be gathered without injury to the potato crop. Here, then, we have the whole ground cropped for the first year. In the following season 1 will take the place of 4, while the other crops will advance one step forward; and this round of cropping will continue as long as may be thought proper. No system of cropping can be more simple and systematic, and I speak the result of nearly forty years' experience when I say no system of rotation can be more profitable.

As regards cultivation, let us assume that the garden has been properly drained, not less than three feet, and, if possible, four feet, deep, the drains being from fifteen feet to twenty feet apart. Then the ground must be trenched two feet deep, not necessarily reversing the ground to that depth, but digging the surface a foot deep, and loosening the subsoil another foot, so that it may become enriched from the percolation of the manure-water from the surface, and be

ready for bringing up in subsequent trenching. Trenching may be defined as reversing the whole body of soil two or more feet deep. Bastard trenching consists in digging the surface soil a foot deep, and moving the subsoil another foot, but leaving it there. Sometimes a layer of dung is placed between the two layers of soil: a very good practice for deep-rooting plants. Digging or forking is simply the reversal of the surface-soil to the depth of one foot; and in performing that operation, it will be found a good practice to pare off two or three inches of the surface soil, and place it in the bottom of the trench, so as to bury the weed-seeds beyond vegetative distance.

As respects manure, in addition to farmyard dung, finely-sifted ashes, soil, weeds—in fact, vegetable refuse of all kinds—may be collected together, and if regularly soaked with sewage, will soon become rich manure. Thus, several cartloads may be collected in the course of a year, and will add materially to the fertility of the garden. If the soil is light and sandy, salt may be used with considerable advantage; but if heavy, then lime, or lime and salt will be preferable. Of concentrated manures, Peruvian guano, if it can be procured genuine, is the best, especially for making manure-water. Nitrate of soda is a valuable manure for light land, and soot may be strongly recommended for heavy soils.

With reference to cropping, the following remembrancer was compiled nearly thirty years ago, and the fact that it has stood the test of that length of time without change or amendment, is the best proof of its value:—

Sow	SEED-TIME.									
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
Asparagus.....				2	...	...	...	...	...
Artichoke.....			2	...	...	...	...	...	...
Beans, Early Broad	2	2	...	...	...	2	2	...	...
" Windsor, &c.		2	2	2	2	2	...	...	...
" French Dwarf				3	2	2	1	...	...
" Scarlet Runner.....				3	2	...	...	...	...
Beet.....				...	1	...	...	...	...
Borecole and Kale.....			1	2	...	...	...	...	...
Broccoli, Early (Snow's) ..			1	2	1	...	...	...	...
" Late.....			2	2	...	...	...	...	...
Brussels Sprouts.....			2	2	...	...	...	...	...
Cabbage, Early			1	2	...	...	2	...	...
" for Coleworts				1	3	2	...	...	...
Cauliflower, Early		2	2	...	...	...	...	3	2	
" Late.....			2	2	2	2	...	...	...
Carrot, Early.....		3	2	2	2	...	...	2	...	
" Late.....				1	...	...	...	...	...
Celery.....		2	3	...	...	...	...	...	...
Corn Salad.....			2	...	...	...	1	...	...
Cress and Mustard		2	2	2	2	2	2	2	2	
Cucumber.....				4	2	...	...	...	...
Endive.....					2	2	...	...	...
Gourd.....				3	2	...	...	...	...
Kohl Rabi.....				3	2	...	...	...	...
Leek.....			2	2	...	...	...	...	...
Lettuce, Cos.....			2	2	(1	1	1	2	1	
" Cabbage.....					3	3	3	...	...
Mangold Wurzel.....				2	2	...	...	...	...
Onion.....			2	...	...	...	...	3	2	
Parsnip.....			1	...	...	...	...	...	...
Parsley.....			1	1	2	...	...	...	...
Peas, Early.....	2	2	...	...	...	2	...	...	...
" Late.....			2	2	2	2	2	...	...
Potatoes, Early		3	...	...	...	...	...	...	...
" Late.....			2	...	...	...	...	...	...
Radish, Early and Turnip...	2	2	2	2	2	2	2	2	2	
Rhubarb.....				1	...	...	...	...	...
Savoy.....			2	2	...	...	...	...	...
Seakale.....				1	...	...	...	...	...
Spinach.....		2	2	2	2	2	2	1	...	
Turnips.....		2	2	2	2	2	2	2	...	
Turnip, Swede						(2	...	...	...
Vegetable Marrow				2	1	...	...	...	...
Pot Herbs.....			2	2	2	...	...	...	...

Note.—The figures refer to the weeks in each month; in early situations sow the early, and in late, the latter part of each respective week.

Sow everything in drills, whether in seed-beds or as permanent crops. Small seeds such as onions, carrots, &c., in addition should be dibbled in the drills; half the usual quantity of seed will thus be sufficient. Avoid broadcast sowing altogether. It is not necessary to manure for every crop; carrots and parsnips are better without it; but broccoli, cauliflower, and all the brassicas should be plentifully supplied with it, solid and liquid. The first and last crops of tender varieties of vegetables, as peas, cauliflowers, French beans, lettuces, radishes, should be sown in sheltered situations. To render the succession of vegetables certain, sow two or three varieties at the same time.

The following list of select vegetables may be of use in these days when seedsmen's catalogues are so overburdened with varieties:—

ASPARAGUS.—Of this there is but one kind. The Giant is only a stronger sort.

BROAD BEANS.—Royal Dwarf Cluster, Broad and Green Windsor.
 BEET.—Pine-apple, Short Top, Barr & Sugden's New Crimson.
 BRUSSELS SPROUTS.—Sutton's and Scrymger's Giant.
 BORECOLE.—Hearting, Cottager's Kale, Buda or Asparagus Kale.
 BROCCOLI.—Snow's Winter White, Hammond's Imperial Hardy, Cattell's Eclipse, Carter's Late Summer, Purple Sprouting.
 CAULIFLOWER.—Walcheren, London Market.
 CABBAGE.—Atkins's Matchless, and Rosette Colewort, for all seasons. For larger kinds, Wheeler's Imperial and Enfield Market.
 CARROT.—Early Scarlet Horn, Intermediate, and Altringham for deep soils.
 CELERY.—Incomparable, Hooley's Conqueror, for size.
 CUCUMBER.—Telegraph, Master's Prolific, Hardy Ridge.
 ENDIVE.—Frazer's Improved Batavian, Digswell Prize.
 KIDNEY BEANS.—Sion House, Newington Wonder; Scarlet Runner—Carter's Champion.
 LEEK.—Axtoun Castle.
 LETTUCE.—Hardy Hammersmith, All the Year Round, for winter; Tom Thumb, Cos, Sugar Loaf, Dunnett's Perfection, White Paris Cos.
 ONION.—Hardy, for autumn sowing, Red and White Tripoli; summer crop, White Spanish, Globe, James's Keeping; for pickling, Silver Skinned.
 PARSNIP.—Guernsey, Hollow Crown.
 PEAS.—Early, Ringleader, Advancer; main crop, Yorkshire Hero, Veitch's Perfection, Ne plus ultra.
 PARSLEY.—Treble Curled.
 RADISH.—Wood's Early Frame, Short Top, Scarlet and White, Olive Shaped, Red and White Turnip.
 RHUBARB.—Dancer's Early Scarlet, Myatt's Victoria, Mitchell's Royal Albert.
 SPINACH.—Flanders and Prickly.
 TURNIP.—Red American Stone, White Strap-leaved; Chirk Castle and Orange Jelly, for winter.
 POTATOES.—Veitch's Ashleaf, Myatt's Ashleaf, Haigh's Kidney, Paterson's Victoria and Economist, Milky White, Baron's Perfection, Almond's Yorkshire Hero.
 VEGETABLE MARROW.—Hibberd's Prolific, Moore's Cream, Prince Albert.

A few notes upon vegetables may not be out of place. The Royal Cluster Dwarf Bean is valuable, forming a plant about a foot high; and the same may be said of Newington Wonder French Bean. Carter's Champion Runner is invaluable, being nearly double the size of the ordinary runner. Among brassicas we attach great importance to Snow's Broccoli: it is invaluable, and so is Hammond's Imperial for spring use. For cottagers, Purple Sprouting is very profitable, and has the true broccoli flavour. Let me strongly recommend the asparagus, or Buda-kale, for spring use, it is one of the finest vegetables we have. A good word must also be said for the Rosette Colewort. There should always be a seed-bed of this ready for filling up every vacant space. A.

THE LARGE WHITE CALIFORNIAN RADISH.

THE fact that some imperfect specimens of this have received a first-class certificate from the Royal Horticultural Society justifies some allusion to it. It was when walking through the Chinese quarter of San Francisco, in the beginning of November 1870, that I first saw it. Among the various vegetable products which were exhibited outside the Chinese shops was what seemed to be a peculiarly tender-looking white turnip, with a skin as smooth as glass, and pure white. The roots were cylindrical in outline, but usually rather neatly rounded at the ends, somewhat like a cucumber, and they were from eight to twelve inches long, and from two-and-a-half to three-and-a-half inches in diameter. Certain that it was a distinct and excellent kind of turnip, I made some inquiries as to the variety, and learnt that it was a radish. But, surely, a radish of such size must be a tough subject in the centre! On the contrary, the largest specimens were found to be as tender throughout as a well-grown young summer turnip. I afterwards visited the gardens where these radishes were produced, and found them grown, and thoroughly well grown too, in beds about four feet wide, with a narrow alley between. The plants, arranged in lines, had abundant room to grow, and seemed to have thriven unchecked in the sandy soil, kept well moistened and enriched by the Chinese gardeners. The culture seemed to me remarkably like what one sees in a good market-garden at Paris, the only difference I saw being, that between every two lines of plants there was a little hollow scooped out, and in this a small drill of half-decomposed manure was placed. Specimens bought in the Chinese market at San Francisco, and brought to London with other seeds and roots, maintained their freshness and good flavour for many weeks. They were shown to some of the most experienced seedsmen and growers in London, not one of whom ever suspected they had anything to do with a radish, though they employed the tongue as well as the eye test. Where these radishes are grown so well, the winter climate is much like that of our early autumn, so they do not suffer from cold. The tops of the specimens shown at South Kensington were dead from frost.

The plant must, of course, receive the treatment of an autumn and winter radish, and be sown in rich, light, and warm soil. In the colder parts of the country it might be desirable to place some plants in positions where they could be readily covered by a ground vinery or some such protection, so as to prevent their being checked or destroyed by autumnal frosts. If it prove distinct, it will doubtless be an acquisition. W. R.

THE FLOWER-GARDEN.

THE HARDY BAMBOOS.

THERE are no materials more attractive than these for the embellishment of pleasure-grounds in the southern and milder districts. I have grown and admired the beautiful and graceful *Bambusa* (*Arundinaria*) *falcata*. It is one of the most valuable of all plants for dotting here and there in the pleasure-ground, on islands, near water, or in the rougher parts of the rock-garden or hardy fernery. When once established it is surprising to see the number of vigorous young fishing-rod-like shoots that spring from it every summer. With me they used to attain a height of from fifteen to twenty feet. I have had hundreds of canes an inch in diameter at the base, springing from one tuft. At Bicton we had them very fine associated with the Pampas grass and *Arundo Donax*, particularly by the sides of streams, and in sheltered and half-shady nooks of the rock-garden. The best and handsomest plants of this bamboo I have ever seen are at Mount Edgecumbe. The most important consideration in connection with this pretty well-known plant, however, is that at least several other species of hardy bamboo are very likely, indeed, to prove as hardy, if not harder, than the subject of our illustration. For example, I find the following descriptions of good kinds in "The Sub-tropical Garden":—

BAMBUSA JAPONICA (*B. Metake*).—A large-leaved and rather dwarf species from Japan, growing from four feet to seven feet high, with erect, thickly tufted stems, which are entirely covered by the sheaths of the leaves; the branches are also erect. The leaves are lance-shaped, with a very sharp point, dark green, persistent, narrowed into a short leaf-stalk, and nearly a foot long. This species sometimes flowers with extraordinary profusion at the expense of a portion of the foliage, which withers away and leaves the naked stems exposed. This may, however, be prevented, to some extent, by placing the plants on mounds somewhat above the level of the surrounding soil. I have seen it thrive very freely in the late Mr. Borrer's garden in Sussex, and in one or two other places. It loves a peat soil, or a very free moist and deep loam, and runs a good deal at the root.

BAMBUSA MILLS.—A fine and vigorous kind from Cochin China, somewhat tenderer than most of the other kinds enumerated, though no doubt it will be found to thrive in the milder southern districts; or it may be found useful if grown in the conservatory in winter and planted out in the open air in summer, as is sometimes done with *B. arundinacea*, which otherwise could not possibly be seen out of doors in our climate. Panicle simple, erect, close; spikes long, imbricated. Leaves rather large, lance-shaped, striated, clasping the stem, which is woody and tapering; nodes rather distant, and not very prominent.

BAMBUSA NIGRA.—A rather compact-growing Chinese kind, with nearly solid stems, and thinner leaves than those of any other species.

The stems are smooth and bushy, about seven feet high, of a light green, dotted and striped with purple when young, changing to a glistening black when fully grown; they branch very much at the top, and sometimes from the base up. The leaves are oval-oblong, acute, shortly-stalked, with a hard, dry, persistent sheath; their tender green colour contrasting finely with the blackish hue of the stems. It is best planted as isolated specimens near the margins of shrubberies, or on slopes in the pleasure-ground in warm, sunny, and sheltered positions, in deep, sandy, and well-drained soil.

BAMBUSA QUILLOI.—A Japanese species of vigorous growth, with robust green stems and bright-green leaves, polished above and slightly mealy beneath, the ligule bearing a little bundle of brownish-grey hairs on the top. This kind I first saw in the gardens of the Acclimatisation Society at Paris, where it was thriving vigorously, and I have little doubt of its proving valuable in Britain.

BAMBUSA SIMONII.—A handsome, distinct, and vigorous species, which has grown very freely for some years past in the neighbourhood of Paris. The stems are numerous and grow as much as ten feet high in a season. They are mealy-glaucous at the joints, and the branchlets are numerous and rather closely crowded. The leaves

are narrow, sometimes nearly a foot long, and are occasionally striped with white. This species, which was obtained from China some years since, has thriven very well in the gardens at Paris, where M. Carrière first drew my attention to it. From what I have seen it do there I have no doubt it will prove of great value in the milder southern parts of England and Ireland.

BAMBUSA VIOLACEA.—A hardy and vigorous kind, intermediate between *B. nigra* and *B. viridiglaucescens*, most resembling the last-mentioned however. It has blackish-violet much-branched stems, which assume a yellow tinge with age. The leaves are green above, bluish-grey beneath, with an elongated ligule surrounded by a bundle of black hairs. Native of China.

BAMBUSA VIRIDIGLAUCESCENS.—A species from Northern China, which has been



Bambusa (Arundinaria) falcata

proved very hardy and free in the Paris gardens, and will, probably, in warm parts of our islands, make a more vigorous growth and prove a more beautiful object than any other kind. The stems, of a light-yellowish-green, grow from seven feet to twelve feet high, branching from the base, each branch again branching very much. The leaves are very numerous, especially at the ends of the branches, of a pale-green, bluish underneath, sheathing the stem for a considerable length. It forms a fine object when planted as isolated specimens in sheltered warm glades in the pleasure-ground, or in snug open spots near wood-walks, in very deep, rich, light, and well-drained soil.

All the above, with one exception, I had the pleasure of seeing about Paris in 1867. Several of them were more vigorous than *Bambusa falcata*, growing in the same ground; hence a very good reason for believing that some of them will be found of quite as great importance as the one figured, and which has been proved to add such a charming and distinct feature to many gardens in the southern and western parts of England and Ireland. We are indebted to MM. Vilmorin, Andrieux, & Co., of Paris, for the above admirable likeness of a well-grown specimen of *B. falcata*.

JAMES BARNES.

A PLEA FOR ROCK GARDENS.

BY JAMES McNAB, ROYAL BOTANIC GARDENS, EDINBURGH.

ROCK GARDENS may be looked upon as comparatively modern institutions, while rockeries are of ancient date. The latter are excellent in their way, but depend much on the nature of the material at the command of the operator, and on being constructed in such a manner as to produce a landscape effect. In rockeries the suitable and geological arrangement of the material is generally aimed at, more than a scientific or artistic distribution of the plants intended to be grown. But with rock gardens, on the other hand, the arrangement and formal distribution of the plants are specially to be considered. It is, however, not necessary that artistic effect should be laid altogether aside, for it is quite possible to have a graceful arrangement without sacrificing the individual health and habit of the plants. For a long series of years I have been enamoured by the diversified forms and extreme beauty of alpine plants, having always had under my charge a large number of these deserving favourites. Their cultivation, however, had always been in pots, plunged in ashes in raised pits, covering with glass during the winter months when necessary.

Some years ago the removal of a high wall which separated the botanical from the old experimental garden here became necessary, to throw the two establishments into one. To utilize this large portion of old building material I commenced what I called a rock garden, in contradistinction to the rockeries which I had previously seen in many places throughout the country, where alpine and herbaceous plants, shrubs, both evergreen and deciduous, and often trees, were indiscriminately growing together, the stronger and wider-spreading plants often smothering the weaker. The general effect of such rockeries when judiciously constructed was good, particularly in the eyes of people not having a botanical taste. In the construction of the rock garden here, I got the stones of the old wall just alluded to split up longitudinally, and arranged on a piece of sloping ground facing the north, which I had previously laid out in an undulating and somewhat geometrical form, and which I divided into uniform sections, separated by stone paths and steps. These sections were then divided into angular compartments of various sizes, and each filled with soils suited for the various plants to be put into them. The compartments of several of the sections were afterwards filled with various species of a genus, such as the sections of *Sempervivums*, *Sedums*, *Saxifragas*, also of *Primulas*, *Silenes*, *Aubrietias*, *Gentianas*, *Androsaces*, &c. Other sections were filled with plants of a uniform height, particularly of kinds of which only a few species exist, while others were arranged in geographical order. The success of the early part of this experiment was such as to induce me to transfer a very large proportion of our alpine plants to the rock garden; and I am happy to say that I have never had cause to regret it. It was often a difficult matter to get such a large collection of alpine plants as existed here kept in proper order, particularly when confined under pot culture, the attention necessary for shifting such a collection being often more than it was possible to undertake at the proper season with a limited staff of men. Unless such re-potting was regularly gone into, the foliage and flowers of each could not be properly developed. In this state, species often get confounded together, which is not likely to be the case when all are planted in separate rock-work compartments, yet near enough to be easily compared. The various sections of a rock garden, having the soil prepared specially for the different genera, should be equally drained and enjoy the same exposure. Under such auspices, each individual plant is developed in a more perfect condition than it can possibly be under ordinary pot culture; but, of course, if anyone could devote a great deal of care and attention to a few select favourites, they might develop very superior specimens by pot culture.

The rock garden recently constructed at the Edinburgh Botanic Garden, and still in progress of extension, contains upwards of four thousand compartments, of which 2,200 spaces are filled with various species and varieties of alpine and dwarf-herbaceous plants, besides numerous dwarf, shrubby kinds, from all temperate parts of the globe. The remaining

compartments are filled with free-flowering duplicates, placed at uniform distances, to please the eye of those whose taste is more for colour; but even to the botanical cultivator, such free-flowering duplicate masses cannot be otherwise than extremely interesting.

All the angular interstices between the irregular plant compartments are filled with a selection of bulbous plants, such as species of *Triteleia*, *Calliprora*, *Calochortus*, *Cyclobothra*, *Cyclamen*, white *Sisyrinchium grandiflorum*; and amongst them nothing more pleasing than the *Iris reticulata*, which thrives well in such places and flowers abundantly. It never requires to be lifted except for sub-division.

Many of the larger compartments between the miscellaneous collection of alpine plants are filled with a selected collection of spring-flowering bulbous plants, such as the Crimean Snowdrop, all the varieties of *Scillas*, of which *S. bifolia major* and *S. sibirica* predominate; *Puschkinia*, varieties of the Grape Hyacinth, Vernal Snowflake, *Bulbocodium vernum*, dwarf *Narcissus*, &c. After the spring bulbs are done blooming and cut down, a little good soil is placed on the surface, and the spaces are filled with dwarf annuals, and shallow-rooted summer-flowering herbaceous plants, such as *Leptosiphons*, *Clintonias*, dwarf *Gilias*, *Mesembryanthemum tricolor*, *Holosteum umbellatum*, *Myosurus minimus*, *Linaria alpina*, *Papaver alpinum*, dwarf *Lobelias*, *Alternantheras*, &c. Such plants are all removed as soon as injured by frost, and the surface of the bulbs is again covered with a little fresh soil, in order to protect the seeds of the annual plants, which rarely start till the bulbous plants are over. It will be found, after the expiration of two or three years, that some of the bulbs will get into a tufted condition, preventing their free flowering. With such plants it will be necessary, as soon as their blooming is over, to have them lifted and sub-divided, giving fresh soil where necessary, and replacing only the larger or flowering bulbs.

Besides the choice bulbs planted in the general rock-garden compartments, a large division is also set aside for a general collection of all the spring-flowering bulbous plants, both species and varieties, and which are exceedingly interesting during the early months. A division is also arranged for *Colchicums*, of which the red, pink, white, and variegated contrast well with the varieties of autumn-flowering *Crocus*, particularly the *C. speciosus*, which succeeds admirably in the stone compartments, making quite a show during the months of September and October.

Large divisions are also appropriated for a selection of monocotyledonous plants, exclusive of bulbs, such as the dwarf and herbaceous species of *Iris* and *Yucca*; also species of *Cordylina*, *Sparaxis*, *Helonias*, *Ophiopogon*, *Trillium*, terrestrial orchids, *Convallaria*, *Uvularia*, *Narthecium*, *Tofieldia*, *Acorus*, rare species of *Carex*, &c.

The interstices between the upright stones are filled with varieties of *Primula vulgaris*, both single and double, which flower abundantly. The double-flowering sorts, which hitherto were of difficult cultivation in the open air, succeed in such places remarkably well. *Hepaticas* are also admirably adapted for such situations, and, with the *Primulas*, have a gay appearance during the spring months.

The rock garden recently formed here is 190 feet long and at present 85 feet wide, having a uniform and graduated elevation of 12 feet. The extension and elevation of the rock garden is still progressing, and when completed the ultimate proportions will be 190 feet long, 120 feet wide, and the ultimate height, 18 feet. In the construction of the rock garden, care has been taken to have it all thoroughly drained. The soil, as well as the sandy subsoil, has all been thrown up, and the ground below filled with ashes and foundation rubbish, composed of stones and other rough material, of which quantities can always be had near large towns for nothing. The original surface soil is always kept uppermost, for placing the stones in. These stones vary from 14 inches to 3 feet in length, from 8 inches to 10 inches in breadth and from 3 inches to 4 inches in thickness, having more or less angular tops. They are all placed about 10 inches or 12 inches deep in the soil in an upright position, not "sloping at a high angle to the east," as stated by "G. A. L.," in the *Gardeners' Chronicle* of the 14th of October, 1871.

Angular stone stumps, varying from 3 feet to 9 feet in circumference, and from 1 foot to 3 feet in height, are placed on prominent points at uniform distances. Each stone stump is planted with *Yuccas* and *Cordylines*. The sides of these upright stone stumps are furnished with angular buttress-stones, which gradually join into the ordinary stone compartments. These stone stumps, filled with large and formal plants of *Yucca gloriosa*, *Y. recurva*, &c., tend to give a characteristic and decided look to the rock garden.

After all the stone compartments are arranged, the ordinary garden soil is taken out, and is replaced by prepared compost, chiefly consisting of turfy loam, peat, and sand, in proportions to suit the plants intended for them. I consider freestone, or any kind of sandstone of a free-splitting character, to be the most suitable, as roots take kindly to it. Besides, such stones retain a considerable deal of moisture when under the surface of the ground, thus giving a certain degree of nourishment to the roots during dry weather. When lifting plants that have been thus treated, the roots will be found to adhere to the stone all round, and can thus be taken up for transplanting in square, triangular, or septangular masses, as the case may be. The drainage before alluded to proves very beneficial during the winter months, as is evidenced by the large number of plants which can be wintered with impunity on the elevated slopes of this rock garden, when contrasted with many of the same species planted in the ordinary garden borders, where they generally decay away with frost and damp. The fact of frost not affecting plants on an elevated rock garden to the same extent as when planted in open borders was thoroughly tested during the winter of 1870-71. The frost set in early in November, and from that period up to the end of February, making 120 days, the thermometer in the garden registered below the freezing-point on no less than seventy-three mornings. During November 1870, on twenty mornings the lowest points were on the 2nd, 8th, 9th, 10th, 22nd, and 23rd, indicating, respectively, 29°, 26°, 25°, 29°, 27°, and 26°. During December, on eighteen mornings, the lowest points were on the 16th, 23rd, 25th, 27th, 28th, and 31st, indicating, respectively, 26°, 9°, 20°, 12°, 17°, and 20°. During the month of January 1871, the thermometer fell no less than twenty-seven mornings below the freezing-point, the lowest being on the 21st, 24th, 25th, 26th, 27th, and 28th, indicating 20°, 22°, 21°, 21°, 16°, and 14°. During February, on eight mornings, the thermometer was below 32°, the lowest being on the 1st, 2nd, 11th, 12th, 13th, and 26th, indicating, respectively, 26°, 30°, 31°, 29°, 29°, and 31°. Although this long-continued frost, almost without snow, penetrated full thirteen inches into the rock garden, it was surprising to find that, when genial weather returned, very few plants had suffered.

At some future time, when the rock garden is nearer completion, it will be my endeavour to give drawings and further details of it—then the large *Araucarias* and *Yuccas*, which now adorn all the prominent points, will be more matured. Meanwhile, I hope enough has been said to give an impetus to the further cultivation of alpine plants on the rock-garden system. Rock gardens can afford as much scope for the display of a geometrical or fanciful taste as any of our modern bedding-out flower-gardens, particularly now that mixed summer bedding-out flower-gardens are coming more into fashion. A geometrical rock-work and flower-garden combined was constructed during 1870 at Easton Duddingston Lodge, the residence of Charles Jenner, Esq., and is a good instance of this novel style of gardening. The raised geometrical beds have their sides constructed of a series of sloping stone compartments for the growth of alpine plants, while their raised centres during spring are filled with bulbous plants, and are afterwards replaced with a methodical arrangement of summer-flowering bedding plants.

On the property of William Christie, Esq., of Craigend Park, near Edinburgh, an old quarry has been turned to good account for rock-garden purposes. When confined entirely to the rock as quarried, a difficulty frequently occurs of getting proper places excavated, for the reception of plants. Mr. Christie has successfully combated this difficulty by laying out the interior in portions of various sizes and styles, composed of stone compartments, for the reception of alpine plants.

Another rockwork, but more in the rock-garden style, has been in process of formation for several years on a piece of southern sloping ground at Fettes Mount, near Laswade, the summer residence of G. H. Potts, Esq. It is laid out in terraces, a style peculiarly well suited to the naturally sloping character of the ground on which it has been constructed.

In many parts of Argyllshire, villa residences have been fixed on merely on account of the natural rocks existing on the ground, which are afterwards covered with ferns and other rock-work plants.

In the construction of rockeries, as well as rock gardens, it is necessary to provide the means of watering during dry weather; for this purpose a flexible tube and hose will be found the most efficient means. Of course, a force of water from a high reservoir is indispensable.

AMARANTUS SALICIFOLIUS.

This promises to be the finest-foliaged plant for dinner-table, drawing-room, and garden decoration for 1872. It created something like a *furor* wherever exhibited last season. It is impossible to exaggerate its beauty, or exhaust its grace, by pen or pencil sketches. It is a free-growing plant, of admirable habit, forming a dense weeping pyramid of about a yard high, and nearly as much through. The plants shown at South Kensington were reported to have been grown in the open ground, from whence they were lifted into pots, and removed to the show. Everything else looked common-place beside them; they were the eye of the exhibition. Long, narrow leaves, from a quarter to half an inch wide, and from six to twelve inches long, weeped down over each other and the pots in the most graceful manner. They exhibited every hue of colour, from bronze-green to the most brilliant orange-red. It seemed as if more than all the beauty of *Croton angustifolium* and *C. interruptum* were combined in this charming *Amaranth*, or whatever else it may be; for I see its title is already questioned; and it certainly is like no other *Amarantus*.

But be it what it may, it is a rare gem for decorative purposes. For centres, groups, or rows, massed either by itself or as a set off to other flowering or foliage plants, it is likely to prove invaluable. In baskets, on brackets, or in vases, in conservatories or living-rooms, I cannot conceive anything more rich and elegant; while it will obviously give a new character to dinner-table decoration. Those long pendent branches, terminating in brilliant plumes, will fit in admirably with, and enhance the richness of, the finest services of plate, glass, dessert, &c. And to cut for the furnishing of tall vases, who that has seen it does not long to have such masses of drooping beauty with which to enwreath and elegantise them? Does any one think this the language of exaggeration? then let him hasten to see and grow the plant for himself.

D. T. F.

Modern Flower Gardens.—Mr. Henry Kingsley has undertaken the herculean task of reforming our modern flower-gardens. Everybody must admit that we have too little individuality—that we are too much ruled by fashion, and if Mr. Kingsley can help us to break through its trammels he will do good service. Most men when they propose a scheme of disestablishment—whether it is that of a church, a government, or a garden—have some scheme of their own to put forth as a substitute; and, as far as I understand Mr. Kingsley, he is desirous of reverting to a more natural style of gardening than that which is now practised. Byron says, "There is a pleasure in the pathless woods"; and I must confess that sometimes, after being half-blinded by the glare of a garden that had taken thousands of plants to fill it, I should have felt, like Byron, delighted with the pathless woods, or with Mr. Kingsley's garden *au naturel*. We have been trying to out-do each other in our rage after novelties. We have even sealed the house-top and torn off the houseleek to plant in lines on mud, so feelingly described by Mr. Kingsley. Nevertheless, after the overlasting red-white-and-blue pattern, the succulents were a move in the right direction. I am not over-anxious about seeing them all in a line, which so irritated Mr. Kingsley, but I believe true flower-garden reform lies in the direction of making a freer use of hardy plants, of neutral tints of foliage and flowers, to tone down the bright colours. I should be only too glad to curtail our present bedding-out system. I don't think we can do without it till the fashion changes, but by making larger use of hardy plants, many of which are especially adapted for massing, we shall be able to free our houses of thousands of the usual subjects of bedding-out.—E. HODGKIN, *Ramsay Abbey, Hants.*

THE SEA HOLLIES (ERYNGIUM).

(Continued from page 50.)

Of quite a different type is the next species that claims attention, viz., *E. aquifolium*, a fine, bold border plant, attaining a height of some three or four feet, or even more, with a general contour of a candelabrum-like character. As a proof of its classic character, I may add that in the Exhibition of 1851, Messrs. Hunt & Roskell took the design for one of their most *recherché* candelabras from an almost perfect facsimile of a flowering stem of this plant; and, by way of securing the pattern from decay, they electro-plated the plant itself.

In succession to the preceding we have a group that is so closely allied that, for all general purposes, its constituents may be considered under one head: *Eryngium planum*, *E. glomeratum*, *E. creticum*, and *E. virgatum*. In all of these the radical leaves are elliptic in shape, and of a bright, shining green colour. The much-branched stems rise to a height of three feet, with the globose inflorescences varying in size in the several species. The involucre leaves are narrow and spinous, and the beauty of the plants depends more on their elegant habit of growth and the general bluish hue, which gives a peculiar charm to the various ramifications, than upon anything else. These plants all seed freely, and in this way may be increased to any extent. I ought to add, however, that the seeds of *Eryngium* rarely vegetate the first season, and, therefore, ought not to be discarded, as they too frequently are, before they have experienced the influence of a second spring's sun.

So much for the entire-leaved section. In our second group, first on the list unquestionably stands *E. amethystinum*. With the radical leaves three-parted and flower-stems moderately branched, rising to a height of two feet or more, and producing numerous stems, the whole suffused with a steel-blue colour, its specific name is in the highest degree appropriate; and a beautiful plant it is.

Closely allied to it, but much larger and stronger in growth—a remark which also applies to its involucre heads of flowers—is the Himalayan *E. Roylei*. This species sometimes attains the height of four or five feet, and is of robust growth, but rarely matures its seeds—at least, such has been my experience.

Two slender and peculiarly forked species, viz., *E. caeruleum* and *E. corniculatum*, the former growing about two feet high, the latter about nine feet, it will suffice merely to name as desirable and distinct, where a collection rather than a selection is the object.

E. spina alba, which is usually entitled *E. rigidum*—but so appropriate is its older title that I prefer reversing the order of synonyms—is a dwarf plant, native of the south of France, of peculiarly rigid aspect, and covered with long projecting white spines, whence the name. It is a species but rarely met with, and, as cultivated by me, does not appear to be long-lived, usually exhausting its vitality by the third year.

Two species, viz., *E. Bourgati* and *E. Balbisii*, closely allied, if not absolutely similar, are both well worth cultivation. Dwarf (rarely exceeding fifteen inches in height), they have undulated and divided radical leaves, marbled over with white; and though devoid of any brilliancy of floral colour, the character just alluded to, and their general habit, is sufficient to give them a claim to the front rank of the herbaceous border.

The third group contains several species all of great similarity of aspect, and all coming from the Southern States of America or Mexico. Unlike the heretofore enumerated species, they have long and somewhat Yucca-like leaves.

E. yuccæfolium (syn., *E. aquaticum*), *E. bromeliæfolium*, and *E. virginianum* are all that I have ever met with in cultivation. So like indeed is the second species to a *Bromelia* that I have several times had it sent to me as one. A nip of the leaf between the teeth soon tells to what order it belongs by the presence of that flavour peculiar to all the Umbellifers.

These species are scarcely hardy enough to stand the vicissitudes of our climate; and, if I mistake not, have naturally a good deal of the biennial character about them. Their interest is more botanical than general. To such as have an opportunity of cultivating them, I may say that their native habitat is swampy ground; but if grown freely under similar circumstances in this country they are almost certain to be cut off by an early frost in winter, whereas if grown in a somewhat dry, sheltered nook of a rockery they are much more likely to survive the perils of their first winter, and to flower sufficiently early in the season to render the maturation of their seed possible, at least, if not probable.

Hull Botanic Gardens.

JAS. C. NIVEN.

God manages all of nature's growth and bloom in such way, that every earnest man with an observant eye can so far trace the laws of His Providence, as to insure to himself a harvest of fruit, or grain, or flowers. And whatever errors may be made are only so many instructors, to teach, and to quicken love by their lesson.—IK. MARVEL.

NOTES AND QUESTIONS ON FLOWER-GARDENING.

Iris persica.—Professor Syme informs us that this charming plant proves hardy under a wall as far north as Fifehire, and that it flowers there every spring.

"Carpeting" Ground beneath Trees.—I have recently taken a cottage in Derbyshire, as a refuge occasionally from city smoke and fog. There is a garden of fair size, in which are laurustinus, yew, holly, and other evergreen trees, which have been long planted and long neglected, and are now of large growth. I like them as they are; but there are such big bare spaces of earth below them on which nothing grows—not even weeds. Will anything grow there, and "carpet" the soil?—J. S.—[Your best plan is to naturalize on the bare ground small herbaceous plants that thrive in similar positions. Try, for example, the winter aconite, the periwinkles in considerable variety, the blue apennine, and the wood anemones, the St. John's Wort, the snowdrop, and any kinds of crocus or daffodil you can readily obtain.]

Flowers.—Some fifty years ago the poet Goethe discovered that all the parts of plants had a kind of common nature, and would change into each other. Now this was a true discovery, and a notable one; and you will find that, in fact, all plants are composed of essentially two parts—the leaf and root—one loving the light, the other darkness; one liking to be clean, the other to be dirty; one liking to grow for the most part up, the other for the most part down; and each having faculties and purposes of its own. But the pure one, which loves the light, has, above all things, the purpose of being married to another leaf, and having child-leaves, and children's children of leaves, to make the earth fair for ever; and when the leaves marry, they put on wedding robes, and are more glorious than Solomon in all his glory, and they have feasts of honey and we call them "flowers."—John Ruskin, in "Fors Clavigera."

Advice to Amateurs.—If your notion of country enjoyment is limited by thoughts of a good place where you may lie down under the trees, and frolic with your children, or smoke a pipe under your vine or clambering rose-tree at evening—find a gardener who is thoroughly taught, and who can place upon your table every day the freshest and crispest of the vegetables and fruits of the season, leaving you no care, but the care of bills for superphosphates and trenching. If you stroll into his domain of the garden, take your walking-stick or your pipe there, if you choose—but never a hoe or a pruning-knife. Joke with him, if you like, but never advise him. Take measure of his fitness by the fruits he puts upon your table, the order of your grounds, and the total of your bills. If these are satisfactory—keep him; if not, discharge him, as you would a lawyer who managed your case badly, or a doctor who bled or purged you to a sad state of depletion. If, on the other hand, in establishing a country home, you have a wish to identify yourself with its growth into fertility and comeliness, in such sort that you may feel that every growing shrub is a little companion for you and yours—every vine a friend—every patch of herbs, of vegetables, or of flowers, an aid to the common weal and pleasures of home, in which you take, and will never cease to take, a personal interest and pride—if all this be true, and you have as good as three hours a day to devote to personal superintendence—then, by all means, forswear all gardeners who come to you with great recommendations of their proficiency. However just these may be, all their accomplishments, ten to one, will be only a grievance to the full, you. It is far better, if you be really in earnest to taste ruralities to the full, to find some honest, industrious fellow—not unwilling to be taught—who will lend a cheerful hand to your efforts to work out the problem of life in the country for yourself.—D. G. Mitchell.

THE IN-DOOR GARDEN.

PALMS FOR THE GARDEN.

(Continued from page 31.)

Areca monostachya (Australia).—Quite a gem in its way, with a stem one-and-a-half inch in diameter and four feet high; fronds, dark-green, two feet long, drooping; useful for a vase; succeeding well under greenhouse temperature, and, in a young state, suitable for a Wardian case, being slow in growth.

A. rubra (Mauritius).—A very graceful species, having dark-green foliage, with a tint of red on the margin of the pinnæ; but the older the plant the less conspicuous the red hue becomes; leaf stalk, clothed with dark scales; habit, gracefully spreading, light and feathery; suitable for table decoration, and one of the best for general stove purposes.

A. furfuracea.—A variety of *rubra*, from which it differs in the absence of the red tint, and in having a denser clothing of dark scales on the petiole. A variety called *A. aurea* has the habit of this plant, but it has a yellowish tint on the petiole and yellow spots on the pinnæ. A handsome plant, but shy, and very fond of heat.

A. sapida (the cabbage-palm of Norfolk Island).—A useful greenhouse plant, with dark-green, narrow foliage, having a yellow tint; habit, spreading, which unfits it for table decoration, but on a pedestal it has a fine appearance. Being dwarf in habit, it is useful for the ornamentation of the conservatory.

A. triandra (East Indies).—In habit allied to *A. sapida*, but, not being so hardy, is of less value.

A. tigellaria (East Indies).—A spiny species, elegant in a young state, and pushing offsets from the base; not a free grower. *A. horrida* resembles this species; but both become ragged as they get old, and both like a high temperature.

Acrocomia sclerocarpa (syn., *macrocarpa*: Tropical America).—A nice plant when young; foliage dark green, and petiole clothed with long dark spines; when large, ungainly and lax in habit; not a good plant for general purposes.

A. lasiospatha.—Similar to the above.

Astrocaryum rostratum (syn., *mexicanum*: Tropical America).—A very spiny plant, with fine fronds of a dark-green hue; under sides white; stem clothed with very strong black spines, and the petiole with smaller ones; fronds dense, and pinnæ broad; a good stove palm, whose spines, however, are apt to tear other plants that may happen to be within reach of them.

Arenga saccharifera (Sugar Palm; syn., *javanica*, *Westerhantii*: Indian Archipelago).—Fronds, pinnate; when fully grown, twenty feet long and four feet wide; under side, white; upper, dark green; leaf-stalks round, with abundance of black fibre at the base. A fine palm for a large house; but quite unfit for general purposes.

Attalea Cohune (Honduras).—Fronds erect, twelve feet long; pinnæ channelled on under side; bright green. In this species the fronds stand without order, which gives the plant a confused appearance. For ordinary purposes, *Attaleas* are not very satisfactory; but where a plant is required to stand in a corridor, or near a wall, some of them might be found useful.

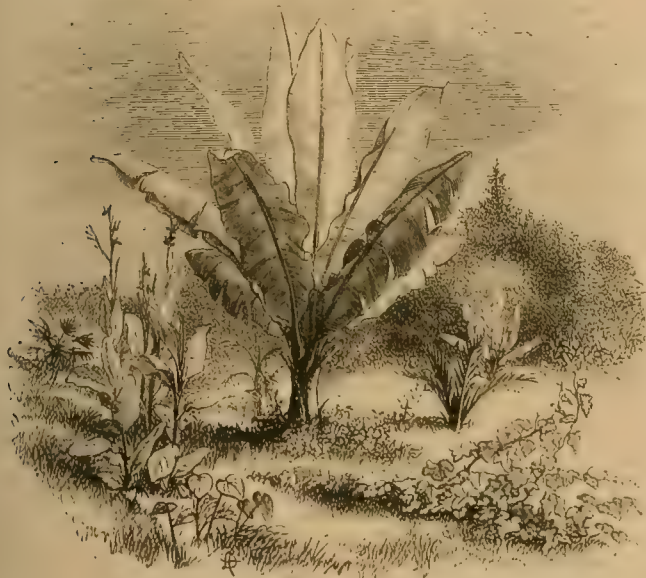
A. nucifera (New Granada).—A more lax plant than *Cohune*; pinnæ narrow.

A. spectabilis (Brazil).—Fronds more spreading than in the last; margin of pinnæ furnished with brown fibre, and the points are drooping. There are several other species of this genus; but they are not ornamental. J. C.

(To be continued.)

MUSA ENSETE FOR THE CONSERVATORY AND WINTER-GARDEN.

COMPARATIVELY few have any conception of the value of this superb plant for the conservatory, large greenhouse, or winter garden. When I went to Paris in the spring of 1867, I was



Musa ensete.

pleased and surprised to find a noble specimen in one of the cool-houses there, as in England I had not previously noticed it in a cooler house than the palm-stove at Kew. Much as it has been spoken of during late years as an ornament for the flower-garden in summer, its value in this country will be infinitely greater as a cool or intermediate house subject; particularly as in all but the southern and mild districts it may not be placed in the open air without danger. In the conservatory it quite surpasses all other plants in the stately beauty of its colossal leaves, and gives a dignity to the vegetation of that structure which it hitherto has not possessed. It grows freely planted out, or in large tubs, in turfy loam, slightly enriched and well drained. In a warm conservatory or winter-garden, with plenty of space overhead, it ought to be planted out; in a cool house or a small one, it would be better to restrict it to a large pot or tub. W. R.

Epiphyllum truncatum.—Few plants are better adapted for decorating the stove or warm conservatory during the months of November and December than the different varieties of this *Epiphyllum*. Any new mode, therefore, of displaying their beauties cannot fail to be interesting. A plant of an erect round Cactus, of which I do not know the name, was used here this spring as a stock for in-arching some varieties of *E. truncatum*, and they are just coming now into full flower. This stock was about eight feet in height, and about four feet of it, measuring from the top, was in-arched with the varieties of *E. truncatum*, called *spendens violaceum* and *Ruckerianum*. Next year I intend in-arching some varieties of *truncatum* on the lower portion of the stock, and, judging from the effect of those at present in flower, this plant will, when furnished and in full beauty, make a pyramid of *Epiphyllum* well worth seeing. I have some six varieties of *Epiphyllum truncatum* in-arched on the *Pereskia*; but they are only about three feet in height. Nevertheless, when in flower, they are very beautiful as pyramids.—WILLIAM TILLERY, *Welbeck*.

Acacia humifusa.—Most of us are familiar with the *Acacias*, their frequently elegant and not rarely singular leaves, and their form of beautiful, densely-produced flowers. They are widely cultivated in greenhouses and conservatories in this country, but they usually require more nutriment than they can obtain in pots, while, if planted out they generally run up straight to the glass, and become objectionable for that reason, their lower parts getting naked, and the flowers being chiefly presented to the roof. There are, however, some elegant and not over vigorous growers to which this does not so much apply, and which may be trained with good effect over an arch or up a pillar; but generally the different species of this genus are liable to the above objections. It is with much pleasure, then, that we recommend one which, flowering profusely and well, has a directly opposite tendency to those accustomed to wild life in a New Holland *Acacia* scrub. It is *Acacia humifusa*—which, indeed, grows upward sufficiently to enable us to train it to rafters, pillars, &c., but then begins to throw down long green tresses of fine leaves, and becomes, even when out of flower, a graceful ornament to the conservatory or greenhouse. In spring these long tresses, reminding one of the pendulous shoots of the Weeping Willow, become covered with flowers. The genus *Acacia*, though now considerably reduced, contains upwards of five hundred species, but not one which we should select in preference to this for the purpose herein mentioned. As to culture, there needs little to be said. It, like most of its brethren, will grow in almost any soil. We first saw this plant when visiting the garden at Floors Castle some years ago, but were not fortunate enough to see it in flower. We saw enough, however, to know that *A. humifusa* is about the most valuable plant ever introduced for adding grace to the interior of the conservatory or large cool-house of any kind in which there is room to plant it out.

Rhodanthe Manglesi as a Greenhouse Ornament.—It is when grown in pots for the spring decoration of the conservatory that this charming plant is seen in its finest proportions. For this purpose the seed should be sown the first week in August under glass, and when the young plants are of sufficient size, they should be singled out and planted three or five in a small pot and sheltered until they get established. The compost for them should be equal parts of turfy loam and peat, with a sprinkling of gritty sand for the winter, substituting leaf mould and rotten manure for the peat at the subsequent pottings. The best place for the plants is upon a shelf close to the glass, where, with a free circulation of air, they will be free from damp and cold draughts. Water moderately, and as the plants require it, shift them into larger pots, taking care to stop the side branches when two or three inches long, and remove all flower-buds as fast as they appear until the plants are thoroughly established. With proper attention plants may be had in eleven-inch pots forming half-spheres two feet in diameter, and covered with thousands of flowers. To attain that end the treatment must be liberal; the temperature should be that of the warm greenhouse, with, after Christmas, a warm growing temperature, the heat increasing as the days lengthen. It is, however, essential to make as much headway as possible in the early part of the spring; for, as the light increases, the inclination of the plants to bloom is so great that it is difficult to produce them of superior size. The plants will enjoy a sprinkling of water daily while in free growth, but as soon as the flowers begin to show colour then the sprinkling must be dispensed with; a moist atmosphere will, however, still be necessary, therefore damp around the pots and the stages and paths in the house. When the plants are fairly established and in free growth, weak manure-water will be of great advantage to them; it may either be prepared from guano or from soot and cow or sheep dung, and it should be used in a perfectly clear state. These plants are subject to mildew in winter, for which sulphur may be used. B.

Zonale Pelargoniums.—I have raised seedlings of these at the rate of thousands a year for some seasons past, not only in the hope of improving this class of plants, but to multiply the colours. Whatever style of gardening we adopt, it is difficult to conceive any case in which these plants will be given up; for, whether in the form of beds, clumps, or planted singly, there is nothing to equal them in effect, as far as colour is concerned. The artificial crossing of the flowers, and the after-cultivation of the seedlings, has to me been a constant source of pleasure and excitement. As long as bedding-geraniums were nearly all scarlets, there was a sameness about them which prevented many from taking much interest in them; but since we have succeeded in raising so many shades of rose and crimson, I have observed that a marked increase of attention has been directed to them. But it is to their value as winter-blooming greenhouse plants that I would call particular notice. Few have any idea of their excellence in this respect. If a number of plants be well grown in pots all summer, plunged out of doors and not allowed to bloom, and then removed to a greenhouse in autumn, the effect which they will produce will be found to be far greater than that which a lot of chrysanthemums is capable of making, and will be continued three times as long. One great advantage of these plants is, they are never attacked by insects, if we except the green caterpillar of the Angleshades Moth, so that they give little trouble, and can do no harm to vines or other plants with which they may be associated. Indeed, I know no tribe of plants capable of producing such an effect as this at so little cost, and for so long a period; and I think good winter-bloomers will soon be in demand, for though all flower well when properly prepared, some bloom much better than others during autumn and winter.—J. B. PEARSON, *Chilwell*.

Poinsettia pulcherrima.—This old and well-tried favourite still occupies a prominent place in our plant stoves during winter, and if removed when it has fully expanded its large red bracts from the stove to the drawing-room or front hall, where it can enjoy a little warmth, it will be found to be a useful in-door ornament. In such situations, however, watering requires to be carefully attended to. Heavy applications of water are apt to sour the soil and to cause the plants to have a sickly appearance, whereas if proper discretion is exercised they will remain in full beauty for at least three weeks, even at this festive season of the year. By the latter part of January the beauty of the plants will be over, and they may be set out of the way in any house, the minimum temperature of which never falls below 45°. They should, however, be kept dry until the time arrives to cut them down, which will be about the first week in March. Then remove them to a propagating or forcing house. Preserve the wood cut off to work up for next season's supply. In propagating the Poinsettia, most cultivators prefer what may be called the vine-eye system. Select thoroughly-ripened wood, and prepare the eyes in the same manner as you would those of the vine; perhaps the best possible time for carrying out this method is about the first week in March; place then the cuttings or eyes thickly over the surface of a pan or a six-inch flower-pot, and set them in the strongest heat at command. When they start into growth, be careful to guard against damp. Another way of increasing the Poinsettia is this:—Take firm young shoots, consisting of three or four joints off the old plants—say, in April—and place them in a strong heat. They will soon strike root, and their after culture will be precisely the same as that for plants struck from eyes. Pot off immediately they are fairly rooted, so as to guard against a check, and as soon as they have filled the pots they are in with roots, shift on into larger pots till the strongest plants are in eight-inch pots and the weaker ones in six-inch ones; and in those they may remain to flower. A moist atmosphere and liberal waterings are required to insure success. Cold draughts are very injurious to this plant, and, therefore, must be avoided; as must also scorching, by timely air giving. Possibly, the best soil for Poinsettias would be equal parts of peat, sand, good turfy loam, and leaf mould, well incorporated together. By this treatment, plants with bracts large and brilliant may be obtained. In order to have dwarf specimens, take old plants in March, shake them out, and re-pot them in as small pots as their roots can conveniently be put into, and as soon as they are established, shift them on till you get them into ten-inch pots, or say a very large specimen in a twelve-inch pot, in which it may be allowed to remain to flower. As the shoots advance, tie them out as widely as possible without breaking them. About, say the third week in August, take the shoots and bend them down to within about nine inches of the pot, and secure them there to a stake or the rim of the pot, and in this way form a neat and compact head. When well done the plant assumes a handsome shape; afterwards care must be taken in watering, for if that is not properly attended to the result will be crooked, barren stalks, instead of branches well-furnished with leaves. Everybody knows how difficult it is to keep this plant dwarf and bushy; but the directions just given will secure that desideratum.—H. W.

NOTES AND QUESTIONS ON THE IN-DOOR GARDEN.

Phalænopsis Lowii.—This is one of the prettiest of the genus. It is found growing on limestone rocks in its native country, where it loses its leaves and takes a period of rest annually. Mr. Page, Park Hill, Streatham, had a plant treated after this fashion, which had ten flowers all open on one spike at one time. It is usually kept growing all the year round, which is a mistake. It should be potted in rough peat and broken crocks, and should have plenty of water during the growing season. *P. grandiflora*, well established on boards, has been offered for sale in such large quantities lately, and at such low prices, that no stove should be without a dozen or more of it. Suspended in baskets from the roof, few plants are more effective.—W. HOWARD, *Batham*.

Palm Culture.—There is one point—as to the amount of sun or shade palms require—which I do not find mentioned in any books on their culture. I have had some since last spring in a cool fernery, which I am obliged to keep much shaded, as the roof is exposed to the sun. They have hitherto done very well. Query—Will they continue to do so? and are there any palms more particularly suited to a shady situation than others? Mine would really never have the direct sun on them.—HENRY FAULKNER, jun., *Fernwood, Roehampton Park*.—[The majority of palms will succeed without direct sunlight, and will grow very well in such a position as that mentioned, with the exception of *Chamædorea* and *Geonomas*, which require a very moist, shady atmosphere and a stove temperature. The following would do very well in a cool fernery, viz.:—*Areca australis*, *A. Baueri*, *Chamærops humilis*, *C. Fortunei*, *Cocos australis*, *Jubæa spectabilis*, *Rhapis flabelliformis*, *Scaevola elegans*, *Sabal Adansoni*, and *Corypha australis*.]

Neapolitan Violets at Christmas.—A bunch of violets is always a precious possession—even when days are calm and bright, and the scented air is redolent of the perfumes of many flowers; but how much more so in the dead of winter! I remember well, years ago, how in the south of England we used to have Neapolitan violets at Christmas, and how their odiferous blossoms mingled with the round red holly berries at our family gatherings in the decline of the fast-fading year. This was how we grew them, and with great success: In May a compost of fibrous loam and leaf mould was made, and with this we constructed a bed on a warm and dry border. Then, selecting the young, vigorous offshoots made by the violets, two or three of these were put together, and so made to form a plant, and were placed in this our nursery bed about six inches or eight inches apart; and there they grew, and were allowed to remain until the beginning of August. Then they were placed in pots about six inches in diameter, using a soil composed of two-thirds of leaf mould, and one part maiden loam of a fibrous free character, with some silver sand. We always placed good drainage at the bottom of the pots, and when potted, the plants were placed in some shady position in the open air for about three weeks or a month, and then removed to a dry and elevated frame for winter blooming, where the pots were plunged in tan, and a thick lining of leaves and short straw was placed round the frame to keep them from frost. In selecting materials for our lining care was always taken to avoid anything of a heating character, so that dung or other material subject to rapid fermentation was eschewed. When here, our attention was simply directed to keeping the plants protected from cold winds, the foliage dry, and consequently free from damp, which is very injurious to the plants at the Christmas season of the year. Such was the mode by which we obtained plants of Neapolitan violets in pots laden with pleasant flowers at mid-winter. Perhaps our southern locality, almost close to the sea-side, helped us somewhat. We grew these in pots for our pleasant little conservatory and sitting-room that overlooked the silvery waters of the Solent river, that washes part of the south-west coast of Hampshire. Where cut flowers only are required, the plants could be managed equally well planted out in the frame in such a compost as that recommended for pots, care being taken to keep the plants dry during the dull part of the winter.—*Geo., in "Field."*

Lachenalias.—These are highly ornamental plants, much too little grown for decorative purposes. They are dwarf, bulbous, South-African plants, and therefore perfectly amenable to greenhouse culture; and few subjects are gayer or more useful, as contrasts with other bulbs, than they are when nicely grown. *L. pendula*, *tricolor*, and *aurea* are three distinct and beautiful species which, with the more common *L. luteola*, are equally deserving of general cultivation. *Pendula* is of larger size and stature than the others, with plain green leaves and peculiarly tinted reddish flowers tipped with green. *Tricolor* is a free-flowering sort, with spotted leaves, and yellow flowers margined with green and red. *Aurea* is a very scarce sort, which has slightly spotted leaves, purple-speckled scapes, and very beautiful waxy flowers, which are wholly of a rich apricot or golden yellow. Mr. Barron, who grows these plants most successfully as conservatory ornaments, has kindly communicated the following notes on their cultivation:—"When the plants have done flowering, water should be withheld gradually, and by and by altogether. They may be kept in a frame until all the leaves have died off, and then placed in any convenient place, where they may only be kept dry. In August or early in September the bulbs should be taken out of the pots and soil, and assorted, i.e., the larger and the smaller ones each put by themselves. For soil, get some fresh turfy loam and peat, with some sand, and a little manure, mixed up together, and fill this into clean forty-eight-sized pots, well drained—the latter a very important point; place from five to eight uniform bulbs in each pot, and just slightly cover them with soil, then water and place in a cold, close frame until they commence to grow. In October they must be placed in some cool pit or house near to the glass, as they love abundance of light and air. The temperature must just be sufficient to exclude frost, but they dislike heat, which makes the leaves draw up weakly and lanky. They require careful watering during winter, otherwise at that season they are liable to die off. When coming into flower, however, they need abundance of water, and sometimes a little heat is beneficial to help the flowers to expand. The different sorts cannot be treated exactly alike; *aurea*, for instance, which has been nearly lost to our gardens, having an awkward habit of refusing to grow at all some seasons. My bulbs of it rested for two seasons, remaining quite dormant, and this season they have only started into growth after having the assistance of a strong stove temperature." Mr. Stevens, gardener to G. Simpson, Esq., Wray Park, Reigate, exhibited at South Kensington, last spring, a charmingly-flowered basket of *L. luteola*, than which nothing more beautiful as a basket plant has ever been seen. Mr. Stevens has been good enough to send the following memoranda on his method of growing these wonderful specimens:—"I start them the first week in September, and put them in the coldest house I have got. When they have started into growth, I give them a little manure-water made of soot and cow-dung, which I find they delight in. I plant them in the strongest loam I can find, mixing a little cow-dung with it, and I find them to do well in it. I have at the present time five baskets of them, which I think will be better than the one I brought up to London last spring."—*Florist and Pomologist*.

THE ARBORETUM.

THE BIG TREE—SEQUOIA (WELLINGTONIA)
GIGANTEA.

So many imperfect and incorrect accounts of this tree have appeared in journals at different times, that the following, by Professor Whitney, the State Geologist of California, in "The Yosemite Book," will, doubtless, be acceptable to all tree lovers. Very little that is trustworthy has been published either in this country or America on this subject:—

According to Mr. Hutchings's statement, the Calaveras Grove of Big Trees was the first one discovered by white men, and the date was the spring of 1852. The person who first stumbled on these vegetable monsters was Mr. A. T. Dowd, a hunter employed by the Union Water Company to supply the men in their employ with fresh meat, while digging a canal to bring water down to Murphy's. According to the accounts, the discoverer found that his story gained so little credence among the workmen, that he was obliged to resort to a ruse to get them to the spot where the trees were. The wonderful tale of the Big Trees found its way into the papers, and appears to have been first published in the *Sonora Herald*, the nearest periodical to the locality. The account was republished, among other papers, in the *Echo du Pacific* of San Francisco, then copied into the *London Athenæum* of July 23, 1853 (p. 892), which is believed to be the first notice published in Europe, and from there again into the *Gardeners' Chronicle* of London, where it appeared July 30, 1853 (p. 488). In the last-named journal, for December 24th, page 819, Dr. Lindley published the first scientific description of the Big Tree. Overlooking its close affinity with the already-described redwood, he regarded it as the type of a new genus, which he called *Wellingtonia*, adding the specific name of *gigantea*. His specimens were received from Mr. William Lobb, through Messrs. Veitch & Sons, well-known nurserymen. The tree had been previously brought to the notice of scientific men in San Francisco, and specimens had been sent to Dr. Torrey in New York considerably earlier than to Dr. Lindley, but the specimens were lost in transmission; and, no description having been published in San Francisco, although Drs. Kellogg and Behr had brought it to the notice of the California Academy early that year as a new species, the honour and opportunity of naming it was lost to American botanists. The closely allied species of the same genus, the *Sequoia sempervirens*, the redwood, had been named and described by Endlicher in 1847, and was well known to botanists all over the world in 1852.

At the meeting of the "Société Botanique de France," held June 28, 1854, the eminent botanist Decaisne presented specimens of the two species, the Big Tree and the redwood, with those of other Californian conifers recently received from the Consular Agent of France at San Francisco. At this meeting M. Decaisne gave his reasons, at some length, for considering the redwood, and the more recently discovered "Big Tree" to belong to the same genus, *Sequoia*, and in accordance with the rules of botanical nomenclature, called the new species *Sequoia gigantea*. The report of these proceedings is to be found in the *Bulletin de la Société Botanique de France*, Vol. I., p. 70, which was issued in July (probably) of 1854.

In the meantime, specimens had been received by Dr. Torrey at New York, and in September of the same year, 1854, Professor Gray, of Cambridge, published, in the *American Journal of Science*, appended to a notice of the age of the redwood, a statement, on his own authority, that a comparison of the cones of that tree and those of the so-called *Wellingtonia* of Lindley, did not bring to view any differences adequate to the establishment of a new genus. To this Professor Gray adds:—"The so-called *Wellingtonia* will hereafter bear the name imposed by Dr. Torrey, namely, that of *Sequoia gigantea*." It does not appear, however, on examination, that Dr. Torrey had himself published any description of the Big Tree, or of the fact that he considered it generically identical with the redwood, and priority seems to have been secured by Decaisne, so that the name must stand as *Sequoia gigantea* Decaisne.

No other plant ever attracted so much attention, or attained such a celebrity within so short a period. The references to it in scientific works and journals already number between one and two hundred, and it has been the theme of innumerable articles in popular periodicals and books of travel, in various languages; probably there is hardly a newspaper in Christendom that has not published some item on the subject. Seeds were first sent to Europe and the Eastern States in 1853, and since that time immense numbers have found their way to market. They germinate readily, and it is probable that hundreds of thousands of the trees (millions, it is said) are growing in different parts of the world from seeds planted.

The genus was named in honour of Sequoia, or Sequoyah, a Cherokee Indian of mixed blood, better known by his English name of George Guess, who is supposed to have been born about 1770, and who lived in Will's Valley, in the extreme north-eastern corner of Alabama, among the Cherokees. He became known to the world by his invention of an alphabet and written language for his tribe. This alphabet, which was constructed with wonderful ingenuity, consisted of eighty-six characters, each representing a syllable; and it had already come into use to a considerable extent before the whites had heard anything of it. After a time the missionaries took up Sequoyah's idea, and had types cast and a printing-press supplied to the Cherokee nation, and a newspaper was started in 1828, partly in this character. Driven with the rest of his tribe beyond the Mississippi, he died in New Mexico in 1843. His remarkable alphabet is still in use, although destined to pass away with his nation, but not into oblivion; for his name, attached to one of the grandest and most impressive productions of the vegetable kingdom, will for ever keep his memory green.

The Big Tree occurs exclusively in "groves," or scattered over limited areas, never forming groups by themselves, but always disseminated among a much larger number of trees of other kinds. The groves of the Big Trees are limited in latitude between 36° and 38° 15' nearly, at least so far as we now know. The Calaveras Grove is the most northerly, and one on the south fork of the Tule is the farthest south of any yet known to us. They are also quite limited in vertical range, since they nowhere descend much below 5,000 or rise above 7,000 feet. They follow the other trees of California, in this respect, that they occur lower down on the Sierra as we go northwards; the most northerly grove, that of Calaveras, is the lowest in elevation above the sea-level.

There are eight distinct patches or groves of the Big Trees—or nine, if we should consider the Mariposa trees as belonging to two different groups, which is hardly necessary, inasmuch as there is only a ridge half a mile in width separating the upper grove from the lower. The eight groves are, in geographical order from north to south: first, the Calaveras; second, the Stanislaus; third, Crano Flat; fourth, Mariposa; fifth, Fresno; sixth, King's and Kaweah rivers; seventh, North Fork Tule river; eighth, South Fork Tule river.

The Calaveras Grove is situated in the county of that name, about sixteen miles from Murphy's Camp, and near the Stanislaus river. It is on, or near, the road crossing the Sierra by the Silver Mountain Pass. This being the first grove of the Big Trees discovered, and the most accessible, it has come more into notice, and been much more visited than any of the others; indeed, this and the Mariposa Grove are the only ones which have become a resort for travellers. The Calaveras Grove has also the great advantage over the others, that a good hotel is kept there, and that it is accessible on wheels, all the others being at a greater or less distance from any road.

This grove occupies a belt 3,200 feet long by 700 feet broad, extending in a north-west and south-east direction, in a depression between two slopes, through which meanders a small brook which dries up in the summer. There are between 90 and 100 trees of large size in the grove, and a considerable number of small ones, chiefly on the outskirts. Several have fallen since the grove was discovered; one has been cut down; and one has had the bark stripped from it up to the height of 116 feet above the ground. The bark thus removed was exhibited in different places, and finally found a resting-place in the Sydenham Crystal Palace, where it was unfortunately burned in the fire which consumed a part of that building a few years ago. The two trees thus described were perhaps the finest in the grove; the tallest now standing is the one called the "Keystone State"; the largest and finest is known as the "Empire State." The height of this grove above the sea-level is 4,759 feet.

The exact measurement of the diameter and the ascertaining of the age of one of the largest trees in this grove was made possible by cutting it down. This was done soon after the grove was discovered, and is said to have occupied five men during twenty-two days. The felling was done by boring through the tree with pump-augers; it was no small affair to persuade the trunk to fall, even after it had been completely severed from its connection with the base. It was done, however, by driving in wedges on one side, until the ponderous mass was inclined sufficiently, which was not effected until after three days of labour.

The stump of this tree was squarred off smoothly at six feet above the ground, and the bark being removed, a pavilion was built over it, forming a capacious room, the exact dimensions of the stump inside of the bark being,

Across its longest diameter, south of centre, 13 feet 9½ inches.
" " " " north of centre, 10 " 4 "

Total longest diameter 24 feet 1½ inches.

The shorter diameter, or that east and west, was 23 feet, divided

exactly even on each side of the centre. The thickness of the bark, averaging 18 inches probably, would add three feet to the diameter of the tree, making 26 feet in all. After this tree had been cut down, it was again cut through about 30 feet from the first cut. At the upper end of this section of the trunk, or about 40 feet from the ground, as the tree originally stood, we carefully counted the rings of annual growth, measuring at the same time the width of each set of one hundred, beginning at the exterior; the result was as follows:—

First hundred	3.0 inches.
Second "	3.7 "
Third "	4.1 "
Fourth "	3.9 "
Fifth "	4.1 "
Sixth "	4.1 "
Seventh "	4.6 "
Eighth "	5.6 "
Ninth "	7.3 "
Tenth "	7.9 "
Eleventh "	10.1 "
Twelfth "	13.0 "
55 years "	9.4 "
1,255. years.	80.8 inches.

There was a small cavity in the centre of the tree which prevented an accurate fixing of its age; but making due allowance for that, and for the time required to grow to the height at which the count was made, it will be safe to say that this particular tree, which was probably about as large as any now standing in the grove, was, in round numbers, 1,300 years old.

The Calaveras Grove contains, as will be seen in the table, four trees over 300 feet high, the highest one measured in the Mariposa Grove being 272. The published statements of the heights of these trees are considerably exaggerated, as will be noticed; but our measurements can be relied on as being correct.* The Keystone State has the honour of standing at the head, with 325 feet as its elevation, and this is the tallest tree yet measured on this continent, so far as our information goes. When we observe how regularly and gradually the trees diminish in size, from the highest down, it will be evident that the stories told, of trees having once stood in this grove over 400 feet in height, are not entitled to credence. It is not at all likely that any one tree should have overtopped all the others by 75 feet or more. The same condition of general average elevation, and absence of trees very much taller than any of the rest in the grove, will be noticed among the trees on the Mariposa Grant, where, however, there is no one as high as 300 feet.

The Mariposa Grove is situated about sixteen miles directly south of the Lower Hotel in the Yosemite Valley, and between three and four miles south-east of Clark's Ranch, and at an elevation of about 1,500 feet above the last-named place, or of 5,500 feet above the sea-level. It lies in a little valley, occupying a depression on the back of a ridge, which runs along in an easterly direction between Big Creek and the South Merced. One of the branches of the creek begins in the grove.

The grant made by Congress is two miles square, and embraces, in reality, two distinct, or nearly distinct, groves; that is to say, two collections of Big Trees, between which there is an intervening space without any. The Upper Grove is in a pretty compact body, containing, on an area of 3,700 by 2,300 feet in dimensions, just 365 trees of the *Sequoia gigantea*, of a diameter of one foot and over, besides a great number of small ones. The lower grove, which is smaller in size and more scattered, lies in a south-westerly direction from the other, some trees growing quite high up in the gulches on the south side of the ridge which separates the two groves.

The trail approaches the Upper Grove from the west side, and passes through and around it, in such a manner as to take the visitor very near to almost all the largest trees; to accomplish this, it ascends one branch of the creek and then crosses over and descends the other, showing that the size of the trees depends somewhat on their position in regard to water. Still, there are several very large ones on the side hill south of the creek, quite high above the water.

Several of the trees in this grove have been named, some of them, indeed, half a dozen times; there are no names, however, which seem to have become current, as is the case in the Calaveras Grove. A plan has been drawn for the commissioners, however, showing each tree, with its exact position and size, a number being attached to each. The circumference of every tree in the grove was also

carefully measured, and the height of such as could be conveniently got at for this purpose.

There are several trees in this grove considerably larger than any that are to be found in the Calaveras, and their average size is greater. The average height of the Mariposa trees, however, is less than that of the Calaveras; and the highest of the former, 272 feet, is 53 feet less than the tallest one of the latter. There is a burned stump on the north side of the grove, nearly all gone, but indicating a tree of a size perhaps a little greater than any now existing here. The beauty of the Mariposa Grove has been sadly marred by the ravages of fire, which has evidently swept through it again and again, almost ruining many of the finest trees. Still, the general appearance of the grove is extremely grand and imposing. There are about 125 trees over 40 feet in circumference.

The principal trees associated with the Big Trees in this grove are, the pitch and sugar pines, the Douglas spruce, the white fir (*Picea grandis*), and the bastard cedar (*Libocedrus decurrens*); the latter so much resembles the Big Tree in the general appearance of its trunk and bark, that there was no person in our party who could certainly distinguish the two species at a little distance.

There are but very few of the young Big Trees growing within the grove, where probably they have been destroyed by fire; around the base of several of the large trees, on the outskirts of the grove, there are small plantations of young *Sequoias*, of all sizes, up to six or eight inches in diameter, but only a few as large as this. Those trees which are about ten feet in diameter and entirely uninjured by fire, in the full symmetry of a vigorous growth of say 500 years, are, although not as stupendous as the older giants of the forest, still exceedingly beautiful and impressive.

The meadows near the Big Trees abound in gay, blooming flowers. Mr. Bolander enumerates, as the most conspicuous: *Rudbeckia californica*—Gray; *Aconitum nasutum*—Fischer; *Anisocarpus Bolanderi*—Gray; *Boykinia occidentalis*—T. and G.; *Sidalcea malvaeflora*—Gray; *Myrica Gale*—L.; *Hulsia brevifolia*—Gray; *Epilobium angustifolium*; *Veratrum californicum*. A species of lupine is very abundant, and this, with the *Rudbeckia*, gives the main colouring to the meadows, which also abound with numerous carices.

The southern division of the Mariposa Grove, or Lower Grove, as it is usually called, is said to contain about half as many trees as the one just described. They are much scattered among other trees, and do not, therefore, present as imposing an appearance as those in the other grove, where quite a large number can often be seen from one point. The largest tree in the Lower Grove is the one known as the "Grizzly Giant," which is 93 feet 7 inches in circumference at the ground, and 64 feet 3 inches at 11 feet above. Its two diameters at the base, as near as we could measure, were 30 and 31 feet. The calculated diameter, at 11 feet above the ground, is 20 feet nearly. The tree is very much injured and decreased in size by burning, for which no allowance has been made in the above measurements. Some of the branches of this tree are fully six feet in diameter, or as large as the trunks of the largest elms of the Connecticut Valley, of which Dr. Holmes has so pleasantly discoursed in the *Atlantic Monthly*. This tree, however, has long since passed its prime, and has the battered and war-worn appearance conveyed by its name.

No other grove of Big Trees has been discovered to the south-east of this, along the slope of the Sierra, until we reach a point more than fifty miles distant from the Fresno Grove. Here, between the King's and Kaweah rivers, is by far the most extensive collection of trees of this species which has yet been discovered in the State. This belt of trees, for grove it can hardly be called, occurs about thirty miles north-north-east of Visalia, on the tributaries of the King's and Kaweah rivers, and on the divide between. They are scattered over the slopes and on the valleys, but are larger in the depressions, where the soil is more moist. Along the trail which runs from Visalia to the Big Meadows, the belt is four or five miles wide, and it extends over a vertical range of about 2,500 feet; its total length is as much as eight or ten miles, and may be more. The trees are not collected together in groves, but are scattered through the forests, and associated with the other species usually occurring at this altitude in the Sierra; they are most abundant at from 6,000 to 7,00 feet elevation above the sea-level. Their number is great; probably thousands might be counted. Their size, however, is not great, the average being from ten to twelve feet in diameter, and but few exceeding 20 feet; but smaller trees are very numerous. One tree, which had been cut, had a diameter of eight feet, exclusive of the bark, and was 377 years old. The largest one seen was near Thomas's Mill; this had a circumference of 106 feet near the ground, no allowance being made for a portion which was burned away at the base. When entire the tree may have been ten or twelve feet more in circumference. At about twelve feet from the ground, the circumference was 75 feet. Its height was 276 feet. The top was dead,

* Several trees were measured twice, and the results, in every case, found to be closely coincident.



OLD SPECIMEN OF SEQUOIA (WELLINGTONIA) GIGANTEA, 93 FEET 7 INCHES IN CIRCUMFERENCE, AND 280 FEET HIGH.

however, and, although the tree was symmetrical and in good growth, it had passed its prime.

Another tree, which had fallen, and had been burned hollow, was so large that three horsemen could ride abreast into the cavity for a distance of 30 feet, its height and width being about 11 feet. At a distance of 70 feet the diameter of the cavity was still as much as eight feet. The base of this tree could not be easily measured; but the trunk was burned through at 120 feet from the ground, and at that point had a diameter (exclusive of the bark) of 13 feet 2 inches; and, at 169 feet from its base, the tree was nine feet in diameter. The Indians stated that a still larger tree existed to the north of King's River. This tree should be looked up and carefully measured; unfortunately, it was not in the power of our party to do this.

All through these forests there are numerous young Big Trees, of all sizes, from the seedling upwards; and at Thomas's Mill they are cut up for lumber, in a manner quite at variance with the oft-repeated story of the exceptional character of the species. Prostrate trunks of old trees are also numerous; some of them must have lain for ages, as they were nearly gone, while the wood is very durable.

Not one of the Big Trees has ever been found south of the grove on the south fork of the Tule. The region has not, however, been so thoroughly explored that it would be safe to say that none exist there. Judging from the extent of the area over which this species is scattered, between King's and Kaweah rivers, it would seem that here was its most congenial habitat, and it may eventually be found that this tree forms pretty nearly a continuous belt for some fifty or sixty miles.

From what has been here stated the reader will easily gather that the Big Tree is not that wonderfully exceptional thing which popular writers have almost always described it as being. It is not so restricted in its range as some other species of the Coniferae in California; it occurs in great abundance, of all ages and sizes, and there is no reason to suppose that it is now dying out, or that it belongs to a past geological era, any more than the redwood. The age of the Big Trees is not so great as that assigned, by the highest authorities, to some of the English yews. Neither is its height as great, by far, as that of an Australian species, the *Eucalyptus amygdalina*, many of which have, on the authority of Dr. Müller, the eminent Government botanist, been found to measure over 400 feet. One, indeed, reaches the enormous elevation of 480 feet, thus overtopping the tallest Sequoia by 155 feet. There are also trees which exceed the Big Tree in diameter, as, for instance, the Baobab (*Adansonia digitata*); but this species is always comparatively low, not exceeding 60 or 70 feet in height, and much swollen at the base.

On the whole, it may be stated, that there is no known tree which approaches the Sequoia in grandeur, thickness and height being both taken into consideration, unless it be the *Eucalyptus*. The largest Australian tree yet reported is said to be 81 feet in circumference at four feet from the ground; this is nearly, but not quite, as large as some of the largest of the Big Trees of California.

THE ARBORETUM FOR DECEMBER.

ALL land in a natural state intended to be planted should be drained, trenched, or ploughed, and subsoiled according to circumstances, a description of work, indeed, in which the steam-plough might in many instances be profitably employed. Nevertheless, however well ground for planting may be prepared at first, it will require to be kept clear of weeds and bushes for some three or four years afterwards, otherwise the tree-roots will be deprived of their proper amount of food by thickets of weeds and underwood. When the trees shall have attained a certain size they will take care of themselves, keeping all such intruders in check under their shade. Where plantations to be made are of considerable extent, let the trees of which they are to consist be put in, so as to stand in rows every way, an arrangement of much importance, as it admits of horse-hoeing being carried on in all directions, and thus may be speedily and readily cleaned, provided the work is taken in hand before weeds or other undergrowth have arrived at a size to offer any serious obstruction to its efficient performance. Where the ground to be planted is steep and awkward to work, the best plan is to plant thickly such trees as Scotch firs, larch, and Spanish chestnut; and in low, swampy spots, ash and willow, all of which will soon attain a size sufficient for poles, first for hops and then for fencing. Both hilly and flat districts, I need scarcely say, are much improved by trees, which, as far as landscape scenery is concerned, should consist of as much variety as possible, and, after having been planted a few years, they will be found to yield a profitable return. Larch, Scotch and spruce firs, birch, beech, ash, and oak are what have been chiefly planted in days gone by, and of these some fine plantations may still be found. Now, however, we have so much variety from which to select, both in the way of pinuses and other

kinds of trees, that old-fashioned woods do very little more than furnish materials for nurseries or shelter. *Abies Douglasii* and *A. taxifolia* are both wonderfully free rapid-growing trees, consisting of wood, tough and strong, and full of turpentine. *Ponderosa* is also a valuable Pine, and so is *P. Menziesii*, where it makes a good start; but it does not succeed so well in some parts of the country as in others. Various other pines and firs might also be dotted about in new plantations with advantage, taking care to place them in aspects which they will thrive best, and to give them sufficient room in which to fully develop themselves. The variegated and common sycamore, the wood of which is largely used for household furniture, should also be freely planted, and the wild cherry, so beautiful in spring and autumn, should likewise have a place in all new plantations, its wood being much sought after by cabinet-makers. All these and many others would be found to add wealth and beauty to a country, if plantations of them were made, as they should be, in a methodic and systematic manner.

JAMES BARNES.

THE HOUSEHOLD.

TINNED FRUITS AND VEGETABLES.

IN connection with this subject, to which we have several times alluded in this department of THE GARDEN, we beg to call attention to an article in the *Standard*, of Monday, the 11th inst., in which the whole subject of preserved fruits, vegetables, and meats, is discussed with considerable knowledge and ability. The importance of the subject can scarcely be appreciated by persons who know nothing of what has been done in this way in France, and more especially in America, during the past few years, and therefore we have much pleasure in transferring to our pages that part which is devoted to fruits and vegetables:—

A large variety of vegetables scarcely lose any of their flavour through the process of preserving, such as beans, celery, spinach, carrots, asparagus, mushrooms, tomatoes, and artichokes; and a mixture of vegetables cut into pretty designs, under the name of *macédoine*, may also be mentioned as most useful for soups, *entrées*, and stews. Peas are preserved in excellent condition without any use of copper to give them colour—this being obtained, we believe, by the simple juice of spinach. They are of three qualities, or rather sizes, which are obtained by passing them as they are shelled through sieves of different meshes, the smallest, and consequently youngest and tenderest, peas passing through all to the bottom, the largest remaining in the top sieve. These are, of course, the most delicate in flavour, and obtain the highest price, as only fifteen bushels of them are obtained on an average from fifty shelled into the sieves. The art of preserving these peas has now reached such a high point of excellence that it is almost impossible to distinguish them from those fresh gathered; and it is well known in the trade that early in the season they, under the name and at the cost of fresh peas, are consumed in very large quantities at the first-class hotels and restaurants in London, Paris, and other Continental cities, as well as at the tables of private houses. The trade in this one article has so greatly increased of late that, as we have been informed, from twenty thousand tins, the sale at one establishment alone has risen to five hundred thousand annually in the last four years. A tin containing one pint of the best quality, the *Petits Pois à l'Anglaise*, is retailed at about 1s. 4d.; the larger kind, the *Gros Pois*, at about 11d. Dried, mixed vegetables, in small shreds, have not received from the English public the attention which they deserve from their excellence, cheapness, and convenient form. M. Masson, of Paris, was, we believe, the first to adopt this method of preserving at the time of the Crimean war, when large compressed cakes were sent out to the French troops. After the war large quantities of these were sent to England, but, being of a somewhat coarse nature, were not much appreciated—meeting, however, with a much more favourable reception some hundreds of miles in the interior of Australia, whither some found their way. A great improvement has, however, been made on them. It may be stated that for a little over a halfpenny, a quart of soup may be flavoured, and the vegetables when eaten with it are as good as those used fresh. It is greatly to be wondered at that they are not used in every household, even those of the poor, as when simply boiled they make an excellent dish of vegetables, and comparatively cheap, in consequence of there being no waste, as in the case of fresh vegetables. They are incorporated with meat and essence of beef in Whitehead's "Gargantua" solid squares, at less than 1s. 6d., one of which, boiled in three pints of water, makes a deliciously-flavoured pot-pourri of 4lbs. weight of nutritious food.

The American tomatoes, called by our cousins "love apples," after the German "leibapfel," seem to be making their way in this

country. They are most extensively used in the States, a dinner-table being seldom without them, and they are to be found in tins in every grocer's shop, and though somewhat inferior in flavour to those produced in the south of France, their cheapness will recommend them here. Green corn—that is, Indian maize—cooked in its “milky” state before it is ripe, is a still more indispensable article on American dinner-tables. It is now sent here, as preserved for home use in winter, in tins, with the grains stripped from the cob. Warmed in milk, with the addition of a little butter, it is eaten as a vegetable, and though requiring somewhat of an acquired taste, should, from its cheapness, find a large number of consumers. Green Lima beans have also been sent from America to this country, and can be retailed in one pound tins at one shilling; but we are not in a position to speak of their quality. With the exception of desiccated potatoes, we believe that few vegetables are preserved in England as articles of luxury; they are, however, simply boiled and preserved in tins, more for shipping and for exportation than for home consumption, and though when re-warmed hardly distinguishable from fresh-cooked ones, there is no saving in their cost; but it would be very convenient to have such articles in stock for daily use.

Various fruits are preserved in tins in this country; but the best as conserves for dessert have hitherto been considered those imported from France. M. Ponçon, who is justly considered one of the best fruit-preservers in the world, is employed by several firms to preserve apricots, peaches, and other fruits for them; and for this purpose he goes to Lisbon every year. The fruit he sends home cannot be exceeded in quality; but those prepared by Rodrigues, of Lisbon, leave nothing to be desired. It seems, however, more than probable that the American fruit, introduced comparatively lately, will command a large consumption, not only from its cheapness, but its excellence. Tins containing apricots and pine-apples in syrup, weighing from a pound and a half to three-quarters, are retailed at 1s. 6d. each, and peaches at 1s.; and the only fault we can find with them is that they are called two-pound tins, thus perpetuating, and even renewing, the wretched difference between reputed and actual or standard weights and measures, from which we hope eventually to be delivered. Of the preserved pine-apple we can speak with unqualified praise, its exquisite flavour being rather improved than deteriorated by the preserving process. When these fruits become more used in England, we shall probably receive them at a still cheaper rate; the prime cost of many of them in America, being hardly appreciable, from their great abundance. Peaches we are aware are in that country used partly as food for pigs; and in a description we lately read of a 400-acre orchard in California, near Yuba City, it was stated that there were 25,000 one-year-old peach trees and 16,000 of plums in the “nursery,” while in the bearing part of the orchard there were 600 two-year-old peach trees, many of which bore this season 150 lbs. of fruit each, and 2,200 apricot trees. The peach crop in Delaware, this season has produced about 4,000,000 baskets, at the value of about 1,500,000 dollars. Apples also are a mere drug in the American market, and might, we think, be introduced here in the form of pulp or jam, unless English apples could be so tinned in the districts in which they are produced and sold at a less price than pudding apples are now retailed in our towns. This is by no means an unimportant subject for consideration, as apples for cooking purposes are a most wholesome fruit, and it would be a great boon if the poor in populous places could obtain them at a cheaper rate. The present price for common cooking apples at reputedly cheap shops is about a penny, and even more per pound, which, when peeled and cooked, does not provide a sufficient portion for one person. We are aware that this is an exceptionally dear year, but we think that the present method of retailing them at shops till late in the season involves a great waste and consequent increase of price, which might to a great extent be avoided if they were tinned when ripe at or near the place of their production. They are now largely used in the manufacture of cheap jams of various kinds; we see no reason why they should not be used simply by themselves. The American farmers employ their families in the evening in peeling and cutting up apples into what children call “pigs,” and threading them on thin string to dry; and in this form many are imported into England for shipping purposes. They could be retailed at about 7d. per pound, or even less, in London, if there were a demand for them, and their use would be well worth a trial, as we find that after soaking for twenty-four hours in water about half a pound will make a pudding for five persons, which is at a cheaper rate than it can be made even in ordinary seasons from apples bought from retail shops in our towns. Our concluding remarks on this part of our subject must be in favour of the 2lb. tins of Chaumontel pears put up at a price which would be about 2s. 3d. retail; in our opinion they are a conserve exceeding in delicacy even the best brands of apricots, peaches, and pine-apples.

In the above remarks we have mentioned various articles of great excellence; but in such matters the public should, after careful

experiment, judge for itself, following as closely as possible the “directions for use,” and remembering, above all things, that most of these goods have already been cooked and even overcooked, and therefore only require to be rewarmed, but not recooked, when eaten hot. What we chiefly complain of, is the amount of prejudice and the want of enterprise in all matters of new forms of food offered to us. The wise king prayed, “Feed me with food convenient for me;” but we are apt, as in the case of Australian meat and preserved milk, to shut our eyes to its convenience and various advantages because it may be new to us. We are now allowing various articles, including cheap luxuries in tin cases, to be used almost exclusively on our passenger ships, and exported to foreign countries, or lie unused in warehouses, while their fitting place should be in a store-room in every household, to be used as occasion might require. But, resist it as we will, the ages, as fabled by the poets, of iron, brass, silver, and gold have passed, and the age of tin has come; and we cannot resist the world-wide tendency of preserving and tinning the various products of the earth at or near the spot where they are produced; and then of transmitting and disseminating them by the increased and increasing means of transit to the various countries of the globe which require them. Waste is thus prevented, adulteration well nigh rendered impossible, and prices lowered and equalised for articles both of necessity and luxury.

“Accuse not Nature; she hath done her part:
Do thou but thine.”

We shall best do it by laying aside prejudice, and by the use and interchange of the manifold riches of the earth, which modern science and enterprise have rendered more convenient for our adoption; and thus realizing, in the matter of food at least, a cosmopolitan communism.

GARDEN DESIGN.

THE KITCHEN GARDEN AT BERRY HILL.

If asked to name a few places in which true taste in garden design was evinced we should certainly not omit the name of Berry Hill. Seldom have we seen so neatly-arranged a kitchen and forcing department, hardly ever such charming planting as that around the lake. However, we are at present only concerned with the kitchen and forcing departments, which were always seen in such excellent condition under the management of Mr. Rogers, now the superintendent of Battersea Park. The garden is far from being large, but it is most complete in the variety and excellence of its glass structures. A noticeable feature is the way the garden is placed lengthwise near the road. By this means the breadth of park or pleasure-ground is not in the least interfered with. The judicious way in which this is arranged cannot, however, be appreciated by seeing the plan of the kitchen-garden only. Crops were confined on the pieces marked as such to celery, carrots, parsnips, and beet, and other subjects that occupy the ground for one year only. One feature not shown on the annexed plan deserves notice. It is its flower-beds on the strip of grass running up each side of the central walk. These were cut off on each side by a low hedge of roses. A bold and most graceful entrance to the kitchen-garden consists of two specimens of the weeping beech trained in the form of a large arch. At present Berry Hill is not occupied, and on that account is deprived of much of its gardening interest, but the stamp of thoughtful and graceful design is not one that even neglect, which soon plays such havoc with cultivated or “dressed” ground, can efface. Berry Hill was, we believe, begun by Mr. Kemp, but was completed by Mr. Marnock, to whose true taste we owe its most charming features.

Gates.—Fancy, if you can, a rural home without its gateway—lying all abroad upon a common! The great charm of privacy is gone utterly; and no device of shrubbery, or hedge, can make good the loss of some little wicket which will invite approach and be a barrier against too easy familiarity. The creak of the gate-hinge is a welcome to the visitor, and as he goes out, the latch clicks an adieu. But there are all sorts of gates, as there are all sorts of welcomes; there is, first, your inhospitable one, made mostly, I should say, of matched boards, with a row of pleasant iron spikes running along its top, and no architectural decorations of pilaster or panel can possibly remove its thoroughly inhospitable aspect. It belongs to stable-courts or gaol-yards, but never to a home or to a garden. Again, there are your ceremonious gates, of open-work indeed, but ponderous, and most times scrupulously closed; the very opening of them is a fatiguing ceremonial, and there is nothing like a lively welcome in the dull clang of their ponderous latches. Next, there is your simple, unpretending rural gate, giving promise of unpretending rural beauties—homely in all its aspect, and giving foretaste of the best of homeliness within. And I make a wide distinction

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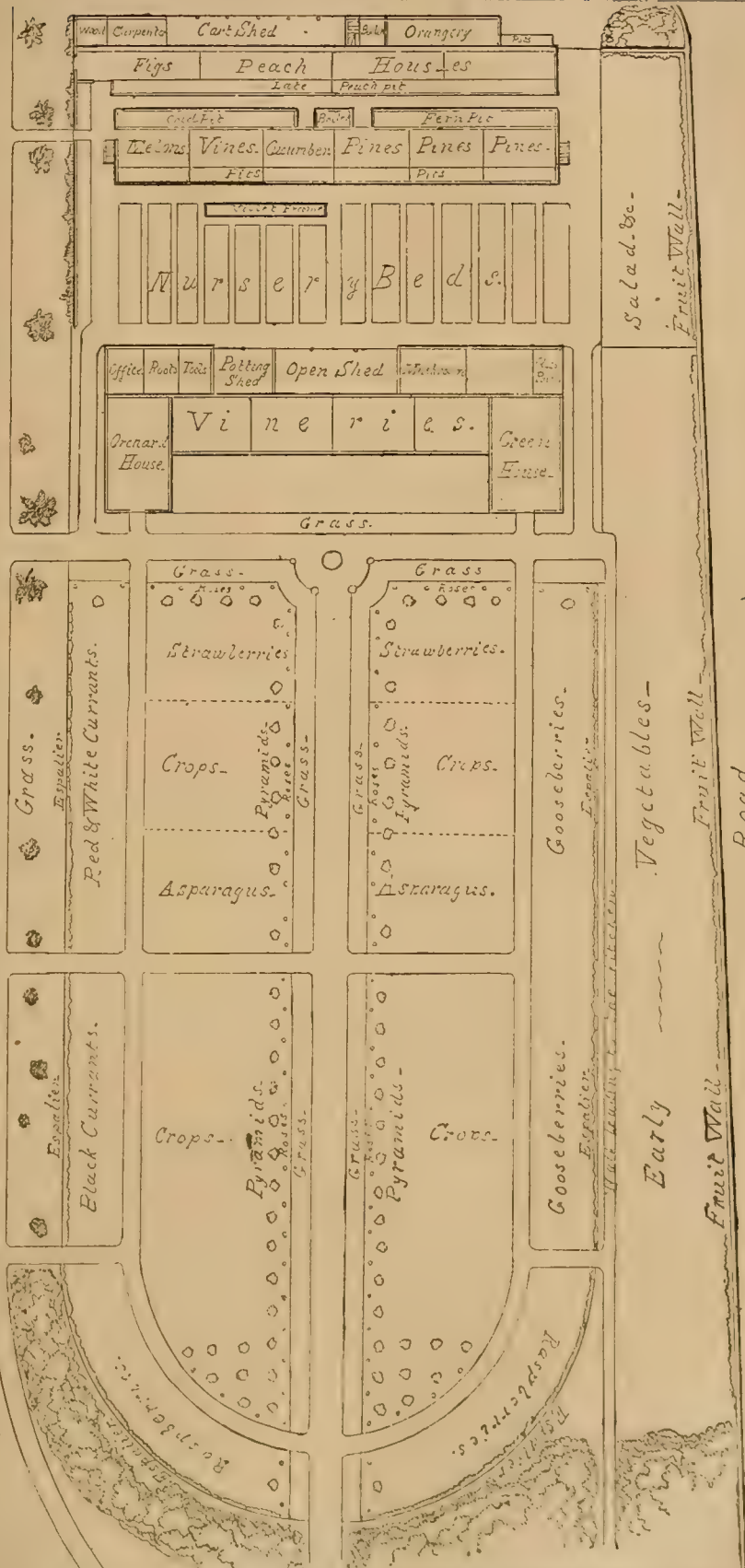
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South of Rect.

Park -

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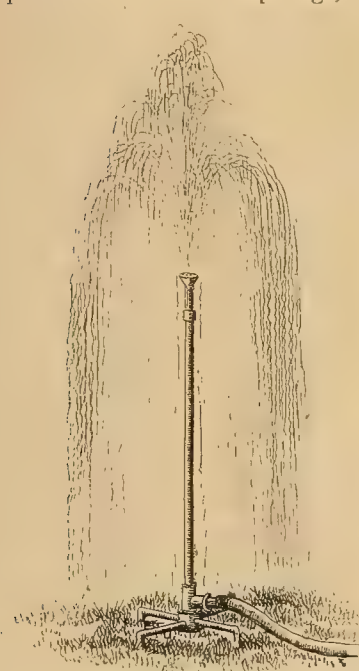
PLAN OF THE KITCHEN-GARDEN AND GLASS DEPARTMENT AT BERRY HILL, TAPLOW, BERKS.

here between the simple rurality at which I have hinted, and that grotesqueness which is compassed by scores of crooked limbs and knots wrought into labyrinthine patterns, which puzzle the eye, more than they please. All crooked things are not necessarily charming, and the better kind of homeliness is measured by something besides mere roughness. Lastly, there is your hospitable gate, with its little rooflet stretched over it, as if to invite the stranger* loiterer to partake at his will of that much of the hospitalities of the home.

—D. G. Mitchell.

MOVABLE GARDEN FOUNTAINS.

MANY a shady garden nook might be very advantageously lighted up with the sparkle, movement, and murmur of a pretty fountain. For the want of some culminating point of interest, such a spot is often passed by without notice, though possessing many attractions which could not fail to be appreciated if a passing attention could be secured to them, and the eye given time to examine them. The gushing sound of a fountain, as its waters are shot upwards, or the low music of their falling plash, like the soft prattle of subdued whisperings, combined with the visionary



Movable Fountain Hose.

aspect of its surrounding vesture of spray, is seldom unsuccessful in inviting attention, not only to itself but also to its more immediate surroundings; and in this way such a nook as the one above alluded to might be very pleasingly called into notice. It is not necessary that there should be an artificial pond, or stream, to afford an obvious *raison d'être* for the fountain, as a few low shrubs in front would conceal the fact that the water neither rose from, nor fell back into, either a natural or artificial pond, basin, or stream. Fancy would supply what *might* be there; and the forms that *might* be are nearly always more charming to the imagination than the things which actually are. Supposing the absence of any pond or basin to receive the water discharged by the fountain, or any channel to carry it away, the

water may be allowed to waste itself, with useful results, over the surrounding turf, and sink to the thirsty roots of the neighbouring shrubs. The movable fountain is a Transatlantic suggestion, and is much used in the parks and gardens near the great American cities, both as a pleasing object and as a means for thoroughly saturating expanses of turf in very dry seasons, being moved from place to place till the desired purpose is effected.

H. N. H.

The Slaughter of the Evergreens.—What a pity it is we do not contrive some less expensive and more attractive way of destroying the thousands of evergreens planted about London every year, than that of planting them and allowing them to blacken and perish before our eyes from the effects of our smoke-pested air! There perish annually as many beautiful young evergreen shrubs and trees in and near London from smoke as would suffice to plant a whole country. We know no greater evidence of obtuseness of mind than is shown by this persistent wasting of precious time and precious energy and destruction of healthful and beautiful young evergreen trees and shrubs. It cannot be too widely known to every town-planter that so long as we are satisfied to live in a sea of the refuse of our fire-places, so long shall we find it impossible to have in cities healthy specimens of vegetation that retain their foliage in winter.

THE GARDEN IN THE HOUSE.

TALL VASES UPON DINNER-TABLES.

As most of the remarks which I now propose to offer will have reference to the accompanying illustrations, it will make those remarks more readily intelligible if I preface them with a somewhat detailed explanation of the illustrations.

Each figure represents a table six feet six inches long, by four feet six inches wide. It is a common size in small houses, and by the addition of extra leaves can be made to accommodate sixteen diners. In the middle of each figure will be observed a rectangular space, ruled across with thick lines in various directions; this space represents that portion of the table which is more than fifteen inches from the edge. Within this space are placed the several kinds of ornaments designated (with more or less propriety) "dinner-table decorations," the marginal fifteen inches being reserved for more necessary articles.

Around each table are placed dots indicating where the seats of the diners could be placed if eight persons were to

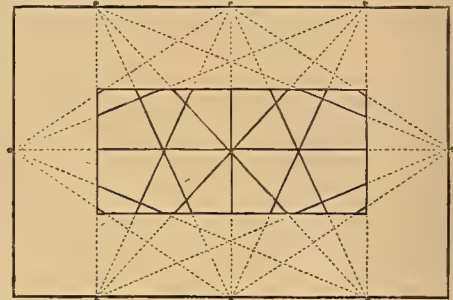


Fig. A.

form the party. In Fig. A there is one seat at each end of the table, and there are three on either side. In Fig. B there are two seats at each end, and two on each side of the table. As far as the convenience of those dining is concerned, there is no advantage in either arrangement over the other, for every one has an allowance of at least two feet for elbow-room in each case.

It will further be noticed that lines have been ruled from each seat to every other seat at the table (except to the seats on each side of it). These lines indicate the lines of sight between all the diners, and it is scarcely necessary to observe

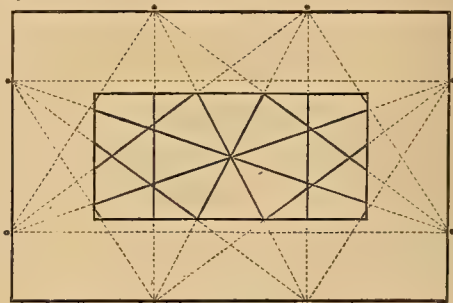


Fig. B.

than any high ornament standing where one or more of these lines cross the table must be an annoyance to two or more of the party.

If I have succeeded in making these explanations intelligible, it will perhaps not be thought surprising that the fashion of the present day is to use nothing on the table that is more than fifteen inches high, because any decoration above that height, and less than twenty inches high, is liable to intercept the view, and thus interfere with the sociability of the dinner. Fashion, we all know, is liable to run into extremes, hence the introduction of zinc and glass trays and dishes little more than an inch high in order that flowers may be arranged as flat as possible on the dining-table. Into these we often see fragments of flowers stuck, without regard to anything but

colour, and without similitude to anything in nature. Dreadful to relate, these miserable imitations of tessellated pavements and French shawls have actually had prizes awarded to them on many occasions at exhibitions! Let us hope that in future judges will be more considerate.

While expressing my disapproval of one kind, I would not wish to be understood to object to all kinds, of flat decorations. I have seen some, and arranged others, that have much pleased me; but I have never yet seen any style of flat decoration that would not have been improved if one or more tall vases had been substituted for a corresponding number of low dishes. The accompanying engravings will show that I am not unmindful of the risk which attends this substitution; but I know it can be done, and I am equally certain that, when properly done, the introduction of tall vases is a great improvement to the appearance of a dinner-table, while they are not in any way objectionable to the diners.

In my remarks in your first number,* as to the information that should be furnished in the schedules sent to intending competitors for prizes for dinner-table decorations, I mentioned that they ought to be informed how many persons were supposed to be dining at the table. I now go further, and say that the arrangement of their seats at the table should also be indicated; otherwise the decorator cannot tell whether his tall vases are, or are not, intercepting the view. On reference again to the illustrations, it will be seen that between the crossing thick lines in the middle of the tables there are interspaces, in which there is room to describe circles varying from three to five inches in diameter. It must thence be patent to every one who has had patience to follow me, that an object of any height that will stand in one of these interspaces without overlapping the lines of sight, may be placed there without inconvenience to any one at the table.

It will also be seen, that no tall object can be placed in a line down the middle of the table when the diners are seated as in Fig. A.—and that no tall object can be placed in the centre of either table; but that in the case of a party being seated as in Fig. B., there are four interspaces in the middle line of the table where tall objects might be placed. W. T.

Instructions for the Growth of bulbs in Windows.—The following excellent directions on this subject, issued in the form of a neatly-printed circular, have been furnished by Mr. J. C. Niven, curator of the Hull Botanic Garden, to the Hull Window-Garden Society. Let us hope that the example may be followed in other places:—

Such bulbs as Crocuses, Tulips, and Hyacinths may, with a little care, be grown in any window, on which the morning, mid-day, or afternoon sun shines, and all the more successfully if the window be under the influence of all combined.

As to planting: do not now lose a day. Those who have a few old flower-pots should have them well washed; the best size will be four to six inches in diameter; but, really, the size is more to be regulated by the width of the window-ledge on which they are to stand than by anything else. If you have a broken pot that is useless for plants reduce it to small pieces, place one of the largest of these above the hole of the pot used for planting, and above it a dozen small pieces. Failing the old broken pot, take a handful of cinders from below the fire grate, they will do quite as well. One of the youngsters will get you a bit of old broken plate, that will do to cover the hole in the bottom, he is almost sure to have a bit in his trousers-pocket; in either case, what we aim at is drainage. Fill the pot thus prepared with the soil, as distributed ready for use, to within one inch of the top; gently press it down, and make good any deficiency caused by the pressure; then place the bulbs (say three, four, or five, according to the size of the pot) on this surface, gently pressing them down; but if the roots are protruding let the pressure be very slight. Fill up the pot with soil, pressing it also down with the thumbs between the bulbs so as to fix each in its place when finished. In the case of Crocuses, at this season, the buds should just peep out above the soil. In this operation, take care of the side buds, not to break or injure them, although they do not produce flowers, they contribute leaves, and leaves are pretty, as well useful. Tulips may be treated in the same way; but Hyacinths should have, if obtainable, a little sand below the bulb, to assist in the development of the young roots; and the upper surface of the bulb should be just above the level of the soil.

But some may say we have no flower-pots, and cannot afford to get any; well, I'll give you a substitute. Have you not an old basin or a soup plate? Perhaps you'll say yes, but it is cracked. All the better for that; it will allow a little of the superfluous water to run out and a little air to come in. The soup plate will be rather shallow, so you must make a miniature mountain of it, finishing with a hollow at top like the crater of an extinct miniature volcano—where water can be poured and sink into the body of the soil without running away. Another substitute—don't laugh! An old superannuated teapot, whose spout, possibly, has come to grief, or, perhaps, the handle—if both are gone, all the better. Make a hole, where the handle was inserted, just sufficiently large for the buds to push through, and before filling up with soil insert a Crocus in each of these holes from the inside; top up with Crocus or any other bulbs, and I will guarantee when their very slender leaves hang gracefully down the sides of the pot (though it lose its former appearance) it will still answer its new purpose to a T.

The operation of planting finished, give them a nice watering, not a deluge (wise folks don't fill the pot when they make the tea)—you may at once place

them in the window; but it would be better to give them about three weeks in a cupboard in the dark—mind, not one beside a fire. Under the influence of the dark they will make roots. During this time they will want watering once or twice, and when in the window possibly twice a week; but until they show their green leaves and the colour of their flowers, be very careful not to over water them. When they are in bloom, on a genial sunny day give them plenty of air—open the window wide and close the door—it will do both you and them good. When done blooming, put them on the outside sill, where the leaves will get their full growth, and under these circumstances water them every day. Having made their growth, and the leaves beginning to wither, stop the water supply, but not till then. For the summer they may be placed in a corner of the yard, or if you have a bit of garden plunge the pots up to the rim in soil and leave Nature to take further care of them till next November.

Another Suggestion.—Your pots, as I before stated, will be on the outside sill; if they are large pots, place among the Crocus roots, about the end of March, two or three seeds of *Convolvulus major*, Canary Creeper, or even *Nasturtium* or *Scarlet Runner*, stretch a piece of wire or twine up the side of the window, and train up the young growing shoots. With a little ingenuity you can carry them over the window top till they meet, and then let them hang in graceful festoons. If your pots are small get larger ones, put some manure in the bottom (say two or three inches thick)—place the small crocus pots in these, and if there is room fill up round the sides with manure or sand; so arranged, your seeds will thrive and flourish without disturbing your bulbs.

If you have had to fall back on the teapot before alluded to, place it in an old broken basin, fill round with manure, so as to rise above the holes where the spout and handle were. The roots of the strong feeding seeds from between the bulbs will soon find their way out, and if you succeed—and I am sure you will—may I not ask if I have not pointed out a use for the superannuated teapot never dreamt of in the philosophy of the staunchest teatotaler?

CULTURE OF PLANTS IN ROOMS, DOUBLE WINDOWS, &c.

For room culture a selection must be made of such kinds of plants as are natives of countries the climatic conditions of which bear some resemblance to the temperature and air which we can offer to these plants in our rooms by means of any contrivances which can be adopted for this purpose; and, in the second place, an intelligent care and regard must be had to the natural requirements of the plants in connection with the peculiarity and special influences of room atmosphere.

For dwelling-rooms, the temperature of which ranges from 55 deg. to 60 deg. Fahr., a judicious choice will naturally select plants which are natives of quite a different region from that inhabited by plants which are suited for rooms, corridors, and staircases, which in winter enjoy a temperature not much above the freezing-point. Here we shall only make the general observation that for regularly heated rooms plants from warm, almost tropical, latitudes must be selected, and amongst these those in particular which do not grow in an atmosphere constantly saturated with aqueous vapour. Plants which require such an atmosphere can be grown in rooms only where arrangements have been specially provided to supply them permanently with the heat and the moist atmosphere of a regular stove. For rooms which have a winter temperature of from 50 deg. to 65 deg., and in which no special arrangements have been made, use may be made of the hardier ornamental plants, and also of some of the freer-blooming temperate stove plants, to which may be even added a few stove plants from moderately warm latitudes. In particular parts of the heated room separated from the rest by a glass partition, plants from the temperate moist stove may be cultivated; but plants of this description from the tropical regions proper will not succeed in a room. Corridors and staircases which are just secure from frost will be most suitably adorned with hardy evergreen plants from temperate regions, and also with the so-called cool conservatory plants, while rooms which are kept above the freezing-point offer the most suitable locations for wintering plants from moderately warm regions, or greenhouse plants intended to bloom in summer. The greater number of the plants of these latitudes, the culture of which is best carried on in low, cool-houses, near the glass, such as the *Ericas*, *Eperisces*, and the tenderer New Holland plants, are not adapted for culture in rooms.

The greater number of plants intended for room culture are, of course, purchased by amateurs from nurserymen. Now there are plants well adapted for room culture which, nevertheless, usually suffer more or less when transferred from the stove to a room; as in the former, they mostly enjoy a moist, warm atmosphere, and a larger amount of light. But in the inhabited rooms of a dwelling-house they can only be supplied with a moist atmosphere, and a sufficient quantity of light in certain parts of the room specially prepared for them, where they cannot serve for ornament as, for instance, in the double window.

We know that leaves exhale less water in a moist atmosphere, and much more in a dry one. The natural consequence of this is, that the leaves and young shoots of all plants growing under the influence of the moist atmosphere of a stove have a softer and more succulent texture. In the dry air of a room, the evaporation from the leaves of the more tender plants is so excessive, that the equilibrium between the supply and the evaporation is disturbed. The result is a drying up of the leaf.

* "Floral Decorations," p. 4.

points and margins, or a shrivelling, or even total withering of the leaf. From this cause frequently plants in a short time become very unattractive in their appearance, while another consequence of the derangement produced by overtasking the organs is the decay of the younger roots and a diseased condition of the entire plant. The amateur removes these debilitated specimens, or sends them into a plant-house for recovery; supplies their place in the room with other specimens, with the greater number of which he makes equally bad practice; and so by degrees he loses all pleasure in his room-garden. Unsuitable positions, far from the light, and faulty treatment conduce alike to the same bad result, but even with the best care failure is sure to attend on plants removed from the stove into a room. Whoever wishes to grow fine and permanent specimens for his room-garden should not be discouraged if at first the removed plants become deteriorated in their appearance, but, on the contrary, let him give them a double amount of attention, so that even in the room they may acquire a fresh and vigorous habit of growth. The organs which are developed under the influence of the room atmosphere will at the same time gain such firmness and powers of endurance as will, with a moderate amount of attention, render the plant capable of becoming a lasting ornament of the dwelling. The best modes of heating dwelling-houses destined for plant culture are those stove apparatuses which supply an equable, unintermittent, and not too dry a heat. Hot-water pipes are, therefore, for dwelling-houses, as well as for plant houses, the most suitable.

PUBLIC GARDENS.

THE SQUARES OF LONDON.

WHATEVER the present condition or prospects of the squares of London may be, we should be thankful that we have them. The haunts, or rather the strongholds, of disease and pollution are rendered unsafe by these islets in our unparalleled desert of slate, brick, and flag. In them the sun shines—dimly, no doubt, from our smoke plague—the wind seems to attain a little more freedom, and trees persist in growing, no matter how badly they are treated. We have many squares in all parts of the city, but assuredly not half so many as its colossal expanse requires. In the suburbs, unhappily, they do not seem fashionable with the cheap builders nowadays. These seem as if they were gradually tending to the extermination of small gardens as well as squares. If matters were arranged as with our neighbours the French, the square and the wide airy road would be laid down long before the builder came to arrange the ground as seemed best to him. They say to him: Here you may build, but do not encroach on the space necessary for public convenience; and thus they avoid the tortuous, close, and often dirty suburban roads which tend to make many of the most agreeable districts round London unvisited by and unknown to all but their inhabitants. I know nothing more disheartening and unwise in its way than our system of mean and narrow suburban roads. In South London matters are not so bad in this respect; but just think of the road to pleasant Kew and its vicinity *via* Hammersmith! Why no person not inured from early years to such a road would willingly run the gauntlet of taking it if there was any alternative. A broad and pleasant tree-planted road through such a district would, by opening it up and making it attractive to the inhabitants of London generally, prove as beneficial from a commercial as from a sanitary and an æsthetic point of view. And if such roads as convenience and good taste demand existed in a city the size of London, squares would be of less importance. Our new Thames Embankment, for example, is better than a score of squares.

It surely cannot be necessary to point out the benefits that a square confers on the district immediately around it. All, or nearly all, our present expenditure for public gardening is on the vast parks of which London is happily the possessor. But so long as the parks are separated by miles from each other, so long must the square or other open space be of the highest importance. The advantage of a park to those who pass one hour out of two hundred in it, is not so very evident; it is far otherwise with contrivances which improve the spots in which people work and sleep. Parks for play and exercise, and beautiful garden scenery, let us have by all means; but our great want is the smaller open spaces called squares, and wide roads planted with trees. Where roomy streets are fringed with one or more lines of trees that have been proved to thrive well in cities, most of the advantages of squares are secured. But as these seem impossible to us at present, if we cannot have what we like, why the best way is to like what we have, and try and make it more worthy of our love.

Into the history of our squares I have no wish to enter; their present condition is what is of most importance to us. We were, I believe, the first to make squares; though, judging by present

appearances, we shall be among the last to improve them. We have in London squares of various degrees of magnitude and keeping, from the West Central squares, with their fine old trees, to the new Brompton ones with their three-year-old Lilacs; from the wide West-end square to the small and dark and grimy ones in Soho or the City; but the very best of them are badly kept, and utterly unworthy of London. From Eaton or Russell Square to the "Square of Leicester" is indeed a deep and ignoble descent; but the stamp of neglect and ignorance is upon all. We will, now, have a look at the condition of Leicester Square in the latter half of the nineteenth century of the Christian era. When, generations hence, our descendants shall have



Leicester Square, June, 1870.

abolished smoke from their cities and made them much less effective in destroying the health and enfeebling the physical powers of the race, perhaps some of them will glance at this beautiful little scene, and look back with pity on the urban lives of their sires. An unhorsed statue lying in ignoble dirt; a propped-up horse with a large basin-like hole in the middle of his back; a filthy dead-dog and dead-cat bestrewn surface; and a rusty, decayed railing, broken away in parts, form the picture. A few tattered Hawthorn bushes remain on one side, and bloom beautifully there, notwithstanding the neglect, and the uncontrolled ravages of the boys when they are in flower. This unhappy square is capable of being made, with but trifling expense, quite as beautiful as such little Parisian squares as that of



Margin of a London Square, with edge of plantation designed to cutoff the view; and Section of Railing surrounding Park Crescent, July, 1870.

Montrouge, which are, or used to be, perfect gems in their way. It is somewhat unfortunate that our French friends should have the worst of all our squares in the middle of their London quarter. We can hardly expect that they, too, will agree that London is the centre of civilisation, so long as we damp their gay souls by such scenery as this. Let us turn from this disgraceful scene—a long-standing evidence of the feebleness of our vaunted system of local self-government, and glance at the condition of our squares generally.

So far as I can discover, no clear idea of what a square should be has ever been possessed by those who designed them. The chief feature they have in common is a very dirty and very ugly crowded

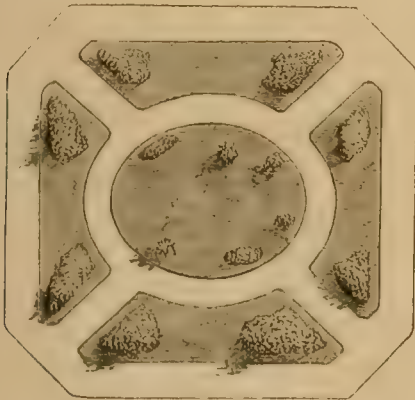
bank of Lilac and other common shrubs just within the margin; so that it is, in most cases, impossible to see into them. It has been assumed that the right thing to do was to hide the persons who now and then wander into the square from the passers-by; and thus the only fresh and pretty spots in many parts of the town are lost, so far as their general effect is concerned; and all from mistaken ideas as to the wants of the few persons who walk about, ghoul-like, in the musty and dripping shades of the interior. There is nothing in any of our parks, there is no feature in any of our public gardens, more beautiful and effective than even our small squares could be made; but little can be done so long as the absurd system of cutting off the scene from public view, and from the view of the persons who inhabit the square, prevails. There are squares in London in which views, almost Arcadian in their beauty, could be made; yet, from the windows of the very persons who support them, you can see nothing but a struggle between Privet and Lilac. Two of the finest weeping Ash trees that I know of anywhere are near the margin of Brunswick Square, but they are so surrounded by the inevitable



Structure in centre of a London Square, 1870.

scrub of mean bushes, that they are rarely recognised by the passer-by. Cleared around and surrounded by well-kept turf, they would prove ornaments to the whole district. But it may be urged that the squares are private property, and that their owners have a perfect right to keep them shut out from public view, if so disposed. Even so, it is quite possible to do this without making the margin inviting as a depositing ground for miscellaneous rubbish, and without wholly concealing the finest objects they contain.

By allowing the grass to venture near the railing here and there, and dotting it with flowers and isolated shrubs, so as to permit of pleasant peeps into the interior, quite a new aspect would be given to our now gloomy squares, and the change would not by any means involve the destruction of all privacy. No conceivable harm could come of making these little gardens attractive to the public; and in doing this they might be made tenfold more so for those who have



Plan of small square, with grassy open centre.

"a right" to these small fenced morsels of God's earth. Notwithstanding the great number of persons that often crowd into a Parisian square, there is not one of the squares of that city that is not a far more attractive object than any London one, and I have not the slightest doubt that if we could drop the square of St. Jacques into our West Central district, there would soon be a general desire on the part of the owners of our squares that they should be disposed in like manner. In that small, much-frequented square I have seen far more rare and valuable plants in masses in the open air than are exposed in our great public gardens here, and without the least danger, though crowds frequent the place from morning till after dusk.

Another important feature of the arrangement of our squares, and one which, like the filthy and crowded marginal shrubbery, is common to nearly all of them, is the disposition of the central portion. The ground is usually so small that it is desirable to make the most of it. The best possible course to make it look mean and contracted is to raise a plateau, and on this build a structure varying in appearance, as it looms through the trees, from the aspect of a wooden summer-house to that of a bathing-machine. Yet this is what is done in the majority of what may be termed the "best" London squares—in Cavendish Square and Lincoln's Inn Fields, for example. The eye is thus fixed on the contemptible objects in the centre, an agreeable spread of turf is made impossible, and one cannot feel the beauty of the trees or shrubs.

It is most unwise to desire uniformity in any art, but if there is one principle which deserves being engraved on the mind of every person who has the care of one of these squares, it is that the true way to obtain the best effect is by keeping the centre open and grassy, untortured by walks, hedges, or beds. By leaving the centre open and working in all our flower and tree beauty round the margins, we may in these small spots of ground make pictures to charm every beholder. The arrangement I mean will be seen at a glance in the preceding plan of a small square. It is by no means given as a model, but simply to explain the principle. The fringes of the central lawn might be planted in as varied a manner as possible. In large squares the form of the lawn need not be regular as in this case. But it is only when the good effects of the sweet fresh lawn in the centre are seen that its excellence can be appreciated; a plan cannot show it.

(To be continued.)

STREETS AND GARDENS OF SALT LAKE CITY.

In the laying-out of their city the chiefs of the Mormon sect have displayed a very high kind of capacity for the great work of town-founding. They wisely took warning from the bad effects produced by the narrow thoroughfares of the older cities and their grimy aggregations of closely-built, wretchedly-constructed, and ill-ventilated dwellings, which are frequently almost without the smallest space of back yard; and certainly free from the slightest attempt at reserving sufficient space for anything deserving the name of a garden.

In order to avoid these glaring evidences of the absence of thoughtful judgment in the original foundation of the great cities of the world, it was determined to make the principal line of roadway (to serve as a public promenade) of such noble width as to leave to the dwellings on either side almost as ample a supply of light and air as if they were situated in the open fields. And in order further to secure the aspect of the city from becoming one of mere brick and mortar, to the utter exclusion of natural beauties, specimens of the best native trees were planted along each side of that spacious road as soon as it was laid out.

In accordance with such views the houses were built at a considerable distance apart, and each was surrounded by an acre or more of garden-ground. These arrangements have necessarily rendered Salt Lake City one of the healthiest cities of the world; although in some parts of "Main Street" the frontage has become so valuable that new houses have filled up the interstices and form a nearly continuous line. The gardens are always trimly kept, and often make a rich display of flowers of kinds but little known in this country, though most of them would probably thrive well in our climate. These gardens, by persevering culture, are also rendered very productive in many kinds of well-grown vegetables; and the land surrounding the city, by unceasing and untiring industry, is made to yield abundant crops of the leading cereals. The Mormons are not a poor people in all that ministers to the comforts of existence, though they have no "money"—and mainly obtain from each other what they require by an ingenious system of barter. The course of legal prosecution entered upon by the American Government will, in all probability, lead to the extinction of those features of Mormonism which are an offence to Christian morality; and Salt Lake City may then form the nucleus of one of the most beautiful American cities of the Far West.

Hampstead Heath.—The covenanted sum of £45,000 has been at length paid over by the Metropolitan Board of Works to Sir John Mayson Wilson, as lord of the manor of Hampstead, in purchase of all his rights over this heath, and the deed has been signed and sealed by which that open space has been permanently secured for the benefit of Londoners in general. The Metropolitan Board of Works has also borne the legal and other incidental expenses of the transfer, amounting to £2,000 more. In commemoration of this transaction a number of the inhabitants of Hampstead and the neighbourhood have lately raised a subscription of some £650 as a testimonial to Mr. Philip H. Le Breton, barrister-at-law, chairman of the Hampstead Vestry, and representative of that parish at the Metropolitan Board, by whose exertions mainly the heath was thus secured. The testimonial, consisting of a silver tea and coffee service, a gold watch, and a purse of £500, was formally presented the other day to Mr. Le Breton at a public meeting at the Hollybush Assembly-rooms. Thus, within

five miles to the north of Charing Cross, as noticed in another part of our paper, some four hundred acres of open heath have been secured to the public, which, for beauty and salubrity, can hardly be surpassed within fifty miles. Indeed, both on the north and south of the metropolis, notwithstanding its enormous growth, pedestrians may still find within a moderate afternoon's walk all the refreshment of pure air and fine country scenery. The considerable hills which skirt the valley of the Thames on both sides are in this respect of immense advantage to London. They are sufficiently distant to secure the city from being cramped in its growth, and to allow ample movement of air, while they are sufficiently near to be serviceable for purposes of health and recreation to the inhabitants. London creeps up to the foot of these eminences, and then, as if deterred by their height and steepness, throws its arms around their base, and thus leaves a portion of open ground still accessible to the lungs and limbs of its overcrowded inhabitants.

Convict Gardening in India.—An interesting report, says the *Times*, of the administration of the Nicobar Islands—our great convict settlement—has been issued. At the end of 1868, Colonel H. Man began what is called "The Royal Dover Garden" at Haddo, Port Blair, as a nursery for fruit and other trees, vegetables, &c. About 350 acres of land have been taken up for this purpose. The superintendent of the garden has now out in the plantation more than fifty varieties of fruit and other trees; 74,500 plants, with an estimated average of six suckers each. He has sent out from the nursery 5,600 more, and there remain close on 50,000. English and other vegetables also have been raised during the year. Of course, this wonderful progress towards social comfort has been made chiefly with a view to the free population, but the ticket-of-leave men and free cultivators receive a share of the benefit. Their monthly average number is 174, all of whom are permitted to work as they please and sell their produce in the best market. When they fail to find a higher price than is given by the commissariat, that market, with regulated prices, is always open to them. If the progress indicated in this report continues, the settlement of Port Blair will before long become rich in fruits and other productions of the soil. The Governor of Madras has contributed to the garden during the year a present of 1,000 plantain shoots, 100 pomeatoes, 1,000 oranges, 1,000 limes, 25 pomegranates, and 25 jack fruit.

Victoria Park.—The Chancellor of the Exchequer received at Downing-street, the other day, a deputation relative to the proposed building on the reserved land around this park. Mr. Reed, M.P., said that the East-end public did not make a demand for the land as of right, but they entreated the Government to step in and prevent the building over of the ground (some thirty-five acres), or at least to suspend the building operations, so as to give time for an appeal to Parliament. It was said that as many as 150,000 persons had visited the park in one day. The Chancellor of the Exchequer said that the deputation had shown what he never doubted, that it was most desirable that their object should be attained. But he had to look upon the matter from a different point of view. The money for the park had been advanced by the Government to buy land, a certain portion of which was to be given to the Board of Works for a park, and another to the Woods for building. That land was therefore the property of the people of the whole country, but they asked him to give it to the people of the East-end. The same request was made to the Board of Works for the reserved land of Finsbury and Southwark parks, but they said the interests of the ratepayers would not let it be granted. He had to put the people of these islands in the place of the ratepayers and say the same thing. If the inhabitants of the East-end wanted this land, they should put their hands in their pockets and buy it.—*Times*.

THE MARKET-GARDEN.

SIXTY YEARS AGO.

At the commencement of my horticultural experience but little was known of gas, steam, or hot-water apparatuses for the heating of either plant or forcing houses, and on account of there being a heavy duty on the materials usually employed in the construction of glass houses, it was not until that was removed that they made much progress. The glass, too, of those days, was coarse, spotted, and of bad colour, and in many houses the panes were lapped in casement lead—in short, frame and pit lights were generally constructed on this principle. Even near London, where the most improved methods of hothouse building might have been expected to be found, market gardeners had almost all their frames and forcing lights glazed either wholly in casement lead, or had the squares of glass lapped with that material. In the course of time some alteration was made in the duty paid on glass—instead of being paid by measurement it was paid by weight. A clearer white glass called "crown glass" then came into use, but it began to be manufactured so thin, to avoid as far as possible the duty, that breakages became extensive. The sash-bars were therefore placed closer together, so that, instead of being seven or eight inches apart, the width was reduced to from four to five inches, which was not only considered safer and stronger, but also furnished a pretext for using up odd bits of glass. This kind of glazing had obvious disadvantages, notwithstanding which, however, many span-roofed and other structures were erected on that principle, in which grapes, pine-apples, salads, early vegetables, and the whole round of garden productions, both as respects plants, fruits, and vegetables, were grown in considerable perfection. When, however, the glass duty was repealed, an immediate improvement in the quality of glass took place. Nevertheless, when we had got it cheap and good, it was reported to burn, scald, and spoil both foliage and fruit.

Such objections, looked back upon, now astonish us, and they probably originated in the fact that more was then attempted under glass than the experience and skill of cultivators were equal to, for new and, comparatively, but little known features of cultivation every day presented themselves. Elegant glass erections began to

be built, in which comparatively little timber was used, and they were glazed with fine, large, clear glass, to admit plenty of light. To stay progress in this direction seemed impossible, but now complaints were raised against colour; and glass of various colours was tried; but in the end clear glass prevailed. Intensity of light Nature usually, if left to herself, counteracts by an increase of humidity; and atmospheric motion she always supplies. I, therefore, endeavoured to follow the lessons which she taught; and this I did with considerable success.

Since that time, however, the principles of ventilation have been taken in hand, and greatly improved. More humidity has been supplied, and, consequently, greater health and vigour have been secured. Few complaints are heard now as to colour; still, there is no doubt, that a slight tinge of blue in glass is better than the clear white sort.

Vineries, pineries, and plant-houses sixty years ago were all lean-to's, span-roofed glass houses being then unknown. They were heated by cumbersome flues, very often so badly constructed that, for want of a brisk draught, one end of the house would be parched up and the other cold. In many localities, the quantity of fuel required for these flues was a serious consideration. Coals were dear, and often far to fetch; indeed, in many country establishments no coal was allowed for hot-house fires; wood, peat, turf, and balls of stiff clay, had to be used, according to the locality. The balls of clay were a pretty good thing to bank up with, or place on a good wood fire the last thing at night.

In those days few persons grew pines—their system of culture was slow, and at all seasons they maintained a dry heat. Therefore, both plants and fruits became nests for scale and bug, and, as might be expected, the fruit was poor and imperfect. Grapes were generally very badly cultivated, indeed; they were all grown on what is now termed the extension system: one vine to a house; or, if two were planted, one would be a black and the other a white variety. The whole surface of the glass was generally covered with a network of wood such as it was, and leaves with but a few small miserable bunches of fruit of poor enough quality. Their theory then was—and no theory was more persistently practised—that an abundance of wood ought to be left when pruning, the idea being, that plenty of wood would be sure to produce abundance of fruit. Another idea was, that all vines must, if possible, be turned out of the house in autumn, or that the house must be uncovered, in order, as it was averred, and which was also abundantly practised, that the wood might be properly ripened. Stoves and greenhouses were generally furnished with grape vines, one to each rafter, oftentimes each being a different variety; and these, too, were turned out to ripen their wood. This practice of having part of the vine in a hot-house, while a large portion remained outside, was, I need not say, anything but favourable to healthy growth. It was, however, continued for some time. The vines were planted outside, and the rods were taken in, and trained up the rafters, thus suddenly exchanging a wintry atmosphere for the heat of a pine stove. The consequence was, that some vines did not even break, others pushed away weakly, and were sometimes cut back, in order that a new growth might commence from the part which entered the house. This system was actually practised as late as 1837, when the memorable Murphy winter came upon us, and killed almost every vine exposed in that way to its action. That year, when they were placed inside, to produce their growth and crop, they were found to be dead—a fact which taught cultivators a lesson for their future guidance. I should, however, mention that a few persons, more intelligent than their neighbours, had made some years previously considerable improvement in vine culture, also in the varieties cultivated, and that they had even ventured on the one-rod and close-pruning system, so generally practised since by good grape-growers. I have noticed of late that even in the present day we are not without advocates of the old extension system; but whether it may prove a step in the right direction or a retrograde one, time will prove.

Early cucumbers were generally grown in those days in frames, on beds of well-wrought fermenting stable dung. Leaves were sometimes used in country gardens, when they could be procured, and preserved by those who were well up in the cultural skill of the period. The bed was thoroughly lined and wrapped up with the same materials, outside of which were placed thatched hurdles, evergreen boughs, or faggots, or other material capable of breaking the force of driving wintry winds; thus maintaining as much as possible, a uniform temperature within—no easy matter under such circumstances. Everlasting attention, in fact, was required to cultivate cucumbers so as to be able to cut good fruit from the 3rd to the 10th of March. Those able to do so were considered to be fortunate. Early cucumbers and melons were the only specimens of horticultural produce exhibited then, and little clubs or meetings of gardeners, and others interested in horticulture,

used to be held in certain localities for the purpose of raising by subscription a small sum to be offered as prizes at such shows. The prizes, which were generally in the shape of some simple and useful article, such as a silver teapot, milk jug, half-a-dozen teaspoons, pair of tablespoons, and such like, were, for the most part, three in number, and in value varied according to the amount of the funds subscribed; they were offered for the best three trees or dish of cucumbers. These little cucumber meetings, or exhibitions, of which the greatest number was held from the 3rd to the 10th of March, generally took place, as had been previously agreed upon, in the room of some hotel or tavern centrally situated or most accessible to the greatest number of exhibitors. After the prizes were awarded, a dinner was provided, after which a friendly discussion on gardening matters took place, with a general interchange of seeds, cuttings, &c., for, as was very often the case in those days, there would not be a nurseryman or seedsman within many miles—indeed, there were but few of either in the whole country.

I should mention that, in order to obtain these early cucumbers, it was the custom to sow the seed from the 3rd to the 12th of the previous October, so that plants might be got strong enough for ridging out, or placing in their permanent positions by the middle of November. The beds, made as has just been described, were from four to five feet in height, and when new linings were put to them, which was often the case, great care was always requisite to keep the least sourness or gaseous fumes from getting inside the frame—such was the constant precaution and anxiety then required to get fine cucumbers by the first week in March. And in attempting this there were often many "break-downs" through not having always in readiness a supply of fresh, sweet, and well-worked materials for any emergency, as well as through other causes. Those who really did succeed in those days were considered to be at the head of their profession, it being generally the case that the successful man was a patient, persevering, and attentive cultivator, in all branches of gardening, as well as orderly and methodical in his habits. My first employer, near London, was an extensive and successful cultivator of early cucumbers. There were then but few others who attempted to grow them on a large scale, on account of the trouble and expense they entailed, together with the uncertainty of success. There being, consequently, but little opposition, cucumber-growing was a profitable speculation to the skilful cultivator. A brace of good cucumbers in March always realised two guineas, and sometimes fifty shillings. The generality of growers and market-gardeners did not attempt to prepare for cucumber culture till January or February: the seed was sown and strong plants obtained in time for ridging out in March; fruit could then be cut by the end of April or beginning of May. In large market-gardens mountains of London stable dung were collected, the first use of which was the protection of frames for forcing early asparagus, seakale, early celery and various other things; some hundreds of lights were also in use all winter for the protection of cauliflower and cos lettuce plants, by which enough were grown to plant thirty, forty, or more acres. By the time these frames were cleared from their winter occupants we always took care to have in readiness some of the litter well wrought in succession heaps, so as to make up at once our succession hot-beds, to have also the plants in readiness for turning out into the frames, and more sown to succeed them. Thus by the middle of April or beginning of May, I have had under my care a thousand lights of cucumber plants. About the first week in May we would have the cucumber plants strong and ready for planting under hand and bell glasses, at that time much used for protecting cauliflower and lettuce through the winter. We had generally above three thousand of these glasses in use for such purposes, the whole of which, by the first week in May, would be turned to account for cucumber culture. Between the rows of bell-glasses under which the cauliflowers were planted, a space of ten or twelve feet was left for winter spinach, as well as for the sowing in December of early radishes. This space, when sown, was covered with straw for protection. By May these crops were generally gathered, when a line was drawn down the centre of the space; in this the pegs used for giving air under the bell-glasses, were stuck at regular distances apart; two strong men then commenced with large market-garden spades to make holes or pits, row after row, where each peg stood, first placing the peg on the right-hand side of the hole. A gang of men was then employed loading and wheeling hot dung, of which a barrowful was thrown into each hole. A man followed with a strong fork to shake and shape the litter into form; he was succeeded by two more men, who, with their spades broke up the soil, which had been thrown out of the pits and placed it on the top of the dung. A woman then put the glass on the top and placed the air peg on the south side of it, to be in readiness. Two more women brought the plants which had been previously taken from the stove and hardened off, and placed a pot against each glass. These were

succeeded by the foreman, who turned the plants out of the pots and planted them. A woman then followed replacing the glass, pressing it down, and drawing a little loose earth round the rim to prevent the admission of air. Thus methodically and like clockwork was the whole work gone through. By the time the cucumber plants had grown sufficiently large to admit of their running out from under the glass, the whole of the spinach and radish crops were cleared, should any have remained. The beds were then rounded off, and mulched with litter shaken from the stable dung. In this manner tons of splendid cucumbers were daily grown for twelve or fourteen weeks to supply the London market. The cucumbers grew so vigorously and productively in those years that I cannot help looking back to the time, and wonder why that, during the last thirty or forty years, no such vigour and fruitfulness are to be seen. A canker disease has attacked them, as the potatoes have been attacked, and from which all out-door-grown cucumbers suffer more or less.

Gherkins were at that time grown in the Fulham and Battersea fields, and in Bedfordshire by acres. The seed was sometimes sown broadcast, and the young plants, when sufficiently advanced, were thinned out by hoeing; or it was sown in a seed bed, with a little bottom heat, in the open air, and the young plants were afterwards transplanted in rows. The produce was generally gathered by women, packed in half-bushel sieves or bushel sieves, and forwarded to London in immense quantities. A large quantity was also annually sent to the different pickling establishments, and to the oil shops that existed near the river side, where they were pickled in casks, jars, and bottles for exportation. In order to get rid of the surplus crop, and the fruit which had become overgrown, they were collected and put in sacks or baskets, sent to market, and sold for two-pence or threepence per dozen; even a penny per dozen would not be refused at times, so glutted would the market very often be with them. Bushels of gherkins might have been seen at the street corners and street stands of London, evidencing the relish which the people had for them, even only forty or forty-five years ago. Although cucumbers have not grown well in the open air for many years past, yet since the establishment of hot-water apparatuses as a means of heating glass houses, they have been inexpensively and successfully grown with but a small share of the trouble and anxiety which characterized open-air cucumber culture sixty years ago.

Melons were never, in my remembrance, very extensively grown by the London market-gardener, owing to their requiring more particular attention than cucumbers, and also on account of their being longer before they produced any return, and then not so profitable a one as the cucumber; some cargoes of Dutch melons, too, were sent to this country, which lessened the sale of what were grown here. Steam vessels also began to venture abroad, and brought to our markets melons and other fruits in great abundance; and imports of this kind have been year by year steadily increasing. Gentlemen's gardeners, however, grew melons in those days, and had them for exhibition, such displays generally taking place about the middle of May. The fruit was then, as now, cut open, in order to test its quality. And I must say that I have seen, more than fifty years ago, as fine melons in size, shape, and flavour, as are to be seen now. In order that good melons might be produced in the market gardens early in May, it was necessary that the seed should be sown about the beginning of February. There were a good many varieties in cultivation, amongst which were an early, fair-sized, scarlet-fleshed sort, called Cantaloupe, a beautiful green-fleshed kind, named Egyptian, and a handsome rock-scarlet-fleshed variety, grown as a summer crop, after early frame carrots and potatoes.

It is a singular fact that vegetable marrows were not cultivated in this country sixty years ago; and, for some time after their first introduction, but little use was made of them as a culinary vegetable; they were looked upon more as a curiosity than as a useful part of garden produce, though now so much appreciated. They are certainly much superior to summer-grown turnips, either cooked whole or mashed.

Late of Bickton.

JAMES BARNES.

Richmond Sewage Works.—In reply to the advertisement of the Richmond Sewage Committee, offering a premium of one hundred guineas for the best practicable plan for disposing of the sewage of the parish, upwards of twenty schemes were submitted; and at the last meeting of the committee the premium was awarded to the authors of the scheme marked "C. E.," found to be Messrs. Goto & Beesley, of Great George-street, Westminster. The system proposed by these gentlemen is the same as is carried out by them at Rio de Janeiro, where it has been in operation for the last seven years, to the drainage from a population of about 100,000. The sewage is decolorised by long sulphate of alumina, charcoal, and other chemicals; then passes through long precipitating tanks, when the solid matter is separated; and the effluent water, after being strained and filtered through charcoal filters, passes off clear, and free from smell. There are special appliances for drying and removing the solid deposit, prepared for agricultural purposes. The high part of the town will be drained by gravitation, and the sewage from the low part will be pumped. The cost of the decolorising works is estimated at £7,000, and the intercepting sewers at £5,900, or a total cost of £12,900. The Sewage Committee have given the necessary notices for obtaining the land for the works.—*Builder.*

THE AMATEUR'S REMEMBRANCER.*

In-door Department.—Remove Chrysanthemums from green-houses and conservatories as they go out of bloom, and fill their places with plants from the forcing-pits. Camellias, Epacris, and winter Heaths will soon maintain a certain amount of gaiety, as will also Cinerarias, Neapolitan Violets, and those pretty-berried plants, the different varieties of *Solanum capsicastrum*. In cool-houses keep up a little artificial heat on dry days in order to be able to give air. Water Cinerarias pushing up flower-stalks with liquid manure, and fumigate if green-fly appears. Where no better accommodation can be found for the beautiful-leaved *Colcous* than a greenhouse, they should be kept at the warmest end. Camellias, now swelling their buds, will be benefited by being watered now and then with weak liquid manure. Auriculas, Polyanthus, and Carnations, in pits, give as much air to in the daytime as possible, whenever that can be done, taking the sashes entirely off; but if wet, keep them on, tilted back and front. A temperature just above freezing will suit them perfectly. Water seldom; but thoroughly when they are really dry. Hyacinths, Tulips, Lily of the Valley, Crocuses, and other bulbs, bring on in the forcing-pit, in a temperature of not less than 60°. A similar temperature will suit Poinsettias, Begonias, Lilacs, Roses, Deutzias, Rhododendrons, Azaleas, and plants of that kind required for the decoration of warm conservatories or greenhouses; and as soon as there is room introduce fresh supplies for succession.

Fruit and Forcing Houses.—Vines starting, if planted inside the house, should receive a good soaking at the root now and then with tepid water, to promote underground growth. Let the rods hang horizontally for a time, in order to induce them to break more regularly than if they were fastened up in their proper positions. Where forcing is about to be commenced, and the roots are outside, if not already done, let the border be well covered with fermenting material. Prune, and paint the vines with the following composition, viz.:—Sulphur and cow dung, or clay, equal parts, mixed with tobacco-water, first stripping off all loose bark from the old wood. Trees in orchard-houses may now be pruned, taking care to shorten back to a wood bud, and dress the trees with Gishurst compound, at the rate of four ounces to a gallon of water. When re-potting, slightly root-prune such trees as have been too luxuriant; and weakly ones encourage with fresh, good soil. Where these constitute storehouses for bedding plants, Pelargoniums in pots, Fuchsias, and things of that sort, a temperature of some 40° or so must be maintained to keep all safe, giving air every day in mild weather.

Fruit and Kitchen Garden.—Pear trees on walls, prune and nail. After pruning trees on espaliers, see that the stakes are in good order, or, better still, substitute those figured in our last number. Orchard trees of all kinds prune, not forgetting even damsons which are often neglected in this respect. Planting of all kinds bring to a close as early now as possible, and when the trees are up, trim in some of the strongest of the roots with a sharp knife. Gooseberries and currants should have their buds dusted on some damp day with soot and quick-lime or guano, to keep birds from feeding on them. Top dress with manure, either "pointing" it in now or in spring. Select such strawberries as are intended for early forcing, dress them and plunge them in a leaf-bed in a cold pit, keeping them about a foot from the glass. They can be introduced into a little heat in succession as wanted. In the kitchen-garden, peas or beans coming through the ground, protect from birds. As soon as it can be done mould them up a little to preserve them from cutting winds. Ground from which roots have been lifted should, when being dug, have a good dressing of lime to kill insects, and should be turned up rough to be pulverised by the winter's frost. When it can be done, stir the surface-soil among growing crops. Endive and lettuces take up on dry days, and store in a dry, airy shed. Cauliflowers or lettuces under glass should have air given them whenever the weather is at all favourable. Straw covers or wooden shutters should be in readiness in a dry state for purposes of protection when wanted. They will be found useful for covering pits or frames in severe weather.

J. M.

How to Prevent Weeds from Growing on Walks.—To one gallon of gas-tar, add about half a pound of air-slacked lime; boil and incorporate them well together, and apply them with a common long-handled whitewash brush while the surface on which the application is to be laid is in a dry state. This will dry in a few hours if applied boiling hot, and the colour will be unobjectionable. Before putting on the mixture brush off any loose rubbish that may lie on the walks; of small growing weeds no notice need be taken, as the hot tar kills them instantly. Walks thus treated cannot fail at all times to give satisfaction.—J. BARNES.

* Complete general calendars, written by some of the most able gardeners in the country, are published in THE GARDEN in the first issue in each month.

RABBIT-PROOF PLANTS.

ALLOW me to add the following to the list published in your first number, on page 9:—

<i>Acanthus spinosus</i> .	Pampas grass.	Paeonies (tree and others).
<i>Buddleia globosa</i> .	Rhododendron.	<i>Forsythia viridissima</i> .
<i>Cotoneaster microphylla</i> .	Hardy ferns (all kinds).	Heaths (hardy).
<i>Juniperus prostrata</i> .	St. John's Wort (<i>Hypericum</i>).	<i>Jasminum nudiflorum</i> .
<i>sabina</i> .	<i>cum.</i>	<i>Spiraea arifolia</i> .
<i>Potentilla fruticosa</i> .	<i>Lyccesteria formosa</i> .	

During a ten years' residence in Norfolk, where rabbits are very numerous, these were generally free from their attacks. I do not say that, during a severe winter, if there was no other food to be got, some of these plants would not be nibbled at; but I have frequently seen common laurels, thorns, hazels, &c., killed to the snow-line by their depredations, and these not touched. Rabbits in different localities may, however, have different notions as to food. In Norfolk I found them particularly fond of dwarf perpetual roses; and frequently choice hollies used to suffer a good deal from their attacks, while rhododendrons, which grew in the woods amongst them, were never injured. The pampas grass is a first-rate plant for planting largely in ornamental game covers.—E. HODDAY, *Ramsey Abbey*.

Hungry rabbits, like hungry dogs or starving men, will eat almost anything that can be masticated and swallowed. Rabbits, as a rule, prefer to nibble over a pasture that contains short, sweet, wholesome, grass, and a proportion of clover, dandelion, and daisies, but in and about woods where rabbits are numerous the grass, from being closely and constantly eaten off, gradually disappears, and at the approach of winter is succeeded by moss, a very cold, watery, and innutritious substitute; then rabbits are driven to seek food from other sources than grass, and the bark of small trees, the leaves, stalks, and bark of shrubs, and the protruding roots of forest trees are eaten almost indiscriminately. Amongst evergreen shrubs, rhododendrons and box are generally avoided, but I have known newly-planted hybrid rhododendrons to be partly eaten by rabbits. The elder is distasteful, and American azaleas are avoided. I have frequently seen yew trees barked; mahonias are devoured in these woods as soon as planted; and periwinkle, which is named amongst rabbit-proof plants, is generally eaten to the ground in severe weather. Some of the bulbs and flowering-plants named by your correspondent may well escape in winter, because they are not seen above ground, and where they grow, other more agreeable herbage appears, so their immunity consists in being inaccessible in a hungry time. Where rabbits are permitted, the fact that they require food daily like other creatures should be recognised. In the absence of wholesome food they will eat simply what they can get. A certain portion of grass land should be retained for them and managed accordingly; a few acres might be wired round, or, to be more explicit, surrounded with wire-netting, to the exclusion of rabbits until the approach of wintry weather, when it could be thrown open for them. If this cannot be done, and frosty weather sets in, when the mischief to shrubs is consummated, trimmings of quick hedges should be scattered about, and an allowance of turnips, carrots, or mangold wurtzel made and doled out daily in bad weather. In my experience, rabbits prefer newly-planted trees and shrubs to those established. I have even had the fronds of newly planted *Athyrium Filix femina* eaten, while other ferns have been untouched. There is one hint I may give your rabbit-preserving readers: certain breeds of wild rabbits are much more prone to bark trees than others. The barking of trees is an acquired propensity more common to north-country rabbits than others. I should advise the destruction of those rabbits whose propensity for shrubs is very marked, and try warren or common rabbits from the south of England; but the best advice I can give is to have no rabbits at all.—W. INGRAM, *Belvoir*.

In your first number you had a list of plants and shrubs, taken from the *Field*, which are said to be proof against the attacks of rabbits. The names of the majority of them were contributed to that paper by me; but I see in the list the laburnum figuring as invulnerable. Now, our experience here is that it is one of the first to be attacked, and we have to protect the stems even of large trees, both laburnum and holly, with a coating of lime and cow-dung, or of coal-tar. A stitch in time saves one never knows how many, and the knowledge of this may save much disappointment.—HERBERT MAXWELL, *Wigtownshire, N.B.*

French Horticultural Relief Fund.—A meeting will be held at the rooms of the Royal Horticultural Society, South Kensington, on Tuesday, December 19th, at 1.30 p.m., to decide on the distribution of the funds accumulated for this purpose.

Trees in Victoria.—Recent explorations show that the great Australian trees exceed in height, though not in circumference, the giants of California, though some of the Australians must be regarded as very respectable in girth as well as height, the hollow trunk of one of them being large enough to admit three horsemen to enter and turn without dismounting, while they led a fourth horse. A fallen tree, in the recesses of Dandenong, Victoria, was measured not long since, and found to be 120 feet long; another, on the Black Spur, ten miles from Healesville, measured 180 feet.

THE GARDEN.

"This is an art
Which does mend nature: changes it rather: but
THE ART IS NATURE."—Shakespeare.

All communications for the Editorial Department should be addressed to WILLIAM ROBINSON, "THE GARDEN" OFFICE, 37, Southampton Street, Covent Garden, London, W.C. All letters referring to Subscriptions, Advertisements, and other business matters, should be addressed to THE PUBLISHER.

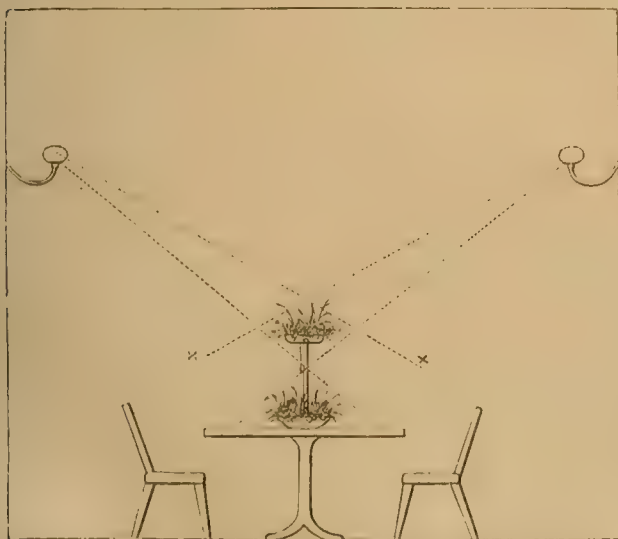
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THE GARDEN IN THE HOUSE.

ILLUMINATION OF DINING-ROOMS.

MANY may be disposed on first thoughts to regard this subject as more fitting for the columns of the *Builder* than THE GARDEN. And so it might be, if it were my intention to suggest alterations in the mode of lighting. My present object, however, is only to treat of the different methods as I find them, and to show their bearings upon the decorations of dinner-tables. The various ways in which a dining-room can be illuminated may be treated of under the three headings of Table-lights, Ceiling-lights, and Wall-lights. By *Table-lights* I mean all kinds of oil and spirit lamps, candlesticks, candelabra, and gas-lamps supplied by flexible tubes. Upon large dining-tables some of these occasionally look well, while upon small tables they are always in the way, and generally regarded, more or less, as a nuisance, though in many cases a necessary one. Under the heading of *Wall-lights* I would include all kinds of illumination proceeding from, or placed near to, the walls: such as gas-arms and branches, girandoles, and all modes of lighting enumerated under the heading of table-lights, when they are used upon sideboards, shelves, brackets, &c., round the room. By *Ceiling-lights*, I mean chandeliers, gaseliers, and sun-burners of various kinds.

Of these modes of lighting I regard table-lights as the



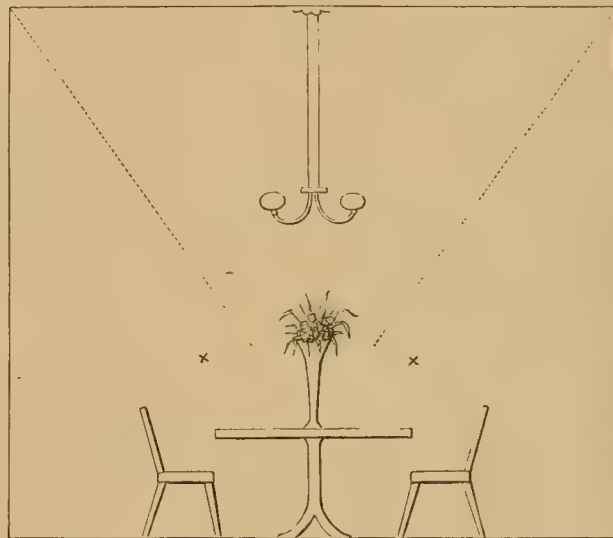
most objectionable when flowers are to form part of the decorations. There is less objection to ceiling-lights than to table-lights, principally because the "machinery" of lighting is more out of the way. But the best of all kinds of lighting is that from the walls, when not placed too far from the ceiling.

The accompanying diagrams will enable me to explain more readily the influence which this mode of illumination should

exercise over the selection of suitable vases. They represent sections of a room fourteen feet wide and twelve feet high, containing a dining-table four feet six inches in width, and of the usual height, two feet four inches. The X indicates the position of the eyes of a person seated at the table.

In the illustration of a room lighted from the walls will be observed dotted lines proceeding from the wall-lamps, and passing above and below the group of flowers in the upper dish of the "March glass." These show that no portion of the shade, caused by the light falling upon the upper dish, comes upon the lower dish, and that both dishes are fully exposed to the light.

In the sectional drawing of a room lighted by a gaselier it will be seen that a trumpet-shaped vase has been introduced



as the centre ornament, instead of a "March glass." This latter form of vase would be quite out of place where the illumination is from above, since everything in its lower dish must then be thrown into deep shade by the decorations in the upper dish.

When rooms are lighted from the ceiling, it is, perhaps, the safest way to restrict one's self principally to flat styles of floral arrangements upon the dinner-table. If I were asked to describe the plan of illumination most suitable for dinners, I should draw a line from the middle of the dining-table to the angle of the room where the wall and ceiling meet (as shown by dotted lines in the sketch of a room lighted from the ceiling), and I should fix the lights at nine feet from the floor where that measurement crosses the dotted line. The number of the lights and their size must, of course, depend upon the length of the room, which is here assumed to be fourteen feet wide.

W. T.

Gleichenia flabellata.—Would not this make a charming plant for table decoration, especially on the interesting occasion of a wedding breakfast? Its branches fork off at different heights into three or four divisions, making nice receptacles for little Cupids, made either of paper or parian. If this hint were taken up by some of our professional table-decorators, I am sure the bridesmaids at least, would think the design "sweetly pretty." Happy would I be if I could as graphically illustrate this matter as Mr. Hole has his Agave telegraphica. —WILLIAM TILLERY, *Woburn*.

Variety in the Leaf Decoration of Flower Vases, &c.—Sometimes the effect of large flowers is spoiled by intermixture with puny flowers of other plants, or an attempt to green down the blaze of colour by fern or other leaves. The proper leaves for many large flowers are their own, or some other large kind. It may be fancy more than correct taste, but it seems to us that even fern fronds are rather out of place with such cut flowers as rhododendrons. We remember we once learned from a confectioner to royalty a lesson which is as applicable to the dressing of flowers as of fruit, though not perhaps to the same extent. He said, "Each fruit should be dished up garnished with its own leaves." Why not each flower? An attempt to conform to such a law would give more freshness and variety to our floral devices than aught else we could try. What should we think of the ladies if, with all their changes of dresses, they invariably used the same trimmings? To a large extent this is just what we do with our flowers—stiff or graceful, sober or gay, we fringe them all alike with the same ferns. Would it not be better taste to try their own leaves first? There is no fear of not using enough fern; but distinctness and freshness could often be reached if we laid it aside now and then for other greens. Many of the Coniferae form good substitutes, barring the smell when bruised; and asparagus, common grasses, and numbers of other plants, may be used with as good an effect as the ferns.

THE CULTURE OF PLANTS IN ROOMS.

(Continued from p. 84.)

THOSE modes of ventilation by which cold air enters the apartment at once are the most common and the most imperfect. The admission of air in cold weather by the windows is particularly injurious, as it enters the apartment just where the plants are standing. Even the opening of small ventilators in frosty weather must be very cautiously practised, so that a current of cold air may not reach the plants. The ventilators which are pushed outwards are much better than the valve ventilators, as the current of air can be better regulated by them. Still better is it to have a ventilator in the wall of the room under the ceiling, unless the amateur prefers the newly-invented and useful contrivance by which the external air is conducted in a warm condition to the stove. Where gas is employed the ventilation must be in the ceiling, or close under it.

The lighting of the apartment is a matter of no small importance. The use of gas for this purpose is attended with particularly hurtful consequences, as, in the first place, even a very small quantity of gas escaping into the atmosphere of a room will cause the leaves to fall and make the plants sickly; and, in the second place, a number of gas-burners will raise the temperature of a room at night, when it ought to be lower, and moreover will consume an immoderate quantity of oxygen. Where it would be inconvenient to dispense with the use of gas, the pipes and cocks should be well looked to, that they do not allow the least escape. These are seldom found to close perfectly air-tight, and should be promptly replaced or repaired. The use of gutta-percha tubes, such as are commonly employed for conducting the gas to reading-lamps, should be particularly avoided; as these tubes become penetrated by the gas, or, at least, emit a very bad odour. Two or three coatings of varnish or oil-paint will make them more secure, if they must be used. The gas-pipes should be touched with cement in suspicious places, and covered all over with a good coating of oil-paint. When the gas is lighted the cocks should not be turned so as to let out more than is absolutely necessary to feed the flame, or allow the escape of any unconsumed gas. All the cocks should be closely examined, and every one that is not perfectly air-tight should be at once replaced by another. The plants which stand in the windows can be somewhat protected from the glaring light and the increased heat, by means of curtains.

Good ventilation will, in a great degree, obviate the disadvantages which arise from too high temperature and the undue consumption of oxygen, so that with proper attention to this point successful culture is possible, especially when, by the evaporation of water, the air is kept somewhat more humid. These two particulars are the essential conditions of successful culture in rooms which are strongly lighted almost daily and until far into the night.

THE ARRANGEMENT OF PLANTS IN APARTMENTS.—The skilful gardener will easily make such a judicious disposition of plants in a plant-house, that each will have the position best suited for it without prejudice to the other plants, or to the general scheme of the entire arrangement, but any difficulties that may arise here, will be experienced in a much greater degree with plants cultivated in rooms. Of these we shall first consider the most common arrangement, that is, in windows or their immediate proximity. The best and most suitable position is in the window itself. If the window-sill is so narrow that the leaves of the plants are brought into immediate contact with the glass, so that in winter they are exposed to the frost and are in summer liable to be scorched by the sun, then must the window-sill be made broader by the addition of a board. This board should not only overlap the window-sill, but be higher than it by the space of an inch, as in winter the window-sill itself is a colder position for plants than the raised board, between which and the window-sill the warm air of the chamber can circulate. Where it is desirable to have the greatest number of plants in a window, a series of shelves can be placed over each other, at such distances as the height of the plants will permit; but as this arrangement shuts out too much light from the room, and is besides rather unsightly in appearance, it cannot be employed for decorative purposes, but should rather be confined to the double window proper.

The plants placed in the window for ornamental purposes should be so arranged that the leaves of one may not come into contact with those of another, nor with the window. In summer and spring, they should be shaded from hot sunshine by a curtain of thin material inside the windows or by a blind on the outside, or it may suffice to place a board before the pots, so as to shelter them from the direct influence of the sun.

The amateur should commence the room-culture of plants with the determination to grow a few plants into fine specimens, rather than have a great number which, from want of a suitable position and sufficient room, are always puny and pining away. A few advantageously placed plants in the full beauty of growth and strength will

afford more pleasure to the cultivator than a whole host of mediocre specimens.

In a room plants do not receive light from above and all round, but only on one side. In consequence of this, a more vigorous growth is always going on at the side whereon the light falls. Therefore, in order to obtain well-formed, symmetrical specimens, both sides of the plant should be alternately turned to the light.

When the specimens have in this way been well grown in the window, it will be time to remove them to another position in the vicinity of the window. This is necessary for two reasons: in the first place, because very large specimens in the window would deprive the rest of the plants in the room of too much light; and, in the second place, because the specimens themselves have no longer sufficient room in the window for their own symmetrical growth. The growth of handsome specimens abundantly covered with vigorous and perfect leaves will afford the highest degree of pleasure to the amateur, and will richly indemnify him for his daily care. To this end an uncrowded arrangement of the plants in the immediate vicinity of the window on small tables or stands about the height of the window-sill is the most suitable. The size of the round tops of these stands may be from nine inches to a foot in diameter, so as to be just capable of holding large pots. In drawing-rooms, where the rest of the furniture is of an elegant description, these stands may be tastefully wrought in wood; but equally suitable are those of a simpler kind, which any basket-maker will supply cheaply. I mean those stands supported on four plain legs, which are bound together by interlacing wicker-work, the upper part of the stand being surrounded by a rim or bordering of wicker-work, which serves to shelter and conceal the pots. It will be well to have these stands of various heights, from the height of the window-sill down, as the larger the specimens grow the lower the pots will have to be placed, until at length they rest close to the floor of the apartment. We say close to the floor, because a pot or a tub should not be placed on the floor, as it would injure it; and, besides, in a room which has no regular heating apparatus underneath, a position immediately on the floor would be too cold for plants in the winter. They can be placed on low stools or on inverted pots; or, where a more elegant arrangement is desired, on wooden stands or baskets with feet a few inches high—only, do not allow the pots, tubs, or vases to come into immediate contact with the floor. The basket-maker, the potter, the gardener, and the manufacturer of ornamental garden requisites in iron and wood, nowadays vie with each other in producing a vast variety of designs, and offer free scope for the exercise of individual taste in this matter. To sum up, the conditions to be observed are, to choose a position near the window where the plants will receive a full supply of light, and to keep the pots raised from immediate contact with the floor.—From the German of Dr. Regel.

THE IN-DOOR GARDEN.

THE SWEET INDIAN DAPHNE.

(DAPHNE INDICA.)

THIS is one of those beautiful plants that are often hurt by kindness. Everybody wishes to have it, not less for its appearance when well grown than for the delicious aroma which the flowers exhale. Plant-growers differ as to its cultivation, some considering grafted plants indispensable, while others would rather have the plant upon its own roots. Much, however, of the success which should attend the cultivation of a grafted plant will depend upon the perfect health and vigour of the stock upon which it is worked. Sometimes the common wood spurge (*Daphne laureola*) is used, but we have found *Daphne pontica* form the best stocks. These should be thoroughly established in three or four inch pots, and the grafting may be performed either in the autumn, when the wood of the season is sufficiently firm and ripened, or in the early spring, after the plant has done blooming. In the former case the grafted plants, after having the graft neatly and firmly fixed and the wound made air-tight with a coat of cold grafting wax, should be placed in a cold frame or pit under the protection of a close-fitting bell glass of hand light, keeping the roots sufficiently moist, but not syringing the plants more than once a week, when the glass should be left off until such time as the foliage has got rid of the superfluous moisture. In spring grafting it is advisable that the stocks should be placed in a gentle heat to excite them into growth before they are grafted, and if at the same time the plant from which the

grafts are to be taken can be placed in a similar temperature it will be well, as then the stock and scion will be in the same state of growth, and the chances of success will be much increased. In the hands of an expert workman the grafts need not exceed an inch in length, half to be attached to the stock, and the other half, which may have two or three leaves and buds, being left to form the plant. What is called side grafting, with the head of the plant left on until the graft has taken, is the best, as then the head may be gradually reduced until such time as the whole force of the plant is concentrated on the graft. Of course, plants that have been growing in heat must be kept in heat after they are grafted, giving them the protection of a hand light in a warm pit or forcing-house, until such time as the buds swelling into growth show that the grafts have taken. Then gradually give air, until, in the course of a week or ten days, the young plants, being properly hardened, may be exposed to the atmosphere of the house.

Cuttings of this *Daphne* are best put in in the autumn, when the young wood is something more than half ripe. Small side branches of about an inch long, if they can be procured, form the best cuttings; but if not, then larger pieces may be cut into portions of about an inch each. In preparing the cutting-pot let it be thoroughly well drained; place over the drainage a layer of nice fibrous loam, made quite firm, and over that a thin layer of silver sand. In this the cuttings may be inserted, not too thickly, and then covered with a bell glass. Keep the cutting-pots in a cool, close propagating pit or frame for a month or six weeks, by which time they should be nicely cicatrised; and if they are then placed in a gentle heat, roots will be immediately formed. It will not, however, be wise to pot the cuttings off until after Christmas, and then, if placed in a close and gentle heat, they will immediately start into vigorous growth.

The secret of growing this charming plant—and it is the only secret in its management—is the fact that it abhors composts and nostrums. Give it good unctuous loam full of fibre, and it will grow like a willow; nurse it with peat, leaf mould, manure, &c., and, like other over-petted things, it will not grow at all. This may be considered the reason why ill-grown plants are the rule, and well-grown plants the exception. Take a nicely-grown plant with three or four branches in early spring. Place it in a temperature of fifty or sixty degrees; in a fortnight or three weeks it will show indications of growth. Then pick out the point of each shoot, which will cause them to throw duplicate branches, so that you may have eight or twelve of these. When the young branches are about half an inch long, the roots may be examined, and, if in a fit state, the plant may be shifted into a larger pot. In doing this, take care that the pot is properly drained; use the fibrous turf before-mentioned, pot quite firmly, and keep the plants somewhat close until such time as the roots have taken to the fresh soil. The *Daphne*, in its growing season, delights in a moist, moderately warm atmosphere, and a free circulation of air. If a growth of four to six inches in length can be got by the middle of June, then the shoots may be again stopped and a second growth encouraged. This will add to the size and compactness of the specimen, but its blooming will not be so certain as if the first growth had been allowed to mature itself.

The blooming of this plant centres entirely in the thorough maturation of the wood, and to that end it is much better to rest satisfied with an early growth, than by forcing a second lose the chance of bloom. To insure their blooming, it is necessary that the plants be exposed to full light and a free circulation of air till the end of June; and if after July, when gradually inured, they can be exposed to the full sun and a southern aspect, the certainty of their blooming will be much increased. During the season of active growth the plants, if well rooted, may be assisted with weak manure or soot water once or twice a week; and even in the blooming season an occasional dose of manure water will be of service. The blooming season over, the plants, if not in heat, may be placed in a vinery or other forcing house, syringing them lightly, but not giving much water at the root. As soon as the leading shoots show indication of growth, go over the plants, and pick out the point of each branchlet; keep them in the same temperature; and, as the buds begin to break, increase the

supply of water. Should the plants require more pot room, let them have it when the young shoots have just started into growth; keep them in a moist, growing temperature for a few weeks, and then gradually inure them to full exposure in the open air as before directed. In this manner, using the soil before described *only*, the *Daphne* may be grown and flowered as freely as a common pelargonium; but, unless it is distinctly understood that the plant must have a season of growth, maturation, and blooming, success in pots is impossible.

Another simple way to succeed with this very popular subject is to plant it against the back wall of a greenhouse or conservatory, in as light and airy a position as possible, and in the soil above recommended. A.

BEGONIAS.

THESE are graceful and elegant at all times, but more especially are they desirable during the autumn and winter months, when flowering plants are scarce. True, we have *Chrysanthemums* in abundance; but, notwithstanding the assistance they lend us in the way of decoration, they are only admissible in conservatory arrangements to a limited extent, while *Begonias* are more or less overlooked. Although the latter seem to revel in a warm moist temperature during the early stages of growth, a temperature of from 55° to 60° will be found to suit them perfectly during the summer months, giving them the full benefit of sunlight to promote maturation and induce profusion of flowers. It may, however, be necessary to reintroduce to the stove some of the varieties, such as the lovely *B. fuchsoides*, in order to bring them into flower. Nevertheless, it should be borne in mind that when this is not absolutely necessary, it is not a desirable course to pursue in the case of plants that are expected to embellish the conservatory during winter.

For general purposes *Begonias* should be propagated annually from July all through the autumn months. They will root in about ten days, and may be potted into small pots in a compost of equal parts of loam, leaf-soil, and sand, and kept in a free growing temperature, sprinkling them frequently overhead. In short, they luxuriate in moisture when in active growth. The loam in the compost may be increased in quantity at each successive potting, and a little well-rotted manure may be given when the loam is not of a rich character, but this is seldom necessary. Thus treated they will make rapid growth, and they will be benefited by occasional applications of weak liquid-manure during the autumn to assist their flowering.

The following are the varieties which I grow, viz.:—*B. Cheloni*, an elegant kind which may well stand in the foremost rank. It is a hybrid between *Boliviensis* and *Sedeni*. It is good in habit, and its bright glossy red flowers are large and attractive. *B. hybrida multiflora*, another of my sorts, a cross between *B. fuchsoides* and *B. parviflora*, has a free style of growth. Plants of it rooted in July 1870 are now six feet in height, and nearly as much in diameter, covered with rosy-pink blossoms suspended on long, slender stems. This is without doubt one of the best sorts we possess. *B. Sedeni*, another garden hybrid, with magenta-coloured flowers, stands a long time in bloom, and is well worth a place in any collection. *B. Digswelliensis* also ranks among our best varieties. *B. Wiltoniensis* is dwarf in habit, elegant in point of foliage, and a free-flowering kind.

These are among the finest for most purposes, but especially so where variety is considered a desideratum. There are numbers of others, many of which are also well worth attention. For example, there are the tuberous-rooted deciduous kinds, such as *Boliviensis*, a charming plant, with very large bright glossy red flowers, *B. rosea-flora*, *B. discolor*, and others. These should be gradually dried off in winter, and stored away in precisely the same manner as *Gloxinias*.

When neatly grown, *Begonias* make useful adornments for the dinner-table, and those possessing a drooping habit are admirably adapted for suspended basket-work. They are valuable, too, for window-decoration, and several of them, such as *florida*, *Wiltoniensis*, &c., do well when bedded out. They flower freely, and are very desirable in mixed arrangements.

Witley Court.

GEO. WESTLAND.

Single and Double Chinese Primroses in Winter.—Take care of the crowns of these, and the leaves and flowers will take care of themselves. No drip must hit the eye of growth. Though dull, sunless winter is their summer, nothing is easier than to keep their crowns dry, and to have them beautifully in flower when we most want them. Water under—not over—the leaves, and see that the water never floods the axils of the lowermost ones. The roots are greedy of water, and must not be stinted; as the season advances, and

the new year's sun acquires power, they may need two or three drinks a day. But at all seasons keep the leaves dry, especially in the dead of winter. The single varieties suffer more from water on the head than the double sorts. Their leaves are larger and more succulent, and their mode of growth is somewhat different. The double sorts have smaller crowns, and more of them. The most effective single plants have but one crown, deeper and more easily hurt. But the safest course is not to wet a single leaf of any of them. Few things vex one more than to see the glorious bunches of flowers and foliage of these fine plants suddenly damp-off. With careful watering and judicious ventilation, however, this may be wholly avoided. Next to keeping water out of the crowns, dry them, after watering, with a current of air as speedily as possible; and should perverse, artful drip choose the eye of a primrose as its mark, move the plant instantly and place it beyond the reach of such mischief.—D. T. F.

ANÆCTOCHILUS CULTURE.

THESE small but exquisite plants rank amongst the most precious jewels of the vegetable kingdom, and few can without the deepest admiration behold the delicate tracery and inimitable markings of their leaves, where the gem-like hues seem to vie with each other in producing the most charming effects of liquid colour. The great object of the cultivator should be the production of fine foliage, and the development of the fine gold and silver veins which are so characteristic of this genus. The only way to accomplish this is to take advantage of the growing season, and to encourage by every possible means a strong, vigorous, and rapid growth. They are not like some plants, which will grow from a foot to a yard in one season, and soon become unwieldy and unmanageable by reason of their bulk. *Anæctochili* are small, compact-growing plants, averaging from two to five inches in height; and it is simply impossible to grow them too large, provided this is not accomplished at the expense of an enfeebled constitution. Some have indulged their plants with bottom heat, thinking that by so doing they would have increased root action, and consequently more vigorous growth. But this has proved a mistake. The plants have progressed favourably for a time, but the excitement has induced weakness of constitution, and death has been the result in many instances. The pots in which they grow being generally small, the compost in them is sure to be of the same average temperature as the air of the house in which they stand, and this is found by experience to be all that is required in the way of root warmth or bottom heat. Shade they must have; to stand them in the sun is simply folly. The bright glare of light will soon mar all their beauty and stop their growth, even if it does not kill them altogether. In their native habitats they grow in forests under the shade of trees, where none of the direct rays of the sun can reach them. These conditions must be observed and continued, or all our efforts will be in vain. Bearing this in mind, look round the house or stove, and select a spot where the rays of the sun never penetrate—at least during the greater part of the day. An easterly aspect, with a point or two to the north, I have found to be the best for them, where the first gentle beams of the rising sun call forth the active energies of vegetable life. But by the time the sun has been up an hour or two it acquires too much power to be allowed to shine upon the beautiful leaves of these delicate plants. Consequently, if the structure does not of itself afford the means of breaking the force of its rays, the observant cultivator will soon discover some means of accomplishing it by artificial means; and here there must be a word of caution. The place they occupy must *not* be a dark corner. They want light, but it must be a subdued light, softened and toned down, and adapted to the delicate structure of the plants. Comparative stillness in the atmosphere is another essential to their well-being and well-doing. The open, airy condition of a house in which other plants are grown will not answer for *Anæctochili*. Growing as they do in the forest, all currents of air are broken by the surrounding trees; and the plants being of such diminutive size, the coarser kinds of vegetation, grasses, &c., effectually shelter them from anything like a draught. Nestling as they do low down, near to the surface of the soil, the little world in which they live is one of unbroken calm and quiet. To imitate this it is found necessary to cover the plants growing in our houses with bell glasses, or, what is still better, a small box or frame with a glass top.

This should be about two feet or two feet six inches from back to front, and a yard in length. It is better to increase the number than the size of the boxes. Eight inches deep in front and twelve at the back will be very useful and satisfactory proportions. These boxes should never be shut close. It is a good plan to have ribs nailed on the under side of the sheet or cover, to prevent it fitting close to the box or frame. And then a gentle current of air will at all times be passing over the top of the plants, not through or among them, and thus as nearly as possible imitate their natural conditions. If shut close and the atmosphere becomes stagnant, they are almost sure to damp off.

They do not seem to be very particular about the kind of soil they have to grow in. I have grown them in rough, lumpy peat alone, and in this they sent down their roots and did very well. I have also grown them in chopped sphagnum mixed with sand; but this did not seem to afford them sufficient nutriment, so I adopted a compost between these two extremes. Peat is the principal ingredient, but a little leaf mould is advantageous, as it enriches the compost without making it rank: say, as a guide, two parts peat and one part leaf mould, with silver sand equal in bulk to the other two. Then, in addition to this, I add pounded sandstone, made about the size of peas. It is astonishing how the roots will cling to these pieces of soft stone, which absorb moisture and help to keep the soil in a uniform state of dampness, and at the same time secure a free passage for the escape of superfluous water.

Drainage must be on the most ample scale; anything like stagnation is ruin and death. If the compost becomes in the least sour, it is vain to look for success. These plants do not root deeply, therefore it is not necessary to have a great depth of soil. This affords opportunity for securing a very considerable amount of drainage. The pots should be quite clean, well washed inside and out, and then half filled with crocks, the rougher ones being placed at the bottom, and the finer ones on the surface. A little moss on the top of these will prevent the compost finding its way down and blocking up the drainage. If this is carefully and properly done, the pots may be filled with the compost, and little fear need be entertained of its becoming waterlogged. But in addition to this the pots should stand upon two or three inches of pebbles, or some other open material, so that the water can soon get away, and at the same time this material being thoroughly wet, it will constantly and gradually give off moisture to the air in the case.

The pots being prepared as above, the creeping stems of the *Anæctochili* should be laid upon the surface. If there are any roots proper, they may be let into the compost a little; but by no means bury the stem. This naturally runs upon the surface of the soil, and the growing plant stands erect, showing its beautiful foliage and developing its tiny flowers. To bury these stems is a sure way to bring on decay; while on the other hand to leave them exposed is to get them consolidated, hardened, and ripened, and thus they are enabled to bear the application of water throughout the year, more especially so during the dark days of winter. If these precautions are attended to, water may be freely given without the slightest fear, especially during the growing season, from the end of March to the beginning of October; they revel in a full supply. They may be freely watered overhead with a very fine rose-can or a syringe every afternoon, with water about milk warm. Don't fear wetting the leaves or the stems; they delight in plenty of water, and it is a mistake to keep them merely damp only; it leads to weakness and feebleness of constitution, and causes many to pine away and die. Even during the winter season they must not be allowed to get dry, and a good sprinkling overhead occasionally at that season of the year will be beneficial to them. It cleanses them of dirt, dislodges insects, refreshes the plants, and adds to their health and vigour. It is necessary, however, to be cautious that there be no sediment in the water, otherwise it will leave a stain upon the foliage and disfigure the plants. The flowers they produce are very inconspicuous and unattractive, and as they help to exhaust the plants, it is better to remove the flower-stems as soon as they make their appearance. By this means additional vigour is thrown into the foliage. Being natives of Borneo, Java, and other hot parts of the globe, they require a high temperature to grow them well

—indeed, I may say to grow them at all; and unless there is the convenience of a stove, it is useless to attempt it. Fifty degrees may be set down as the minimum, and 65° or 70° on a sunny day as the maximum, during the winter months. But through the summer, while they are growing, they may have 65° or 70° through the night, with a rise up to 85° or even 90° in the daytime. This, with the directions given in this paper, will grow them to the greatest perfection; and those who have them will have the pleasure of looking upon the richest markings and most glorious tints of colour that are to be found in leaves.

The Gardens, Didsbury, near Manchester. Thos. Jones.

A CHRISTMAS VASE.

ONE of the most effective vases with which we are acquainted was arranged as shown in the accompanying illustration. In the centre was a good plant of *Epiphyllum truncatum*, surrounded by a ring of large houseleek (*Sempervivum tabulaeforme*) alternated with the common *Pteris serrulata*. We did not see the vase till the *Epiphyllum* had passed out of flower, but even then the effect was very pretty.



Plants of the *Epiphyllum* trained as low pyramids are peculiarly suitable for vase decoration—indeed, it is doubtful if anything that blooms in summer would form so lovely a subject for a sitting-room or conservatory vase as this, which blooms so freely in mid-winter. We had the pleasure of seeing it in Mr. Flowers' handsome conservatory at Furzedown, Streatham, which is usually so well arranged by his gardener, Mr. Laing, and where our sketch was taken.

PALMS FOR THE GARDEN.

(Continued from page 73.)

BACRIS FLAVISPINA (Brazil).—Fronds from four to six feet long, irregularly pinnate; petiole furnished with yellowish sharp spines, and there are small ones on the margin of the pinnæ; erect, dark green. All the species of this genus are dwarf, forming bushes by pushing up shoots from the base; they are fond of heat and water. Though ornamental when young, when old they get lax, and are apt to scratch everything with which they may be associated, thus unfitting them for many purposes to which palms are applied. Many species of *Bactris* enumerated in books are not yet introduced.

B. bacculifera, *liboniana*, and *setosa*.—For purposes of decoration these are not better than *flavispina*.

B. nana (Brazil).—Fronds, two feet broad, abrupt; throws up shoots from the base. This, the best and most compact of the species, runs up with a slender stem, which, however, may be cut down when too high, when a young stem will take its place; must have plenty of heat.

Bentlingia coddapanna (India).—Plant, smooth, pale green; fronds pinnate, spreading; petiole, round; stiff in habit, and a bad grower.

Calamus.—A very extensive genus, consisting of from eighty to ninety species.

Dæmonorops, forty species.

These two genera having got much mixed together in gardens, and their decorative character being similar, I shall speak of them together, denoting the species that belong to *Dæmonorops* by the letter D. The only difference between the two consists in the flower spathe of *Calamus* being persistent and that of *Dæmonorops* deciduous. The albumen in *Dæmonorops* is ruminated; while that in *Calamus* is not—points valueless as far as purposes of decoration are concerned; but they may serve as a test in the case of imported seeds. Both genera are fond of heat and water, and, in a young state, many of the species possess a charming, light, feathery habit, which makes them universal favourites. Though many of them grow more than a hundred feet in height, and become rough in appearance, a few are dwarf, and remain suitable for ordinary purposes of decoration for years. If watered freely, they may be kept in small pots.

C. australis (Fitzroy River).—Plant, erect; stem, slender; frond, one foot long; pinnæ, three inches; spines, pale brown, fine. All the species have three veins on each of the pinnæ, the outer two being furnished with small spines on the upper side. This, the smallest of the genus, grows only from four to five feet high; and, being very graceful in habit, is suitable for a small house or Wardian case. Altogether an elegant palm, and one which has the advantage of being hardier than the other species.

C. D. accidens (Java).—Fronds, spreading, dark green; leaf-stalk, brown; spines, irregular. In a young state this is a beautiful plant for stove decoration, possessing, as it does, an elegant plume of foliage.

(To be continued.)

J. SROUCHER.

THE FLOWER-GARDEN.

HARDY TREES IN THE "SUBTROPICAL" GARDEN.

WE wish particularly to call attention to the fine effects which may be secured, from the simplest and most easily obtained materials, by using some of our hardy trees and shrubs in the picturesque garden. Our object generally is to secure large and handsome types of leaves; and for this purpose we usually place in the open air young plants of exotic



Adiantum and Calamus.

trees, taking them in again in autumn; and, perhaps, as we never see them but in a diminutive state, we often forget that, when branched into a large head in their native countries, they are not a whit more remarkable in point of foliage than very many of the trees of our pleasure-grounds.

Thus, if the well-known *Paulownia imperialis* were too tender to stand our winters, and if we were accustomed to see it only in a young and simple-stemmed condition and with large leaves, we should doubtless plant it out every summer as we do the *Ferdinanda*. There is no occasion whatever to resort to exotic subjects while we can so easily obtain fine hardy plants—which, moreover, may be grown by anybody and everywhere. By annually cutting down young plants of various hardy trees and shrubs, and letting them make a clean, simple-stemmed growth every year, we will, as a rule, obtain finer effects than can be got from tender ones. The *Ailantus*, for example, treated in this way gives us as fine a type of pinnate leaf as can be desired. Nobody need place *Astrapæa Wallichii* in the open air, so long as a simple-stemmed young plant of the *Paulownia* makes such a column of magnificent leaves.

The delicately-cut leaves of the *Gleditsias*, borne on strong young stems, would be as pretty as those of any fern; and so in the case of various other hardy trees and shrubs. Persons in the coldest and least favourable parts of the country need not doubt of being able to obtain as fine types of foliage as they can desire, by selecting a dozen kinds of hardy trees, and treating them in this way. What may be done in this way, in one case, is shown in the foregoing illustration, representing a young plant of *Ailantus*, with its current year's shoot and leaves, standing gracefully in the midst of a bed of *Cannas*.

FRAGRANT FLOWERS.

WHAT is a garden without these? Yet we have seen hundreds of gardens without a single sweet-breathing flower except the rose. But even the ever-satisfying and popular rose does not receive half the attention that it ought, in consequence of the all-absorbing attention required for geraniums, calceolarias, verbenas, &c., which are scentless; not remarkable for great individual beauty of flower, like lilies or irises; devoid of any pleasing association, and perishing during the first frost that comes in autumn. We therefore propose to indicate the various ways in which numbers of sweet-smelling hardy flowers may be grown without interfering with the arrangements for "bedding-out plants."

Supposing a little bed or two to be devoted to pinks, carnations, &c., on a warm border in the vegetable department, or anywhere else away from the flower-garden proper, there are not a few other things which might be advantageously associated with them, and among these none more conspicuous than the rather numerous kinds of German stocks, so sweetly scented and so varied; while near at hand might be beds of violets of various kinds, and also a collection of everlasting and ornamental grasses, not to mention other little specialties of that sort; and the whole might be arranged so as to prove a source of ceaseless interest to the lover of a garden. However, enough of suggestion; let us at once proceed with our enumeration of such sweet-scented flowers as we can obtain cheaply, and grow in the open air.

To begin with an annual flower, the finest of all, perhaps, not only in point of perfume, but in point of size and exquisite delicacy of colour, is a species of *Datura*, *D. ceratocaulon*. It grows a couple of feet high or more when well tended, and has flowers of enormous size and of a divine sweetness, especially in the evenings, when the large blossoms open after the fashion of the evening primrose. Sow in gentle heat in March or April, and plant out in rich soil in May; if possible, in an isolated spot, so that the plant may not be found what is called an "eyesore" among the bedding plants, for it closes during the day, and looks remarkably like the common thorn-apple when in that state. With it might be associated other sweet plants, such as the mignonette; the new annual night-scented stock (*Mathiola bicornis*); the large, fragrant, and showy yellow *Oenothera Lamareckiana*, very fine and sweet, and particularly so in the evenings, when people most enjoy the garden during hot weather, *Oenothera odorata*, stocks, sweet peas, musk, if you like it, in tufts round the edge, clove carnations, &c. Of such goodly-sized bed a charming feature might be made in some quiet nook; and charming indeed it would prove on the summer evenings, between fragrant flowers and those that open in the evening and close as the rising sun laps up the crystal drops of dew that bead round

the margin of their petals during the nights. Wallflowers, too, might be represented, and fragrant shrubs, such as sweet gale, lavender, &c., might be used; in fact, any person who endeavours to glance through the sweetly-smelling host, from roses to rosemary, and from primroses and cowslips to the Persian lilac and the sweetbriar, cannot fail to remember suitable things to form such an arrangement with. The beautiful snowy-white and cheap *Lilium longiflorum* is also worth growing for its exquisite sweetness alone; and on all fair, light garden soils it appears to us about as easily grown as a potato.

Whatever may be selected, do not forget the mixed kinds of polyanthes, which are so very sweet, and even beautiful in point of colour, for the spring garden. They may be raised from seed in abundance. The sweet *Alyssum*, low white sweet candytuft (*Iberis odorata*), the fragrant honesty (a biennial), the night-scented stock (*Mathiola tristis*), all come from the same order as the wallflowers, and are worthy of remembrance in a collection of this sort. Sweet sultans, too, with the Moldavian balm, sweet but not showy; the balm of Gilead (*Dracocephalum canariense*), peculiar, best fitted for the greenhouse in winter, though it will grow well against a wall in summer; and the common balm of the herb ground, which is to us always a pleasing perfume, are all worth growing. Not a few people gather lavender for homely perfumery; indeed, we have never seen this done to such an extent in any garden as in those at Frogmore, for her Majesty's use; but there is a sweet little herb equally well adapted for such purposes, which is not at all so much used as it ought to be, and that is the little British woodruff (*Asperula odorata*), which is so common in many woods, its green mass of leaves powdered over with small white flowers. It grows as freely as grass in any shady spot of the garden, or indeed anywhere, and should be pulled and left to dry in a drawer. The leaves furnish the fragrance. When growing or culled they do not smell, but a few hours afterwards the aroma begins to develop itself; the dried foliage and stems of this little herb retain their sweetness for years in a drawer.

As to hardy shrubs and things of that kind, the common jasmine—common, but unsurpassed for sweetness—flourishes anywhere on a wall, and is entitled to the gratitude of all for being obliging enough to flourish in the very heart of all our great wildernesses of bricks, even down in the areas and the backyards of those parts of our cities where the truth of Cowper's line, that "God made the country and man made the town," is forced upon us in all its reality. Another climbing shrub of priceless value, and perfectly hardy and cheap, is *Clematis Flammula*, which makes the garden or the grove as sweet in the golden days of autumn, and rather late on towards winter, as the hawthorn does in spring. Employ it as a trellis plant, or in any position where you would employ a climber; but to thoroughly enjoy it, plant it in your shrubbery, near some old stump of a tree, some old specimen that was cut down, or anything that it can crawl over, and then it will give no trouble, but the highest satisfaction. It is very useful for cutting for in-door decoration, and a few sprays of the flowers among the autumnal blooming roses (now so common) look very well, as they do indeed in any group of cut flowers. Then there is the early spring-flowering *Daphne Mezereum*, the low and charmingly-coloured *D. Cneorum*; the extremely disagreeable, when broken, but deliciously sweet-flowered spurge laurel; not to mention the bay, the various kinds of lilac, and the myrtles and sweet verbenas, which make large shrubs in the south of England and Ireland; the great flowered American *Magnolia*, the fragrance of which is as powerful as its flowers are large and nobly formed. In the south this plant makes a fine plant for walls, as indeed it does on favourable soils in the midland counties of England and Ireland. At Bicton there was a wall of this which, previous to the scathing frost of 1860, used to scent the whole place; and though the plant does get cut down now and then in very hard winters, it is well worth planting again, if indeed that be required, for the old plants shoot up afresh. Then there is another fine wall shrub to which far more attention should be directed than has yet been the case. We allude to the deliciously sweet *Chimonanthus grandiflorus* the most worthy of all shrubs to be placed in a warm corner against a wall, let that belong to terrace, house, outhouse, or cottage. It has the distinguishing peculiarity of flowering in

winter, when sweet flowers are scarce; and a few sprigs of it, gathered and placed in a vase of flowers in the drawing-room, distil an almost matchless odour without being observed by those who know not the plant; for the flowers, though not small, are singularly inconspicuous. Finally, do not forget our old friend the winter heliotrope (*Tussilago fragrans*) which flowers so sweetly about Christmas, and may be culled for mixing among cut flowers at that period, its unobtrusive blossoms scenting the room. But do not admit it into the garden, or it may become a contumacious weed. Some "out-of-the-way place" is its home. An old lane, bank of rubbish, hedge bank, or any such wild or half-wild spot, will suit it to perfection; and, besides, the wild latitude it will have to run about in, will insure a plentiful supply of flowers, which could not be had from a small garden patch. V. E. R.

PINKS, CARNATIONS, AND PICOTEEES.

It was perhaps no wonder that, before the glare of colour which adapted itself to the wants of those who had but little taste in gardening, a great number of second-rate plants were driven out from cultivation and forgotten; but that such richly-coloured, often elegantly-laced and tinted, and always gratefully odorous subjects as picotees, carnations, and pinks, should almost disappear from cultivation under its auspices, is truly a marvel. Here we have a rare combination—beauty of colour, dwarfness and neatness of habit, perfect hardiness, capability of growing in almost any soil and in any part of the country, aromatic and delightful fragrance, and, in a word, the highest beauties of any flowers we know. And yet what is the practice? Why, there are many gardens where such a bunch of the clove carnation, or common pink as you may buy in London for a mere trifle from the flower-hawkers could not be culled. Now there is no reason whatever why we should not have a moderate and tasteful display of what is called "bedding-out," and enjoy the peerless beauty and grateful fragrance of this fine tribe of hardy and essentially English flowers. There is no reason whatever why we should sacrifice all beauty and interest to the display of a few things which merely attract by their colour, but produce such a monotony in gardens generally, that we are quite surprised that educated people do not cease to take an interest in gardens at all. Why not have your beds of carnations richly striped and fine in form, your elegant picotees laced with the most refined elegance of colour, and your sweet and abundantly blooming pinks, from the common pink of the London flower market to large and rich Anna Boleyn? Suppose you cannot, in your narrowness of heart, afford them a bed in the flower-garden, why not devote a few yards of a snug border in the kitchen-garden to them, even if there be no space wherewith to put them round the borders? For their value for cutting alone, for bouquet making and in-door floral decorations, these flowers would be well worth cultivating, even if they had not attractions enough to entice anybody with a particle of love for flowers to their quarters to see them open their beautiful petals. We know one large place in which the demand for cut flowers is very great, and it is well met by devoting a portion of ground in the reserve garden to pinks and carnations; they supply a great want, and are cut in quantity. Great is the amount of variety in the three sections, and many the charms that may be added to a garden by a selection of the best of each. Each may be raised from seed without much trouble, though of course in that way you cannot expect to get the choice varieties which you may obtain by buying young plants of a nurseryman. V.

Golden-Edged Lemon Thyme. (*Thymus citriodorus aureo marginatus*.)—This golden-edged variety of the old lemon thyme is about as superior to the so-called silver variegated form of the common thyme as genuine claret is to gooseberry wine. In habit it is equally dwarf, dense, and compact as our old familiar garden favourite, and it retains its variegation so perfectly and evenly distributed, that out of some thousands of plants not a single one showed any tendency to revert to the normal state, nor was a green leaf to be seen. As a variegated plant it possesses these qualities: a deep green and bright shining leaf, which contrasts with and sets off to the best advantage its golden variegation, the latter monopolising fully one half of the leaf's surface. In fact, I can compare it to nothing but

a perfect miniature of the lovely variegated *Coprosma*, which will soon claim high rank amongst bedding plants. What a charming marginal zone it will make by itself! or, perhaps, better still, alternated in tufts with the denser forms of the *Aubrietia*, whose purplish-blue flowers would contrast—each borrowing intensity from its neighbour—as markedly as the habit of the two would be in harmony and accord! Add, if you like, an interior circle of *Alternanthera*, and thus complete a girdle of beauty such as even *Flora* herself might rejoice to wear. No flourish of trumpets has announced its advent, but quietly and unobtrusively will it take its well-defined position in the flower garden, and I am no prophet if it does not keep the same through a long series of years. Everyone to whom I have shown the plant gives utterance to but one exclamation—charming!—Jas. C. NIVEN, *Botanic Gardens, Hull*.

NOTES AND QUESTIONS ON FLOWER-GARDENING.

Croquet-Ground.—What is best to do with a recently turfed croquet-ground, coarse, and on a sandy subsoil?—BETA.—[Top dress with half-inch finely sifted fresh loam, and sow with a mixture of good grass-seeds suitable for light soil.]

The Maiden-Hair Meadow Rue.—Can I find this charming plant wild? and how shall I treat it?—S.—[*Thalictrum minus* is abundant in various parts of the country, but in many districts you will find it easier to obtain plants from nurseries. As to treatment, it only requires to be planted. The wild plants should be taken up carefully, and must be well established, and not disturbed, before they show their full beauty.]

Melianthus major.—In the account of this (p. 50) it is said, "In the open air we have not noticed it in flower in this country." I have seen it here both in flower and seed more than once. But to produce flowers, it is not the right course with the plant to treat it as a hardy herbaceous one. It must not be cut down, for the flowers are produced on the wood of last year. In mild winters its fine foliage is very striking; nor do I agree that its bloom is not ornamental. As a large, well-grown plant it is certainly ornamental, and the flowers are very sweet.—HENRY W. ELLACOMBE, *Bilton Vicarage, Gloucestershire*.

Moss on Lawns.—Will you kindly tell me how to remove moss from my lawn? It almost destroys the grass.—R. H., *Portrane*.—[It is better not disturbed till early spring, as even a mossy turf for a while is better than a mutilated one. It must be torn from the ground with long-toothed rakes; and this should be done twice, allowing an interval of a week to elapse between the rakings. In the early part of March the ground should be dressed with fine rich loam, with about a sixth part of lime added. It should be fine, so as to save the trouble of stone-picking, and then sow with a mixture of fine lawn grasses. If lime is cheap in your neighbourhood, give the lawn a liberal dressing of it as soon as you may venture to disfigure it in the autumn. That may do without the rooting up.]

The Mole Tree.—The Caper Spurge (*Euphorbia Lathyris*) is known as the Mole Tree in some parts of Pennsylvania from a popular notion that it keeps moles out of gardens. Those of our readers who have sufficient faith may perhaps feel inclined to try the experiment. A yet more remarkable protector of gardens is found in *Canavalia gladiata*, a twining leguminous plant, which, according to Dr. MacFadyen, is called "Overlook" by the negroes of Jamaica, who plant it along their provision-grounds, from a superstitious notion that it fulfils the part of a watchman, and, from some mysterious power ascribed to it, preserves the property from plunder. Even the better informed adopt this practice, although they themselves may not place confidence in any particular influence which the plant can exercise, either in preventing theft or in punishing it when committed.—B.

Sub-Tropical Plants Without Glass.—I have little or no glass, but should like some of these in my garden. I could get a frame or small pit, if necessary. AN AMATEUR, *Torquay, Devon*.—[Your best plan will be, to select all the beautiful hardy plants of picturesque habit which you can get, such as the Bamboos, Pampas Grass, Yuccas, &c. These, with graceful young conifers, &c., will go far to produce a good effect. With a pit, a frame, or, if your soil be warm and well drained, even without them, you could grow *Canna*, perhaps the most valuable of all fine-leaved flower-garden plants. Some, like the Castor-oil plant, may be raised in a warm pit or frame, and some plants of much value, when properly placed in the flower-garden, may be raised with hardy and half-hardy annuals. Among these may be named *Artemisia annua* and the common hemp.]

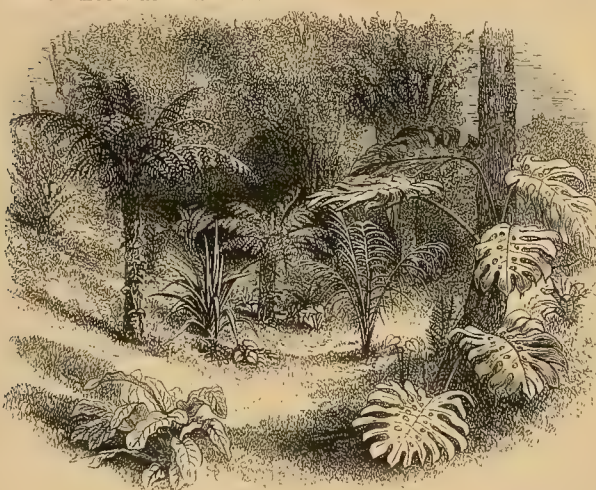
Tall Border Plants.—Can you furnish me with the names of a few plants of this description which would look well in front of shrubberies, or at the back of mixed borders?—DELTA.—[The following, we should think, will answer your purpose:—*Aconitum sterckianum*, *A. variegatum*; *Delphinium*, tall varieties; *Rapistrum exaltata*; *Lathyrus latifolius*, *L. latifolius albus*, *L. grandifolius*; *Gnaphalium lamareckianum*, (E. James); *Eupatorium angustifolium*, *E. a. album*; *Lythrum Salicaria rosea*; *Helianthus exaltatus*, *E. ruthenicus*; *Galega officinalis*, *G. o. alba*; *Aster Novae-Angliae*, *A. Novi-Belgii*, *A. elegans*, *A. excelsus*, and many others; *Achillea Eupatorium*; *Campandra latifolia*, *C. pyramidalis*; *Asclepias Cornuti*; *Verbascum Chamaix*; *Phlox*, taller kinds; *Tritium*, in variety; *Dracocephalum speciosum*; *Lilium tigrinum Fortunei*; *Polygonum Sibaldii*; *Arundo Donax*; Pampas Grass; *Anchusa italica*; *Arundo conspensa*; *Eupatorium aceratoides*, *E. purpureum*; *Helianthus regius*, *H. multiflorus flore pleno*; *Hollyhocks*; *Hibiscus roseus*, *H. militaris*; *Chrysanthemums*; *Dulcids*; *Pyrethrum uliginosum*; *Crambe cordifolia*; *Phytolacca decandra*; *Lupinus polyphyllus*; and *Maclureya cordata*.]

Yuccas.—Perhaps no class of hardy plants deserve more encouragement than Yuccas, of which several interesting species are now grown in British gardens, viz., *Yucca gloriosa*, *recurva*, *superba*, *flaccida*, and *filamentosa*. Notwithstanding the stately habits of these plants, it is surprising to find them so serviceable in many of our nursery establishments. Yuccas are plants of easy propagation, and advantage should be taken of this circumstance to have them more generally diffused. They succeed best in a rich, loamy soil, and, when in flower, amply repay any trouble taken to bring them to maturity. A good flowering spike, independent of its leafy stem, often attains the height of four or five feet, and measures, from three to four feet in circumference, each spike producing several hundred cream-coloured trumpet-shaped blooms. After flowering, the stems of the large varieties generally divide into two or more leaders, and, if well cared for, a succession of flower-spikes will in time be produced

from them, the strongest stem flowering first. In Scottish gardens, the variety most commonly grown is *Y. gloriosa*; but in Ireland, more particularly near Dublin, *Y. recurva* appears to be most prevalent, and it is, without exception, the most graceful of the tribe. The effect of this variety in Merrion Square, Dublin, is quite remarkable. Their prevalence in that locality is due to the energetic efforts of Mr. Adair, who has done much to extend the cultivation of many new and half hardy plants in Ireland. Although *Y. superba* and *recurva* are most abundant near London, yet a large proportion of *Y. gloriosa* is also to be met with, while *daccida* and *filamentosa* are common both in the London gardens and throughout the country, both species being frequently found under the same name. The *Yucca* may be considered by many as rather stiff and formal in habit; but a method of growing them, which tends to take off the stiff appearance, while it preserves their original character and outline, has recently been adopted here. This method is to grow them in raised stone compartments, or in rustic stone stumps, as we call them, a description of which will be found at pp. 70, 71 (No. 4) of *THE GARDEN*. It is desirable that the soil should be made good considerably below the base of the stones, so as to induce the roots to go down. It will be found that the roots of the *Yucca* take freely to the stone, and will soon penetrate to the soil below. The stone stump for the cultivation of *Yuccas* is intended to stand on extensive rockworks or grass lawns. Their effect on grass lawns is considerably improved by having them raised on circular rockwork mounds standing two or three feet above the surface. This raised portion should be formed into rockwork compartments, and filled with dwarf Alpines, or with such plants as sedums, sempervivums, and saxifrages, the spaces between the buttresses being admirably adapted for them.—*J. McNab, in "Villa Gardener."*

A TROPICAL DELL IN THE GARDEN.

ONE of the boldest and most charming little pictures formed by Mr. Gibson, when superintendent of Battersea Park, was the placing in a shady and thoroughly sheltered nook stove and greenhouse plants and ferns that will not suffer from exposure to our summer climate. The plan, so happily shown in our illustration, is well worthy of imitation in the southern and milder parts of the country. Our illustration shows a scene somewhat more free in its disposition than Mr. Gibson's admired nook at Battersea.



Shady and sheltered Dell, with Tree Ferns and other Stove Plants placed out for the Summer.

Some palms, like *Seaforthia*, may be used with the best effect for the winter decoration of the conservatory, and be placed out with a good result, and without danger, in the summer. Many fine kinds of *Dracænas*, *Agaves*, *Yuccas*, &c., which have been seen to some perfection at our shows of late, are eminently adapted for standing out in summer, and are in fact benefited by it. Among the noblest ornaments of a good conservatory are the Norfolk Island and other tender *Araucarias*; and these may be placed out for the summer, much to their advantage, because the rains will thoroughly clean and freshen them for winter storing. So with some Cycads and other plants of distinct habit—the very things best fitted to add to the attractions of such a nook as the above. Besides, there are tall hardy ferns, and other picturesque hardy plants with a tropical aspect, which might be planted out in such a dell. They would make the furnishing of it an easier matter. In fact, there is no moderately-large gardening establishment which ought not, between tender and hardy plants, to embellish such a dell in the most graceful manner. There are, however, many districts in which it would be unwise to place the stove plants in the open air; and even in the warmest, it would be necessary to secure the most perfect shelter and as warm a position as possible.

THE WILD-GARDEN.

DITCHES, NARROW SHADY LANES, ETC.

MEN usually seek sunny and favourable positions for their gardens, so that even those who are obliged to be contented with the north side of the hill would consider my present fancy (the ditch) the whim of a lunatic. What, the gloomy and weedy dyke as a garden! Yes, there are thousands of ditches in every county in England that may readily be made more beautiful than the most finished and expensive "modern flower-garden." But what would grow in them? Many of the most beautiful wood and shade loving plants of our own and similar latitudes—things that love not the open sunny hillsides or wide plains of grass, but take shelter in the stillness of deep woods, hide in dark valleys, are happy deep between riven rocks, and gaily occupy the little dark caves beneath the great boulders on many a horror-stricken mountain gorge, and which garland with inimitable grace the vast flanks of rock that guard the dark or noisy course of the rivers on their paths through the hills. And as these dark walls, ruined by ceaseless pulses of wintry tide, are beautiful exceedingly, how much more may we make all the shady dykes and narrow lanes that occur everywhere! For while the nymph-gardener of the ditch may depend for her novelties on the stray grains of seeds brought in the moss by the robin when building her nest, and the nymph-gardener of the river wall on the mercy of the hurrying wave, we may place side by side the snowy white wood lily (*Trillium grandiflorum*), whose home is in the lonely shades of the American woods, with the twin flower of Scotland and northern Europe, and find both thrive on the same spot in happy companionship. And so in innumerable instances. And not only may we be assured of numbers of the most beautiful plants of other countries thriving in deep ditches and in like positions, but also that not a few of them, like the white wood lily, will thrive much better in them than in any position in garden borders. This plant, when in perfection, has a flower as fair as any white lily, while it is seldom a foot high; but, in consequence of being a shade-loving and wood plant, it usually perishes in the ordinary garden bed or border, while in a shady dyke or any like position it will be found to thrive as well as in its native woods; and if in deep, free, sandy, or vegetable soil, to grow into specimens not surpassed in loveliness by anything seen in our stoves or greenhouses.

The following is a large selection of hardy plants well suited for the positions above named. Very considerable difference is among them as regards size; the stronger-growing subjects will take care of themselves among the scrub at the top of lane and ditch banks:—

<i>Acanthus</i> in var.	<i>Cypripedium guttatum</i>	<i>Lupinus polyphyllus</i>
<i>Aconitum</i> in var.	" <i>spectabile</i>	<i>Mimulus</i> in var.
<i>Adiantum pedatum</i>	<i>Cystopteris</i> in var.	<i>Mitchella repens</i>
<i>Allium</i> in var.	<i>Dentaria</i> in var.	<i>Muscari</i> in var.
<i>Alstromeria aurantiaca</i>	<i>Digitalis</i> in var.	<i>Myosotis</i> in var.
<i>Anemone</i> in var.	<i>Dodecatheon</i> in var.	<i>Myrrhis odorata</i>
<i>Aralia nudicaulis</i>	<i>Dondia Epipactis</i>	<i>Narcissus</i> in var.
" <i>racemosa</i>	<i>Epigaea repens</i>	<i>Oenothera</i> in var.
<i>Arenaria balearica</i>	<i>Epimedium</i> in var.	<i>Oenoclea sensibilis</i>
<i>Arum</i> in var.	<i>Epipactis palustris</i>	<i>Ornithogalum</i> in var.
<i>Arundinaria falcata</i>	<i>Eranthis hyemalis</i>	<i>Orobanchis vernus</i>
<i>Asplenium</i> in var.	<i>Erythronium americanum</i>	<i>Osmunda</i> in var.
<i>Aster</i> in var.	" <i>Dens-canis</i>	<i>Paeonia</i> in var.
<i>Athyrium</i> in var.	<i>Eupatorium</i> in var.	<i>Podophyllum Emodi</i>
<i>Bambusa</i> in var.	<i>Ferula</i> in var.	" <i>peltatum</i>
<i>Botrychium</i> in var.	<i>Ficaria grandiflora</i>	<i>Polygonatum</i> in var.
<i>Brodiaea congesta</i>	<i>Fragaria</i> in var.	<i>Polystichum</i> in var.
<i>Bupththalmum grandiflorum</i>	<i>Fritillaria</i> in var.	<i>Pulmonaria</i> in var.
<i>Calystegia</i> in var.	<i>Funkia</i> in var.	<i>Pyrola</i> in var.
<i>Campanula</i> in var.	<i>Geranium</i> in var.	<i>Sanguinaria canadensis</i>
<i>Cerastium</i> in var.	<i>Gladiolus communis</i>	<i>Scilla</i> in var.
<i>Chelidonium</i> in var.	" <i>segetum</i>	<i>Silthoropia europæa</i>
<i>Convallaria majalis</i>	<i>Goodyera pubescens</i>	<i>Smilacina</i> in var.
<i>Convolvulus</i> in var.	<i>Helleborus</i> in var.	<i>Struthiopteris</i> in var.
<i>Coptis trifoliata</i>	<i>Hemerocallis</i> in var.	<i>Stylophorum diphyllum</i>
<i>Cornus canadensis</i>	<i>Hepatica</i> in var.	<i>Symphytum caucasicum</i>
<i>Coronilla</i> in var.	<i>Hydrocotyle bonariensis</i>	<i>Trillium</i> in var.
<i>Corydalis</i> in var.	<i>Hypericum calycinum</i>	<i>Triteleia uniflora</i>
<i>Crinum capense</i>	<i>Jeffersonia diphylla</i>	<i>Trollius</i> in var.
<i>Crocus</i> in var.	<i>Lastrea</i> in var.	<i>Tulipa</i> in var.
<i>Cyclamen europæum</i>	<i>Lathyrus grandiflorus</i>	<i>Uvularia grandiflora</i>
" <i>hederifolium</i>	" <i>latifolius</i>	<i>Veronica</i> in var.
<i>Cypripedium acaule</i>	<i>Leucojum</i> in var.	<i>Vinca</i> in var.
" <i>Calceolus</i>	<i>Lilium</i> in var.	<i>Viola</i> in var.
	<i>Linnaea borealis</i>	<i>Woodwardia</i> in var.
	Primroses, oxlips, polyantheses, &c., in great variety.	

The above selection is almost exclusively confined to exotic things. With these and our own wildlings what interesting features may be made!—*Field.*

INSECTS, BIRDS, ETC.

THE MOLE-CRICKET.

(GRYLLOTALPA VULGARIS.)

This insect has the reputation of doing much damage to various roots. It is, however, certain that it is not wholly a vegetable feeder; some say not chiefly one. It eats, and no doubt benefits the gardener by eating, many grubs and worms; but the balance seems to be on the side of injury rather than good. Curtis states that in the south of France farmers and gardeners complain of the damage done to their crops of peas and beans by these crickets, and that in Germany they have been known to destroy one-sixth, and even one-fourth, of a crop of young corn by eating off the roots. He quotes Mr. Brackenridge to the effect that the mole-cricket is the greatest enemy the gardener has to contend with at Berlin, where it appears about the beginning of summer in myriads, and nothing in the herbaceous way is proof against its ravages, adding that he (Mr. Brackenridge) had seen the stem of a *Dahlia* an inch thick cut through by it in the course of a night with as much precision as if done by a knife. He further mentions that in the Botanic Garden there the devastations of these insects are so extensive that duplicates of the more tender and uncommon species of plants require to be kept in pots to protect them from its ravages. This was many years ago; we do not know how the case may be now. We are, ourselves, sufficiently familiar with the Botanic Garden at Berlin, but we do not remember ever to have heard the insect mentioned by any of the establishment. One thing, however, is certain, and that is that wherever it appears it is greatly dreaded by cultivators; and, as Curtis says, it is scarcely possible that experienced gardeners should have thus unhesitatingly stigmatized it if it had done nothing to deserve its bad name. M. Souchet, the great French *Gladiolus*-grower, is stated to be in the constant habit of waging war by every means in his power against this cricket, in the belief that if it were allowed its own way for a



Perfect Insect, after fifth and last casting of skin.—Insect after leaving egg.
(After Boisduval.)

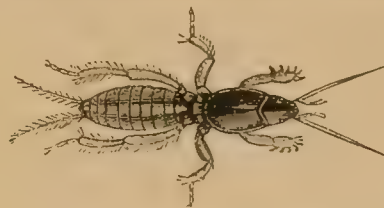
fortnight in his grounds, serious loss would be the result. On the other hand there are some, perhaps many, naturalists who believe that mole-crickets do very little damage, and that the little that they do is not so much by eating as by disturbing the roots in the course of their grubbing and their excavations to form their nests; and the fact that they are certainly carnivorous, so far supports the view that they take. Curtis bears testimony to their carnivorous habits. One that he kept alive with grass turves in a cage fed upon the caterpillars of the lackey moth, with which he supplied it for some time. Dr. Kidd, in his memoir (quoted by Curtis), says that these insects prefer raw meat, and that they will attack each other, when the victor devours the flesh of the vanquished, which is in accordance with the statement of Bouché, that the mother devours a great number of her offspring, so that out of a hundred not more than eight or ten survive.

The evidence as to its carnivorous habits, therefore, seems strong enough, and no doubt the creature does much good by eating wire-worms and other underground grubs and insects, but the injury it actually does to the objects of the gardeners' solicitude (in whatever way the mischief may be done) is sufficient to warrant us, as horticulturists, in putting it down in the list of our enemies, and waging war against it accordingly.

Before entering on the means of attack we had better reconnoitre and ascertain its habits and history. We shall not occupy the time of the reader by giving a description of the insect, except on one or two points. The figures (all of natural size) which we give are worth pages of description. As to its structure, we shall only say that it is an excellent example of the adaptation of structure to function. The mole's "hand" has often been likened to a shovel. The fore tibia of the mole-cricket is still more like one, or rather a combination of the shovel and rake. Its eyes are small, and adapted for little light, and it has two ocelli on the forehead. The form of the head and thorax, like a

projecting cone, is admirably adapted for pushing their way through the half-opened galleries, and it is so strong that, according to Roësel, it can propel six pounds' weight on a smooth surface. It has two bodkin-like spines projecting behind like feelers, and which, indeed, serve that purpose *à posteriori*; for, like the mole, it runs backwards and forwards with equal facility. The colour is brown, and the texture (of the head, thorax, and legs more especially) hard and horny, and it is clothed with a rust-brown, silky, short velvety pubescence, which is apparently analogous to the fur of the mole, although why it possess it is one of those points the purpose of which has not yet been made out. The wings do not appear at first; when complete they have a long projecting termination, which will be seen in the largest figure.

These animals usually inhabit a loose, sandy soil, and prefer it dry to moist. In England, indeed, Mr. Curtis says that they are especially found in damp situations, as around the margins of ponds



Larva after third casting of skin.

and along the banks of streams. Curtis is so almost invariably accurate, that one hesitates to dissent from him; but their known habits on the Continent, where they are vastly more common than here, do not allow us to doubt that their proper ground is dry and sandy, and that they are rarely to be met with in rich, heavy earth. They live under ground, and burrow horizontally during the day, but come out at night; and it has been said that they are sometimes luminous at night. The perfect insect flies very freely about at night, and comes into lighted rooms where a window is open. The male makes a chirping noise, which has been compared to the distant whirring of the goat-sucker.

The pairing of the insects takes place about the end of June or beginning of July, or, in some seasons, a little earlier. The female then constructs a nest for her eggs in the vicinity of her burrows. She makes it about four to six inches below the surface of the ground, and in an excavation of the form and size of a hen's egg, to which a number of zig-zag, slightly-inclined paths lead. The walls are moistened with saliva, well smoothed, and built up in such a manner that, with proper care, the whole nest, like an excavated and rounded clod of earth, may be lifted out. A few, more or less straight, flat paths diverge on various sides from it, which are easily recognised by the earth being slightly upheaved for about the breadth of three-quarters of an inch. In addition to this, a few perpendicular openings serve, not only to regulate the moisture of the cell, but also to provide a means of escape to the female watching by the eggs on the approach of danger, of which they are very



Larva after fourth casting of skin.

sensitive and wary. The nest is usually formed on an open unshaded spot, and the ground above it is loosened, and, where it is necessary, the roots of plants are eaten away, in order to admit the full warmth of the sun.

Nothing betrays so surely the existence of a nest as the decay here and there of plants, whose roots may probably not exceed an inch in thickness. The number of eggs in a nest is variable. The average is 200; but more than 300 have been found. At the close of the breeding season, the female does not immediately die off, as is the case with most other insects, but remains as a faithful sentinel in the vicinity of the eggs, and, indeed, in one of the perpendicular openings already mentioned, out of which its head appears. Nevertheless, it does not hatch the eggs, any more than do our other native female insects. It still lives when, three weeks later, the young larvae escape from their eggs, of which, as we have seen, there is reason to believe that it devours many, although it is right to state that the fact is disputed.

The eggs are oval, greenish white, about a line in length and half a line in breadth, and sufficiently firm to withstand slight pressure. The young are hatched in about a month after they are laid. It is thus about the middle of July that the larvæ leave the eggs, although even then newly-laid eggs have been found, and Ratzeburg found some as late as the 6th of August. But this, which is the case with all insects, is not to be wondered at, as the female has many eggs to lay, which she does by degrees, and does not immediately afterwards die. At their first appearance, the larvæ are like black ants, about one-eighth of an inch long. During the first three or four weeks the young insects remain together, inactive, and nourishing themselves upon the rich, vegetable earth, or on the more delicate roots in their vicinity, from which we may conclude that freshly-manured ground would have a special attraction for the female when about to construct her nest. About this time the casting of the skin for the first time takes place, the larvæ then become more lively, and scatter about in various directions. Towards the end of August, consequently from three to four weeks from the time of the first casting of the skin, the second follows, and four weeks later the third, when they are, on an average, one inch in length. They now descend a little deeper into the ground, and begin their winter sleep. It depends greatly upon the weather of the following year at what time they awaken; but when they do, they shortly after cast their skins for the fourth time, and receive wing stumps. The last casting of the skin, before they become perfect insects, follows about the end of May or beginning of June. Of course, these dates do not apply to insects hatched from eggs laid at a later period. As far as has been yet discovered, very dry and very wet summers are alike destructive to the mole-cricket.

Of its natural opponents the most formidable is the mole. Bouché says that a field which contained an infinite number of root-worms and mole-crickets was entirely freed by the moles in two years. Rooks and crows in this country, and choughs (red-legged crows) and hoopoes on the Continent, assist in keeping them under. But we have also very successful artificial means of destroying them. Perhaps the most successful of any is as follows:—

When this strong and well-armed little fellow gets into a bed of choice Gladioli you cannot well dig him out, as you could if he happened to be in an open spot. The way he is killed here (at M. Souchet's gardens at Fontainebleau) is so interesting and effective that I must relate it. M. Souchet explained it to me; but so many receipts for exterminating vermin are not worth the trouble of trying the second time, that probably I should not have noticed it had he not called a workman and given me an illustration on the spot. When the mole-cricket goes about, he leaves a little loose ridge, like the animal after which he is named, and when his presence is detected in a closely-planted bed of Gladioli at Fontainebleau, they generally press the ground quite smooth with the foot, so that his track and halting-place may be more distinctly seen the next time he moves about. This had been done in the present instance in the case of a young bed of seedlings. We saw his track, and a workman, who had brought with him a jar of water and one of common oil, opened a little hole with his finger above the spot where the enemy lay, then he filled it with water twice, and on the top of the water poured a little oil. The water gradually descended and with it the oil, which, closing up the breathing pores of the mischievous little brute, caused it to begin [to suffer from asphyxia, and in about twenty seconds we had the pleasure of seeing it put forth its horns from the water, go back a little when it saw us, but again come forth, to die on the surface, hindered for ever from destroying valuable bulbs. Being very strong and well-armed, a single mole-cricket can do a deal of damage in a bed of Gladioli, and therefore the moment the workmen of M. Souchet see a trace of the pest, they take means to catch it as described, jars of water and oil being always kept at hand.

This remedy is not a new one; we know its history. "A simple plan," says Curtis, "of pouring water into their burrows first, and then a few drops of oil which killed the insects, probably by stopping their respiration, was actually purchased by Louis the XV.;" and there seems no reason to doubt that the recipe so acquired has continued to be used traditionally in the Royal gardens of France ever since down to the present time. Attempts to improve upon the oil by substituting coal-tar or soap-refuse for it, or by mixing it with turpentine and other ingredients, have been made, but the true rationale of the death of the insect seems obviously to be that the oil closes up its breathing pores, and consequently the simpler method seems also the best. Turpentine has been used to drive the insects away by its smell. Traps, such as jugs buried upright in the places which they frequent, have been found to catch a good many. Fresh sods placed on the borders where they have been observed, have been found to be used as a lurking-place, and many are taken under them on turning

them over in the morning. A more wholesale way, however, is to search for the nests in June or July, before the eggs are hatched, and destroy the whole batch of them; and the best time to seek for them is immediately after rain or a strong morning dew, at least in loose sandy soil, as the openings conducting to the nest are more easily discovered than in dry weather, when they either fall together or are not at all visible. The spots where the plants are withering in patches are recorded as guides to the nests.

The following plan proposed by Kollar, is strongly recommended by Curtis, viz.: to dig three or four pits in September in the infested places two or three feet deep and a foot wide, then fill them with horse dung, and cover them over with earth; attracted by the warmth of the fermenting horse dung, all the mole-crickets about will resort to these pits on the first frost, and may then be easily destroyed.

To the above may be added a precaution mentioned by Taschenberg, which he learned from Richter, formerly gardener to the King of Prussia, in order to protect certain plants from the ravages of the mole-crickets, viz.: to plant them in willow baskets made like pots.

A. M.

NOTES AND QUESTIONS ON INSECTS, VERMIN, ETC.

Wireworms.—I have found these pest attack rape cake placed about an inch underground, and on examining the piece of cake daily have generally discovered them half buried in it. This I have found more effectual as a decoy for wireworm than potato.—W.

Rabbit-proof Plants.—With reference to the list of rabbit-proof plants in your Nos. 1 and 4—why have Gorse and Spanish-broom been omitted? A great desideratum, for purposes of landscape gardening, is a cow-proof plant. Does such a thing exist? It should also be sheep-proof, and rabbit-proof as well.—R. O. L.

Ants.—How shall I get rid of these in a small stove? They swarm everywhere. LAURA.—[Place half-picked bones here and there on the shelves and wherever the ants resort, and when you visit them an hour or two afterwards they will be covered with ants. Have a bucket of scalding water at hand, and drop the swarming bones into it. We have destroyed many thousands in one day by this plan. Pieces of coarse sponge dipped in treacle-water will do as well as the bones.]

Another Insect-Destroyer.—M. Cloëz, who is engaged at the Jardin des Plantes at Paris, has invented what he considers a complete annihilator for plant lice and other small insects. To reduce M. Cloëz's preparation to our measures, it will be sufficiently accurate to say, take 3½ ounces of quassia chips, and 5 dram stavesacre seeds, powdered. These are to be put in seven pints of water, and boiled until reduced to five pints. When the liquid is cooled, strain it, and use with a watering-pot or syringe, as may be most convenient. This preparation we are assured has been most efficacious in France. Quassia has long been used as an insect destroyer. The stavesacre seeds are of a species of larkspur, or delphinium, and used to be kept in old drug-stores. They contain delphine, which is one of the most active poisons known, and we have no doubt that a very small share of it would prove fatal to insects.—*American Agriculturist*. [The stavesacre is rarely now seen except in botanical gardens, and has none of the beauty of the commoner cultivated delphiniums; but seed may be obtained without trouble, and this is well worth a trial].

Remedy for the Apple Maggot.—Two conclusions are inevitable: first, that the tomits, now so abundant in our cider counties, must inevitably perish were it not for the oak galls and the hosts of apple grubs which have sprung up in the crevices of the bark, and which these active birds are hunting for during every moment of our short winter days; and, secondly, that without the assistance of the tomits the apple crop would be entirely destroyed by this irrepressible insect. Many a proprietor of garden or orchard in Herefordshire, Worcestershire, and Devonshire will contend that the tomits must be killed, because they peck holes in the apples and pears just above the insertion of the stalk—a fact that cannot be denied, an act which cannot be defended; the blue-headed tomits, in particular if he have any conscience at all, must plead guilty to its commission; but gentlemen will find that exactly in the same ratio as they diminish the number of their tomits so do they increase that of their worm-eaten windfalls. To myself there is no sight more pleasing than a little blue-cap searching every crack and cranny in the trunk of an apple-tree for the cocoons of the apple grub; his excessive, his indomitable industry, the sharpness of his sight, the knowing manner in which he turns his head on one side the better to peer into the crevices, the drollery of his attitudes, infinitely surpassing those of gymnast or acrobat, and his merry, although perhaps unmusical, note—I can commend him to my affection, and indeed, to my protection, where I can possibly extend it; but almost every apple-grower of my acquaintance prefers worm-eaten apples to blue-headed tomits, and I find it impossible to overcome this preference. Supposing, however, that our little chrysalis escapes the prying eyes of the blue-cap; supposing no such ill-fortune betide him as to be transferred from his carefully-selected retreat to the crop of the little bird—then by the middle of June the chrysalis has become a moth, and is again on the wing and hovering round the young apples on a midsummer evening as before. "Is there no remedy but the tomits?" asks some devoted enemy of the titmouse race. Yes, a partial one. By burning weeds in your gardens at this time of year you may drive away this little moth. If you have trees the crops of which you value, make a smoking (mind, not a blazing) fire under each. It will put you to some inconvenience if your garden be near your house, but the apples thus saved will repay you for that. Then, again, you may pick every apple that the grub has attacked. This is indeed a radical cure, but who can accomplish it? After all, Nature's remedy is by far the best; for the tomits will serve you without giving you any trouble, and simply for their own gratification. And then, again, supposing you are possessed of an orchard (mind, this remedy will not do for a garden), turn in your pigs; nothing is more agreeable to the porcine community than crunching a windfall. It is proverbial that a pig always delights in going the wrong way; and I verily believe they like these windfalls all the better from a conviction that they are taking what they ought not. Thus the pigs are fed, and the grubs are destroyed before they have left the stall where they were fattened.—*Ed. Newman, in "Field."*

THE ARBORETUM.

DECIDUOUS versus EVERGREEN TREES.

During the planting season it may be well to remind the many who are continually planting coniferous and other evergreen trees, without knowing how long they may endure the climate, how futile their efforts are likely to be, and how poor the result they will produce compared with what might be expected if they worked with permanent materials, so to speak. Judging by the scant attention now paid to the planting and grouping of deciduous trees, one would suppose them lower in the scale of attractions than the Coniferae, which are planted everywhere. Deciduous trees are really by far the most valuable in this country. There are three weighty reasons why conifers should not be planted so extensively as they are, viz., first, their short-lived character with us; secondly, their inferiority in beauty to deciduous trees; thirdly, their smaller size and inferior majesty of port. A great number of species described as hardy are, for the most part, not really so. They endure the climate for a while, sheltered in sunny nooks here and there, but a severe winter comes and nips them, or an easterly breeze comes and half burns off all the leaves. Unproved exotics, that thrive for a little while, but succumb to some unusually bitter spell of weather, we have given them everywhere places of honour that should be filled by subjects more congenial to our climate, and as a consequence we often find disease or a vacant place where we looked for a long life of dignified beauty.

Not a few are really hardy, and it is impossible to embellish our gardens and country seats without their aid; but none the less it is a mistake to depend wholly, or almost wholly, on them, as many do nowadays. Then as to beauty, they are wholly inferior to our finest deciduous trees—inferior inasmuch as they are changeless, and without the supreme charm of fair blossoms. No pine that ever grew equals in beauty a well-developed horse-chestnut. The different varieties of the common hawthorn also yield more beauty than any pine. Nobody can dispute our classing the Coniferae as inferior in beauty to flowering trees. Then as to size and port—on the whole deciduous trees are the largest. On the sierras of California the trees are indeed magnificent, and here and there in Canada you meet with a white pine, the leaves of which rustle plaintively more than a hundred feet above one's head; but in the West the whole size of the tree is concentrated in the trunk, and in Canada and other pine countries you may travel for days without seeing any but small crowded trees. The common deciduous trees of the parks of Europe, with their massive trunks, majestic limbs, and picturesque ramifications, are grander than any pines. Nor in this connection must we compare the giant pines of the West with what we can grow in England. It is a delusion to think that our climate will ever permit the Sequoias and the other great pines to live for anything like the time they have existed in their native homes, the long and brilliant summer of which is certainly necessary to their making a robust growth and perfectly it thoroughly.

In connection with this subject, the utter neglect of deciduous trees should be taken into consideration. Very few seem to take any interest in any of them but the common kinds; and they are hardly ever grouped so that their beauty may be set off to advantage, few developing the handsomest-flowering kinds into good specimens, isolated in open groups, or forming pictures by their aid—which it is very easy to do. But, badly as they are treated, they generally live, even in crowded cities and their suburbs, where conifers and most other evergreens perish annually in thousands; and those who plant them usually have the reward of planting something a little more enduring than themselves. The millions of evergreens planted to perish in the smoke-fog of London were not so worthy of a place as the few young planes once placed in Mecklenburg Square, which are now more majestic objects than one could find in many a wild forest country. Those who plant in all but the most favourable districts will find nearly as much difference in the result of planting deciduous and evergreen trees as the Londoners have experienced; though in every case away from towns a sufficient number of the really hardy kinds should be planted.

The Yellow Pine (*Pinus ponderosa*) and Douglas Fir.—I can remember seeing *ponderosa* and *Abies Douglasii* growing side by side near the Flower Garden at Scene in 1839, the positions being no great distance from Douglas's native village, in the churchyard of which is erected a monument to his memory. On one side of this is a list of a few of the trees and shrubs introduced by him, the spelling and pronunciation of which greatly puzzle the village rustics. Instead of such names, if a few of the many charming shrubs or trees which he introduced had been planted at the base of the monument, they would have deprived it of the cold bleak look which it now has. My employer has just had a fine specimen of *ponderosa* cut down, in order to give more space to a splendid tree of Douglas fir, which has reached a height of seventy feet, and which is clothed to the ground with beautiful cone-bearing branches. The circumference of the trunk, a foot from the ground, is eleven feet six inches. The height of the *ponderosa* was fifty-four feet; and the circumference of the trunk, a foot from the ground, six feet. In cutting it up into short lengths we found it to be very full of turpentine. We have had several large trees of different species of pinuses cut up that were killed here during the hard winter of 1860-61, but none had such a strong resinous smell as this. I cannot, however, speak of its value as a timber tree. As far as I can learn it was placed here about 1830. Our soil is a good gravelly loam.—J. M. H., *Aedbury, Herefordshire*.

Notes on Smoke-effects in and about Warrington.—In the remarks which I am about to make, I have strictly confined myself to what has come under my personal observation with regard to the destruction of trees, shrubs, and plants by smoke and chemical vapours, and also in regard to certain plants that will not grow, I believe from natural causes. Among evergreens that are most severely injured by smoke, &c., are the conifers. The Scotch fir has long since disappeared with us; so has the spruce. About two years ago we planted one hundred young healthy plants: there are only a few now alive, and those are sickly. I have seen nice plants in other parts of the town gradually dying. The arbutus (*Thuja occidentalis* and *Thuja warreana*), the savin, lavender, rosemary, laurustinus, and *Cotoneaster microphylla* are among the plants that, fifteen or twenty years ago, flourished well with us, but have now disappeared. Among plants that just exist are the yew, several varieties of heaths, the sweet bay, common laurel, and Portugal laurel. The deodar and *araucaria* we have not tried here, but I have seen in the town very meagre specimens. The common holly has grown very well till within the last three or four years; the tips of the plants are now dying. The evergreen oak (*Quercus ilex latifolia*) has so far stood pretty well; so has the box. Among evergreens that flourish best is the rhododendron, the plants here are healthy, flower freely, and grow to a large size; the only complaint is the foliage is dirty. The *ancuba* is more vigorous than the rhododendron, and grows almost under any treatment, but the very best of all is the ivy, particularly the Irish ivy, this does not appear to be damaged in the least beyond being dirty. Among deciduous trees and shrubs that suffer most are the mountain-ash, service fruit, beech, hornbeam, wych, and several other large-leaved elms. The common variegated sycamore has suffered very severely the last two or three years. The birch and *Normandy poplar* are now suffering to some extent in various parts of the town. The ash, till two or three years ago, was among the trees least affected; its having withstood dense smoke for so many years, and its being now so much affected tends to show that, though it will not stand chemical vapours yet it will stand black smoke pretty well. The horse-chestnut a few years ago grew well and flowered profusely, but it is now suffering severely. Some trees that were able to resist the effects of smoke a few years ago are now sinking rapidly, a sign that they dislike chemical vapours more even than dense smoke. While large elms suffer, the common English elm (*Ulmus campestris*) has so far proved to be one of the very best growing trees in a smoky atmosphere, retaining its foliage longer than any other old-established tree with which I am acquainted. We had, two years ago, planted several plane trees (*Platanus occidentalis*), and so far they appear to be the very best trees for this locality. The common oak stands as well here as in the country. We have also two or three Turkish oaks growing well. Among others that stand well are the tulip tree, common laburnum, lilac, and mulberry, which keeps its foliage well. The hawthorn and elder are the very best of all trees or shrubs to withstand deleterious vapours. I do not think it necessary to say much about fruit trees, beyond stating that red and white currants have nearly succumbed. Black ones still grow. Gooseberries are getting worse, so are apple-trees, but pear-trees still grow well; but the fruit is dirty. Among soft-wooded flowering-plants, dahlias, stocks, pansies, mignonette, nasturtium, lobelia, ageratum, penstemon, antirrhinum, and a few others, flower very well. For the last few years I have paid some attention to variegated and fine foliage plants in the flower-garden, and have found this to be the best course to take to get a good display of colour, which is a fine substitute for flowers in a town atmosphere. The rose we used to grow well, but now it is very inferior. The Scotch rose we have been compelled to destroy, it was so bad. The chrysanthemum is also very inferior to what it was a few years ago. Near Runcorn, Widnes, St. Helen's, and Newton, large numbers of trees are entirely destroyed by chemical vapours. Plants affected by smoke only gradually decline, but by deleterious gas the destruction is much quicker.—E. Green, *Bank Hall, at a recent meeting of the Warrington Literary and Philosophical Society*.

A Pine Forest.—A pine forest is one of the most beautiful features of nature. Of all quiet scenes it is surely the quietest. The harsh sounds of the busy human world, and even the dreamy murmurs of summer, are hushed there; no song of bird or hum of insect disturbs the solemn stillness; and only at rare intervals the mournful caw of a dove, making the shadows more profound, is heard in the deeper recesses. The weary eye wanders and lingers in the serenity of the silence, and feels the charm and refreshment of its highest life. The trunks of the trees have caught the rapid and many-varied shadows, and are bordered with long streaming rifts of emerald green, which impart to them a weird, savage appearance; but they are touched with grace by the wild flowers growing at their feet—cliff-orchids, and many more lowlinesses at the feet of old age. They form long-drawn aisles and vistas, like the pillared halls of Karnak or the Thousand Columns of Constantinople, which are indistinguishably attractive, for they appeal to that love of mystery which exists in every mind; they reveal only enough to stimulate the imagination, and lead it onward to lovelier scenes beyond. It is the same vague sentiment of expectation and hope that gives the charm to every natural as well as to every moral landscape. Life itself without these vistas of expectation would not be worth living. When

the sun is shining brightly, and pierces here and there through the dusky foliage, the effects of the chequered light and shade, the alternations of green and gold, are very lovely. Richly-tinted mosses, that, "steal all noises from the foot," pale clusters of delicate ferns, starry flowers of *Trientalis*, waxen balls of *Pyrola*, and green and crimson leaves of the blue-berry, cover every inch of ground not occupied by the boles of the trees, and form mosaics more beautiful than those of the Vatican. The dim, slumbrous air is laden with an all-pervading balsamic fragrance, strongly stimulating that sense which is more closely connected with the brain than any other, and suggesting numberless vague but sweet associations and memories of the past; while through the pyramidal tree-tops may be obtained glimpses of the quiet sky, which seems to come close to the earth, as if in sympathy, and appears calmer and bluer than elsewhere by contrast with the dark-green motionless foliage. Beautiful, indeed, is the pine forest in all seasons: in the freshness of spring, when the marbled boughs are penetrated and mollified by the soft wind and the warm sun and, thrilled with new life, burst out into fringes and tassels of the richest green and cones of the tenderest purple; beautiful in the sultry summer, when among its cool dim shadows the cheated hours all day sing vespers, while the open landscape is palpitating in the scorching heat; beautiful in the sadness of autumn, when its unfading verdure stands out in striking relief amid changing scenes that have no sympathy with anything earthly save sorrow and decay, and directs the thoughts to the imperishableness of the heavenly Paradise; beautiful exceedingly in the depth of winter, when the tiers of branches are covered with pure, unsullied wreaths of snow, sculptured by the winds into curves of exquisite grace. It is beautiful in calm, when the tree-tops scarce whisper to each other, and the twitter of the golden wren sounds loud in the expectant hush; it is more than beautiful in storm, when the wild fingers of the wind play the most mournful music on its great harp-strings, and its full diapason is sublime as the roar of the ocean on a rock-bound shore. I do not wonder that the Northern imagination in heathen times should have invested it with awe and fear as the favourite haunt of Odin and Thor; or that, in after times, its long rows of trunks, vanishing in the dim perspective, should have furnished designs for the aisles of Christian temples, and the sunset burning among its branches should have suggested the gorgeous painted window of the cathedral.—*Bible Teachings in Nature.*

THE EVERGREEN CYPRESS.

(*CUPRESSUS SEMPERVIRENS*.)

THE accompanying is an illustration of three well-known Evergreen Cypress trees which are distinguished for their great age, size, and beauty, and—more even than all these—for having been planted by the hand of Michael-Angelo Buonarrotti. They stand in the garden of the Convent of the Chartreuse, at Rome, which is said to be situated on the site of the baths of Diocletian. It will be seen that there are four trees in the group, but that one of them is of a smaller size, and, apparently, considerably younger than the others, and that another is fast going to decay, so that these famous Cupresses of Michael-Angelo will soon be reduced to two.

Michael-Angelo was born in 1475 near Florence, and did not come to Rome—at least, did not acquire such celebrity as would have led anyone to ask him to plant memorial trees, until after the year 1500. We shall, therefore, not be far wrong if we estimate the age of these trees at from 360 to 380 years. We have no recent account of their sizes; but they were measured by M. Simond in 1817, who states that the circumference of the largest was then about thirteen feet.

This is a big tree, but it is by no means the largest with which we are acquainted; for that of "Somma," in Lombardy, is nearly twice as thick, viz., 23 feet in circumference, and 121 feet high. That is the tree which is said to have been of the age of our Saviour, and, consequently, may be even older than the great Sequoias, about whose longevity so much discussion has at various times taken place. It is certainly noteworthy, although only confirmatory of what we might expect, that this quality of extreme endurance should be found in the two most remarkable species of Cupresses of the Old and New Worlds respectively; and it applies not only to individuals, but also to the life of the species themselves, which extend back into past geological epochs.

The home of the Evergreen Cypress is the south-east of Europe, Turkey, Greece and its Archipelago, Asia Minor, Syria, Persia, Cashmere, and the Himalayas. In fact, its distribution is parallel with that of the Cedar, except that the blanks in the course of its spread are better filled up than in the latter. Both occur on the mountains of Lebanon, and as the Cedar of Lebanon differs from the Cedar of Mount Atlas, so the Evergreen Cypress of Lebanon has sufficient distinctness to have led to its being described as a distinct species (*C. sphaerocarpa*); but it is merely a variety, and occurs mingled with typical specimens. As in the Cedar, too, the Himalayan individuals differ somewhat from the European, and, like the Deodar, have been described as distinct species under the names of *C. indica*, *Roylei*, and *Whitleyana*. The degree of difference, however, is less than that between the Cedar and the Deodar, and the latter may very well be

regarded as a distinct species even by those who do not so consider the Himalayan Evergreen Cypress. Whether the parallel can be completed by the extension of the Cypress to the western parts of the Mediterranean may be questioned. So far as we know, this Cypress does not occur on Mount Atlas, but is found, both in cultivation and apparently wild, throughout the Mediterranean region generally. The received opinion, however, is, that in all the countries where it now grows to the west of Greece and Turkey it has been introduced. A statement by Pliny, that in his time there were standing at Rome some Cupresses that were more ancient even than the city itself, would seem rather to lead to the inference that our tree must have been aboriginal there; for although there had been some communication and attempts at colonization or settlement between Greece and Italy prior to the arrival of Æneas in Latium, they do not seem to have been of such a character as would have included arboriculture or horticulture as one of their elements. Still, on the other hand, Pliny tells us, without qualification, that the Cypress was introduced from Greece to Tarentum.

The Cypress has been grown in England for three hundred years at least, but there are no trees anywhere of great age. The climate is scarcely warm enough for Cupresses, and although they withstand ordinary winters, every now and then comes some envious frost which carries them off, so that we have to begin all over again. Mr. Palmer's tables of the effects of the winter of 1860-61 show that out of thirty-seven places indiscriminately reported upon in England there were only eight where the Evergreen Cypress had escaped without injury, while at twenty-two it had been killed. In Scotland, out of seven places it was killed at five, and escaped uninjured at none. There are only two returns from Ireland, at one of which it escaped uninjured and at the other was killed.

There are two very marked varieties of this species distinguished by their habits of growth, which become more especially distinct as the tree gets older—one upright like a Lombardy Poplar, the other spreading and forming, when old, something like a head. The Somma tree, of which Loudon gives a good figure, is of this kind. The upright form is known as *fastigiata*, the spreading as *horizontalis*. In former years it used to be a vexed question whether these two were distinct species or only varieties. There is scarcely any question as to this now. We have become more familiar with the vagaries of the Cypress tribe, and we know that similar differences in habit may be observed in almost every species. As a case in point take the Californian *Cupressus macrocarpa* or *Lambertiana*, names respectively given in the supposition that the two trees were distinct varieties; but although the difference in appearance between the two is often as great as that between an umbrella shut and one open, we have evidence that both have been raised from the same packet of seed. In the same way we have lately had a beautiful fastigate variety of *Cupressus Lawsoniana* resembling in port and habit the upright variety of *C. macrocarpa*. This variety of form is an advantage to the landscape-gardener, who, with the same species, can thus produce totally dissimilar effects.

The Evergreen Cypress is a tree of easy culture and propagation, and, unlike the Thujas, the seeds begin to germinate in some three or four weeks from the time of sowing. A. M.

HARDY TREES AND SHRUBS.

CONTEMPLATION of the beautiful in nature, not only refines and humanises, but exalts the mind. Who among us does not hail with delight the unfolding of nature's woodland charms in spring? But to appreciate the beauty of such scenery in its fullest extent, we should possess an intimate knowledge of the materials of which it is composed; for a person who scarcely knows one tree or shrub from another, will derive no more pleasure from a collection of different species of such things than from an assemblage of plants of the same kind. Cowper says there is "No tree in all the grove but has its charms;" nevertheless some species are more effective than others, both in colour and form; and thus when scenery contrived by man is contrasted with that of wild nature, the parts which trees and shrubs play in the way of ornament soon become apparent. What would our landscapes, for instance, be without trees? or where would be the charms of hills, plains, and islands without them? Again, in the case of pleasure-grounds, wrested, as it were, from nature's dominion by the hand of man for purposes for



GROUP OF CYPRESSES PLANTED BY MICHAEL-ANGELO AT ROME.

which nature alone seemed inadequate, we see a farther illustration of the part which a judicious selection and arrangement of trees and shrubs sustain; for the beauties of a pleasure-ground consist in the contrasts which the variety and distinctness of each tree and shrub produce.

The chief interest, therefore, of all gardens necessarily depends on the variety of exotic trees and shrubs with which they are adorned. The different points to which attention should be directed in the study of trees and shrubs are, pictorial form, height, breadth, general magnitude, outline, the mode of growth, spray, and shape and size of leaves. The first qualities, however, in a tree which will strike a general observer, are either its height, width, or the outline which it makes against the sky, or against any object behind it. The characteristic beauty and general forms of trees, I need scarcely say, are infinitely varied, the changes, also, in the foliage at different seasons of the year form never-failing sources of enjoyment to lovers of nature. Trees also furnish shelter and shade, and are the cheapest and least precarious mode of increasing the immediate value, as well as future income, of an estate. To clothe the barren mountain with foliage, is not only a laudable measure with reference to general ornament and shelter, but it is, for the most part, the best purpose to which such wastes can be used. In all cases a more extensive and judicious choice of trees may be made than that which we usually see, and much improvement might be effected in their distribution. In the allocation of different kinds in shrubberies, little interest seems to be taken or knowledge displayed as to the form which the plants will assume at an advanced stage of growth; and thus plantations that have been thickly planted as screens and never thinned, soon defeat the purpose for which they were intended.

Trees and shrubs on lawns should for the most part be disposed in an isolated manner, that is, in such a way that each individual plant may assume its natural shape and habit of growth. When trees and shrubs, however, in a pleasure-ground attain a large size, they very frequently become more or less crowded, and, therefore, destroy the individuality which belongs to each. Therefore, as they advance in growth, they should either be cut in or thinned out, so as to fully develop the nobler individuals and, where possible, to form groups. Half the trees which are planted, whether for ornament or for profit, are either disfigured or rendered comparatively valueless by having been originally planted too closely together, or by being allowed to remain too long without thinning; care should therefore be taken to place them in the first instance at a distance apart sufficient to permit them at a future day to display their individuality. The form and outline of trees and shrubs also vary very much according to the physical circumstances in which they are placed, such as soil, situation, and climate, and we only get the full grandeur of character which an individual tree is capable of expressing when, from its youth up, we save it from being weakened and deprived of light and food by other trees.

In planting trees and shrubs, the first point to be considered is the selection of such kinds as are known to flourish in the particular locality allotted to them, and to thrive in the soil about to be operated upon; the next thing to be determined is the ultimate object in view, viz., whether you wish to create a permanent wood, or to plant merely as a means of reclaiming the land, or for shelter, or for ornament. In the formation of large masses of trees and shrubs, or when trees are introduced into ornamental plantations, they should be kept as much as possible in the background; great care should also be taken that all the taller-growing kinds are placed in the rear of the less vigorous and slow-growing ones; otherwise they will soon overgrow them and, eventually, leave only branchless skeletons, such as we so frequently see disfiguring plantations around many country seats. Again, we often find on lawns, groups of trees planted with the full intention on the part of the planter in the outset that the nurses should be timely removed to allow such trees as are intended ultimately to adorn the grounds to assume their natural forms; but those nurses are, in nine cases out of ten, allowed to become robbers, excluding light and air from those trees which they were at first only intended to shelter. Another evil lies in planting trees where they will not thrive, a fact evident in many of our oak plantations, which in numerous cases are curious cradles in which to rear "the wooden walls of Old England." No department of rural economy is so injudiciously practised as the planting of trees, and this is, in a great measure, attributable to an unacquaintance with the forms and sizes which they ultimately attain. Their selection, too often betrays little forethought or reflection on the part of the planter, and consequently the kinds planted are seldom in keeping with the places they occupy. The use of single trees in breaking the formality of an unsightly situation, and in varying an uninteresting surface, is well known. Trees suitable for planting singly should be chosen according to circumstances; such, for instance, as those which

best resist the wind for exposed situations, and those which require moisture for low or damp places. No thick plantations, large clumps, or broad belts of trees and shrubs, should be allowed except in extensive places, or for useful purposes, as timber trees. Where concealment is wanted it can be well enough effected by scattered trees and shrubs, placed so as to form groups; which, moreover at once convey an idea of extent, by allowing glimpses of open space and glades of turf.

The predilection which different trees and shrubs indicate for different soils may occasionally furnish hints to planters for the selection of species, and prevent that meagre, starved, and poverty-stricken appearance which too often manifests itself, notwithstanding that heavy expenses have been incurred; for trees and shrubs in a state of nature are all indicators of the character of the soil and subsoil where they grow. They also point out its aridity or moisture, a fact which should be kept in mind by the planter for his guidance in the selection of proper and suitable kinds for particular sites, for it is lamentable to see unsuitable trees so frequently planted by persons unacquainted with their nature and habits, in places where they only exist; whereas, if suitable kinds had been selected and properly planted, a very different effect would have been produced. When the planter has only to consider what trees he should like to see growing around him, and not what the land is most suitable for, he can plant what he pleases, as some kinds of trees appear to flourish, and really do so, in most soils for a few years; but, after some ten or twenty years, they become stunted and dwarfed, lose their foliage prematurely, and, either actually die, or survive only to perpetuate the melancholy spectacle of a well-intentioned work injudiciously conducted.

GEORGE GORDON, A.L.S.

TABLE OF MEASUREMENTS OF HEIGHT AND CIRCUMFERENCE OF SEQUOIAS IN THE MARIPOSA GROVE.

No.	Height.	Circumference at Ground.	Circumference at 6 feet above the Ground.	Remarks.
6		77.5		
7		72.5		
11		62.		
12	244	62.	.....	Very fine symmetrical tree.
15	272	.....	.....	Fine sound tree.
16	.....	80.5	.....	31 feet in diameter. Hollow.
20	.....	72.5	55.	Fine tree.
21	.....	.....	44.	Very fine tree, not swollen at base.
27	250	48.		
29	.....	80.8		
31	186	35.7	29.6	Very straight and symmetrical.
35	.....	65.	50.8	
38	226	27.		
49	194			
51	218	56.	39.	Very fine tree.
52	249	.....	40.	Fine tree.
60	.....	81.6	59.	Very fine tree, but burned at base.
64	.....	82.4	50.	Very fine tree.
66	221	39.8		
69	219	35.7		
70	225	43.9		
77	197	.....	27.8	
102	255	.....	50.	Very fine tree.
158	223	.....	
164	213	.....	27.6	
169	.....	79.6		Much burned at base.
171	.....	82.7	.....	Badly burned on one side.
174	268	.....	40.8	
194	192	.....	46.	Two trees united at the base.
205	229	87.8	.....	Much burned on one side, formerly over 100 feet in circumference.
206	235	70.4		
216	.....	.....	63.2	Very large tree, much burned at base.
226	219	.....	48.	Fine tree.
236	256	.....	46.	
238	.....	.....	57.	26 ft. in diameter, burned on one side.
239	187	.....	26.6	
245	270	81.6	67.2	Burned on one side.
253	.....	74.3	60.	
262	.....	56.	.....	Half burned away at base.
275	.....	68.		
286	.....	70.	.....	Burned on one side nearly to centre.
290	.....	.....	16.	
301	.....	.....	51.	
304	260	92.7	.....	Largest tree in the Grove, 27 feet in diameter, but all burned away on one side.
330	.....	91.6	.....	Splendid tree, over 100 feet in circumference originally, but much burned at base.
348	227	.....	51.	

Professor Whitcomb, "The Yosemite Book."

The Axe Essential.—Most planters about a country home are too much afraid of the axe, yet judicious cutting is of as much importance as planting, and I have seen charming thickets shoot up into raw, link assemblage of boles of trees without grace or comeliness, for lack of courage to cut trees at the root. For all good effects of foliage in landscape gardening—after the fifth year—the axe is quite as important an implement as the spade.—*Rural Studies.*

GARDEN DESIGN.

GARDEN SCULPTURE.

GARDEN SCULPTURE should, if possible, have an object; and not be dotted here or there with no definite purpose; for, unless this principle be scrupulously observed, detached vases, or other pieces of sculpture, become merely intrusive spots; while, if well placed in suitable situations, as at the principal entrance of a house, or at certain distances apart on the parapet of a terrace, they become very valuable adjuncts to the general effect. It is much easier to regulate the tasteful distribution of such objects near the residence than in the open garden; and consequently lawns and shrubberies are occasionally disfigured with excrescences in the way of vases or statues in an ignorant and disagreeable manner that seriously offends the trained eye of taste. Statues may, however, be sparingly introduced in the front of dense shrubberies, in which situation they are sometimes very effective; foliage forming a good back ground; but they should not be placed under the drip of tall trees, both on account of the drip, which would soon discolour them, and because statuary should have a direct vertical light to secure



A decorative screen of garden sculpture.

that brightness of effect which is its principle charm. In certain situations where a solid screen is deemed desirable, a low wall, architecturally embellished so as to form a base for vases or groups of figures, may be resorted to with good effect. For instance, let it be supposed that a broad walk connecting ornamental grounds with a fruit and vegetable garden is left open for the purpose of preserving the effect of distance; the merely utilitarian features of the latter being tolerably well screened to the right and left of the walk by a deep flower border. Still it may be desirable to terminate the view along the walk at a certain distance; in which case a screen formed by a group of sculpture similar to that represented above, would effectively complete the purpose in view, and form a very agreeable object for the eye to rest upon as the closing feature of the vista. But this device could only be resorted to with good effect, and full advantage, in gardens where similar kinds of sculptural features are adopted in the pleasure-grounds; in which case the effect of such a group as that in our engraving would be perfectly consistent in the situation proposed, and would have the additional advantage of seeming to extend the area of the ornamental grounds to some distance beyond their real limits. This last advantage is far from being either an illegitimate or unimportant one, as the restricted space of most of our gardens renders it necessary that, in the art of laying them out, the smallness of their extent should be concealed by skilful arrangements.

H. N. H.

LANDSCAPE TREATMENT OF RAILWAYS.

I know that it is the habit of many who control large estates adjoining railways to ignore, so far as possible, this iron neighbour, and to make all their plans of improvement with a contemptuous disregard of the travelling observers, who count by thousands, considering only the few who look on from the old high-road, or those, still fewer, who have the privilege of the grounds. It is his duty so to illustrate them as to make them command the acceptance of the multitude. He has no right to ignore the onlook of the world, and be careless if the world condemns or approves.

A high railway embankment traversing the low lands of a country estate, if at a good remove from the homestead, is not so awkward a matter to deal with as might at first be supposed. A few years of well-tended growth in a forest screen may be made to exclude it altogether; but care should be taken lest such screen, by its uniformity, should present the same tame outlines with the embankment itself. To avoid this the woody plantation should flow down in little promontories of shrubbery upon the flat; it should have its open bays upon the embankment itself, disclosing at intervals a glimpse of the passing trains; and, above all, the bridge or culvert, which keeps good the water-courses of the land, should be distinctly indicated, and might have its simple decorative features.

All this, if picturesque effect only is aimed at: but if it be desirable to utilize such monster embankment, it may be remembered that its shelter, if looking to the south, would almost create a summer climate of its own, and would make admirable lee for the forcing-houses of the gardeners, and for the growth of whatever plants or vegetables crave the first heats of the spring sun.

If, on the other hand, such embankment flank the north, its shadow will offer capital nursery ground for the rhododendrons, ivies, and all such plants as are impatient of the free blast of the sun.

And, after all, if these happy accidents of position and opportunity did not favour such special culture, it should be the duty and the pride of the true artist in land-work to ascertain what other growths would be promoted by exceptional disturbances of surface. The finest and highest triumphs in landscape art are wrought out in dealing with portentous features of ugliness, and so unleashing them with the harmonies of a given plan as to extort admiration.

The railway, with its present bald embankments and its baldness of all sorts, is a prominent feature in many of our suburban landscapes. It cannot be ignored, and the study must be to harmonize its sweep of level line, its barren slopes, its ugly scars, its deep cuttings, with the order and grace of our fields and homes. Rains and weather stains and wild growths are doing somewhat to mend the harshness; but a little artistic handling of its screening foliage, and adroit seizure of the opportunities furnished for special culture, will quicken the work. And it is to this end that I have thrown out these hints upon so novel a subject as that of railway landscape gardening.

D. G. Mitchell.

Water.—If the improver will recur to the most beautiful small natural lake within his reach, he will have a subject to study, and an example to copy well worthy of imitation. If he examines minutely and carefully such a body of water, with all its accompaniments, he will find that it is not only delightfully wooded and overshadowed by a variety of vegetation of all heights, from the low sedge that grows on its margin to the tall tree that bends its branches over its limpid wave, but he will also perceive a striking peculiarity in its irregular outline. This, he will observe, is neither round, square, oblong, nor any modification of these regular figures, but full of bays and projections, sinuosities, and recesses of various forms and sizes, sometimes bold, reaching a considerable way out into the body of the lake; at others, smaller and more varied in shape and connection. In the height of the banks, too, he will probably observe considerable variety; at some places the shore will steal gently and gradually away from the level of the water, while at others it will rise suddenly and abruptly in banks more or less steep, irregular, and rugged; rocks and stones, covered with mosses, will here and there jut out from the banks, or lie along the margin of the water, and the whole scene will be full of interest from the variety, intricacy, and beauty of the various parts. If he will

accurately note in his mind all these varied forms, their separate outlines, the way in which they blend into one another, and connect themselves together, and the effect which, surrounding the water they produce as a whole, he will have some tolerably correct idea of the way in which an artificial lake ought to be formed. Let him go still further now in imagination, and suppose the banks of this natural lake, without being otherwise altered, entirely denuded of grass, shrubs, trees, and verdure of every description, remaining characterized only by their original form and outline. This will give him a more complete view of the method in which his labours must commence; for uncouth and apparently misshapen as those banks are, and must be when raw and unclothed, to exhibit all their variety and play of light and shadow when verdant and complete, so also must the original form of the banks and margin of the piece of artificial water—in order finally to assume the beautiful or picturesque—be made to assume outlines equally rough and harsh in their raw and incomplete state.—A. J. Downing.

THE FRUIT-GARDEN.

NEW PEAR.—BEURRE LUIZET.

THE fruit of which the following is an outline ripened on the 8th of November last year. In shape it may be said to be acute pyriform, somewhat one-sided, rather ventricose at the base, and bent at the top. Skin, clear, greenish-yellow, finely dotted and streaked with russet, with veins and patches of a lighter russet about the stalk, and covered with beautiful vermilion on the sunny side. Stalk, rather long, and swollen at both ends, obliquely set on the



Beurre Luizet.

surface of the fruit. Eye, large and wide open, and set in an even shallow basin. Flesh, compact, white, fine, and melting, without grit at the core. Juice, abundant, sparkling, rich, sugary, and slightly acidulated, with a delicious *beurre* flavour.

This variety grows freely upon the quince, bears abundantly, and forms very handsome pyramids. It was raised by M. Luizet, a nurseryman at Ecully; bore its first fruit in 1856, and was sent out about 1860. I imported it in 1865, and have found it to be one of our best Christmas pears. It keeps well, and ripens in succession, a

valuable property, as it prolongs the time during which it can be enjoyed.

As with all pears worked upon the quince, the stock should be planted an inch or two under the surface, a practice which will contribute greatly to the health of the trees. The quince stock is exceedingly fond of half-rotted stable manure, a plentiful supply of which should be annually laid over or slightly forked in about the roots. Pears on quinces are, like roses, fond of being occasionally lifted and replanted, an operation which invigorates them.

J. SCOTT.

ORCHARD HOUSES.

THE future of gardening will be more and more under glass. This was the opinion I formed when the duty was first taken off glass. How confirmed one's opinion is now! Is it not ridiculous to suppose that people who can afford to grow fruit at all, that is to say, choice fruit, will be content to pursue plans of culture which must often result in failure? I remember, some thirty years since, walking with an old lady of the old school round her garden in spring, and seeing all her peaches carefully covered up with canvas to protect the blossoms from frost, and hearing her remark, "Is it not absurd to go to all this expense? why, I do not get peaches fit to eat more than once in four or five years." Was it not Dr. Johnson who said he only once had as many peaches as he could eat? There are many favoured places in the south of England where it is worth while to grow peaches on walls; but in the vast majority of places it would be much more sensible to plant pears. Few people know the value of pears. Instead of planting the finest varieties on south and west walls, we find them on north and east aspects, where few can ripen that are worth a wall, whilst the best situations are taken up by unprofitable peaches and nectarines. In our uncertain climate all tender fruit must be grown under glass, if we are to be at all certain of a crop, or care for quality. A rose may be a rose by whatever name you call it, but a peach with about the flavour of a white turnip is not worth calling a peach. If it be determined to build glass houses for fruit culture, the next consideration will be of what form they shall be built. The idea that strikes most persons is to cover their walls by building what are called lean-to houses. For very early vineries this may be advisable, but not for stone fruit. I never found a house cost less, if you took the number of square feet covered into account, when built against a wall than when erected away from a wall. It is impossible to provide the same ventilation in a lean-to house as you can in a double-roofed house, and trees will fail sometimes against a wall to set their fruit, whilst those planted in the same house in the front of the sashes will be full of fruit. In every respect I prefer a double-roofed house; and if it saves nothing, why spoil your pear walls? Is it advisable to heat orchard houses? After nearly twenty years' experience, I say, yes, if you want a certainty as to a crop, and are anxious for the best quality procurable. At the same time if circumstances forbid the expense, I would still say, to any one south of the Trent at any rate, glass without heat is far better than any wall without glass.

Chilwell.

J. B. PEARSON.

ORANGE CULTURE.

As the cultivation of the orange as a dessert fruit is again exciting some attention, it has occurred to me that the reproduction of the subjoined paper, read before the Horticultural Society of London so long back as March 13, 1820, might not be without interest. For many years I had models of the fruit to which the paper relates, and I have now before me a drawing of two China oranges, girthing thirteen and a half inches, and weighing one pound each. These were grown in 1818, and I have the authority of the late Mr. Donald Munro, so many years curator of the Society's gardens, expressed but a short time before his death, that the collection of the *Citrus* tribe shown by my late father in that year was the best that had ever been exhibited before the Society. The collection consisted of fourteen species or varieties, a handsome dish of each. These were grown in the garden of J. M. Mundy, Esq., at Shipley, near Derby, where at that time the regular supply of oranges for dessert was regarded in the same business view as that of peaches, grapes, or pine-apples. For refined and elegant appearance upon the table, nothing can be more desirable than oranges cut with two or three leaves adhering, and sometimes with a spray of bloom.

Oranges at Shipley were a speciality: my earliest lessons in the garden being taken in gathering their blossoms for conserves and distillation; and I can confidently affirm that, in a half century's wanderings, I have never seen them nearly so well-grown as they were there. They were managed as follows:— W. P. AYRES.

The greenhouse in which they were grown at Shipley was forty-nine feet long and seventeen feet wide, with a glazed sashed roof, sloping to the south; the back and sides were solid walls; the front was nine feet and a half high, and had glazed folding-doors, the intervals between which were filled with fixed glazed sashes. The floor was stone pavement, and the house was warmed by a flue built on arches, and carried under the pavement near to the front glass, the heated air being admitted through ventilators from a narrow air-chamber adjoining the flue. The back wall, on the inside, was eighteen feet high, and that, as well as the sides were covered with a trellis, the openings of which were six inches square. Adjoining the back wall, at even distances from each other, were six holes in the pavement, each two feet square. In these were growing trees in the following order:—1, a lemon; 2, a China orange; 3, a lemon; 4, a citron; 5, a Seville orange; 6, a lemon. They were planted young, in a border under the pavement, and their branches were trained to the trellis. Citron trees were planted in the same manner against the west side; and these were trained to the trellis at the two sides respectively. Besides the above eight trees, there were twenty-two in tubs, seventeen of which were brought from Malta; they were small when planted, but they grew finely, and the fruits they produced were excellent, both as regards size and flavour. In addition to these trees in tubs, other greenhouse plants in pots were kept in the house in the winter season. The conservatory was some thirty-two feet long; and was divided longitudinally into three borders; the back border was three feet eight inches wide, and its level was elevated three feet above the other part of the house by means of a wall which supported it. A paved walk, some two feet wide, was carried over the border, so that only about one foot of it, next the wall, was exposed to view; in this border, at even distances, were planted one lime and three lemon trees; the lemons were of my own working. The centre border was thirteen feet broad; in it were planted, in a double row, four in each row, at even distances, eight trees, viz.: two standard China oranges, one dwarf China orange, three Seville, and two Maltese oranges; these last were young plants; the other six trees were all in a bearing state. In the front border, which was only four feet wide, these trees were planted in 1818—one was a China orange, three years old from the bud, and the two others were lemons. This house was also used for the growth of grapes; vines were planted in the front of it, on the outside, and were introduced through holes in the walls. The trees in each of the tree borders of the conservatory were trained in different ways. Those in the back were fastened to a trellis against the wall. The trees in the centre had their branches in part secured to a row of stakes set along the front and sides of the borders, at even distances from other supports, being so placed as to allow the branches to be spread evenly over the border, thus exposing the first to sun and light, and also producing a beautiful effect. In the front border the trees were trained flat on a horizontal trellis, after the manner of peach-trees, the trellis being two feet from the ground.

Both in the greenhouse and conservatory the borders were filled at the time the trees were planted with a compost made as follows: To twelve barrowfuls of strong, turfy loam, were added six of good rotten dung, and three of vegetable mould; these were properly incorporated six months previously to being used, and were then put into the borders. [This, no doubt, was the orthodox method of preparing composts in those days, and was described accordingly; but I have reason to know that the compost was used quite fresh, that it fermented moderately, and maintained a gentle bottom heat for several months after the trees were planted. This fact my father, in after life, when bottom heat became better understood, regarded as a potent element of success; and no doubt he was right.] After I had planted both houses, having a few old trees in tubs and pots which were not in good health, I was induced to try the effect of a richer compost, and I also applied to them waterings of liquid manure. The sickling trees thus treated were restored to health in twelve months, and as they made fine fruitful wood, I was so satisfied with my new compost and manure water, that I determined to use them in future with all my other plants, whether in borders or in tubs or pots. I have applied them in the manner hereafter detailed, and the beneficial effects resulting from their use have exceeded my expectations, not only in the vigour and richness of the wood and foliage, but in the abundance, size, and flavour of the fruit. The compost in question was formed of ten parts (a wheelbarrowful being my usual integral quantity) of strong turf loam, seven of pigeons' dung, seven of garbage from the dog kennel or butcher's yard, seven of sheep dung, seven of horse dung, and ten of vegetable mould; these were mixed together twelve months previous to use. The manure water consisted of three wheelbarrowfuls of cow droppings fresh from the pasture field, two of fresh sheep's dung, and two pecks of quicklime thrown into a hoghead of soft water, the mixture being frequently stirred for a week or ten days before it was used, and when applied to the plants ought to have about the consistence of cream. By the usual mode of managing orange and similar trees in greenhouses, however fine the plants, they only serve the purpose of ornament, and are otherwise useless, never producing fruit fit for the table. This arises from gardeners taking these trees out of the house when they put out their greenhouse plants for the summer; whereas, they ought to keep them under cover the whole season, availing themselves of the removal of the other plants to give them the peculiar treatment necessary to bring them into bearing. Oranges and similar trees require little warmth in winter; I therefore never suffered my house to rise above 50 degs. by means of fire heat until the end of February or the beginning of March, when the trees, if in good health, will begin to show blossom; fire heat should then be increased, say to 55 degs.; but the houses ought not to be warmed above 65 degs. at this time even by sun heat, the excess of which must be checked by the admission of air; and indeed the more air the trees have during the time of blossoming, the more certain will be the crop of fruit. I washed my trees with a hand syringe about twice a week in winter, advantage being taken in cold weather of the middle of the day for that work. In summer they were syringed in the morning every day, and when in blossom a rose was used having holes so small that they would not admit a fine needle to pass through them. As soon as the fruit was set I began to water at the roots with the manure water above described, giving more or less according to discretion, and they had no other water during summer, except what little fell from their leaves after syringing.

Early in June the greenhouse plants were set out of doors for the summer, and I then began to force the orange trees, by keeping the heat up as near as possible to 75 degs. for I do not consider that either citron, oranges, lemons, or limes can be grown fine and good with less heat. Whilst this forcing was going on, particular attention was paid to watering. In June I also gave the trees, whether in borders or in pots or tubs, a top dressing of the rich compost already mentioned, an application which was of the greatest benefit in assisting them to swell their fruit. The surface soil was moved with a small hand fork, taking care not to disturb the roots—all the loose earth was then removed down to the roots and

replaced with the compost, an operation to which I attributed much of my success in producing such fine and abundant crops.

With respect to pruning, early in February the more unpromising branches were cut away to make room for younger and more productive wood, and if the trees afterwards grew very strongly, the shoots were shortened according to their strength in the same way as peach-trees are shortened. Some nicety is required in thinning and arranging the crop. When the fruits are about the size of green-gages it is proper to thin them. Two fruits should never be left together, for they would neither be fine nor well formed, the quantity left to ripen should also depend on the age and strength of the tree. The thinnings being without pulp when of the size mentioned above, are much esteemed by confectioners and make excellent preserves.

The fruit which I exhibited to the Society was part of the produce of 1818, which was particularly great that year, nineteen of the older trees yielding two hundred and seventy-eight dozen of ripe fruit, being nearly fifteen dozen on an average to each tree. The citron tree in the greenhouse bore eight dozen, each citron measuring from fourteen inches and a half to sixteen inches and a half in circumference; three China orange trees, viz.: one in the greenhouse and two in the conservatory, had sixty dozen of fruit, some of which measured thirteen inches round. Six Seville orange trees, viz.: one in the greenhouse, three in the conservatory, and two in tubs, bore one hundred and forty dozen of fruit. Seven lemon trees, viz.: three in the conservatory, three in the greenhouse, and one in a tub, had fifty dozen of fruit, and from two lime trees, in tubs, twenty dozen of fruit were obtained.

NOTES AND QUESTIONS ON THE FRUIT-GARDEN.

Peach Trade in America.—The transmission of peaches over the Delaware Railroad, in a single day, amounted to ninety-eight car-loads for New York, and twenty for this city.—*Philadelphia Paper*. [The car-load alluded to is a large railway waggon].

Apricot Disease.—Is the Moor Park more liable to this than any other kind? and is there any remedy? My trees of the Moor Park have suffered much. **RECROX.**—[It is an unfortunate disease, for which no reason nor remedy has yet been found. The Moor Park is the kind most subject to it. At Frogmore they have removed many trees and planted seedlings in their stead, and as yet the result is satisfactory.]

Remarkably Prolific Apricot Tree.—A Breda apricot tree, growing in the garden of Arundel Castle, in the year 1838, covering about one thousand superficial feet of wall, which had been planted about seventy years, had the following enormous crop:—Ripe fruit gathered, August 15th, 450; 20th, 600; 24th, 240; 28th, 744; 30th, 900; September 2nd, 72; 11th, 168; destroyed by wasps, &c., 648. Ripe fruit, 3,852. Thinned for tarts, &c., when unripe, 13,885. Total, 17,707.

Vertical Cordons Pears.—Will you kindly tell me how to form these, commencing with maiden trees?—**NORTH WALES.**—[Nothing is simpler. The leading shoot of the maiden tree will usually grow erect, and, beyond stopping the side shoots in summer, at five or six joints from the base of the current year's growth, there is scarcely anything more to be done. Cutting back the shoot annually is usually practised; but it is not really necessary, except when the leading shoot is a weak or mutilated one.]

Fruit-Trees for growing against an Oak Fence.—What fruits would you recommend for growing against an oak fence seven feet high, there being one hundred and thirty feet each of east and west aspect, and one hundred feet north aspect? The garden is on the chalk, at Sutton, in Surrey.—**F. H.**—[On the west aspect plant ten trees: 6 Pears, viz., 2 Marie Louise, 2 Glou Moreau, 2 Beurré Rance; 2 Moorpark or Peach Apricots; 1 Maydunke and 1 Elton Cherry. On the east aspect put 6 pears: 1 Fondante d'Automne, 2 Louise Bonne de Jersey, 2 William's Bon Chrétien, 1 Beurré Bosc; 4 Plums: 1 Denyer's Victoria, 1 Prince Engleboot, 1 Autumn Compôte, 1 Jefferson. Against the north aspect plant Morello Cherries and Red and Black Currants.—**Ed.**]

Best Fruit for a Small Garden.—Will you or any of your correspondents tell me the best kinds of hardy fruits for a cottage-garden in the Midland Counties? **F. L.**—[We should recommend the following:—Six Kitchen Apples: Lord Suffield, Spencer's Favourite, Selina, Blenheim Orange, Wellington, Northern Greening.—Six Dessert Apples: Red Astrachan, Eve Apple, Cox's Orange Pippin, Sturmer Pippin, Kedleston Pippin. Court pendu Plat.—Six Dessert Pears: Beurré de Capiaumont, Beurré Diel, Beurré Superfin, Beurré Clairgaut, Suffolk Thorn, Winter Nelis.—Six Plums: Chapman's Prince of Wales, Denyer's Victoria, Jefferson, Green Gage, Wine Sour, Prune Damson.—Gooseberries: Rumbullion, Warrington, Yellow Champagne, Green Gage, Roaring Lion, Crown Bob, Whitesmith, Overall. Currants: Black Naples, White Dutch, Red Grape, Ruby Castle.—Strawberries: Dr. Hogg, Sir J. Paxton, Sir C. Napier, La Constante, President, Frogmore Late Pine.]

Preservation of Fruit-Buds.—Buds must now be pickled, if you wish to keep them; birds are on the wing with sharp, hungry beaks, intent on devouring those of gooseberries and plums chiefly, but also any other plump sorts should these fail. The best remedy against any such depredations is pickling with soot. This acts as a deterrent; after a taste of fresh soot they turn up their beaks, singing a curious note of disappointment, sounding something like, "Did you ever?" and at once take wing, in search of sweeter food. The sight and smell of soot ever afterwards is enough, and it is a remedy which is cheap, and easily applied. On one of these foggy mornings, when Queen Gossamer reigns in structural beauty over everything, out with dry soot, and dust each dropping bough and bud. The soot will stick, and the work is done. If heavy rain dash it off, or dry weather or high winds sweep the buds clean, renew the pickling. It does the trees or bushes no harm. On the contrary, it is good manure for the roots, and it saves the buds.—**D. T. F.**

Strawberries in Autumn.—The best strawberry for autumn fruiting with me is Patrick's Seedling, which produces a good crop, and the flavour and appearance are both good. The next best as to productiveness is one of which I have lost the name; it is a very distinct variety, but not so hardy as the former, and cannot be relied on after the end of September, except the season is warm. Another that produces fruit with the least trouble is Sir Walter Scott; but it is pale and soft, though of good flavour in autumn. Swainstone's Seedling is good as to crop and flavour, but pale and soft. Black Prince is *fine* in colour, and not very small. The most hardy of all is May Queen; I have had this within a week of Christmas, but unless thoroughly ripe it is acid, and it is, moreover, small compared with others. The time to keep them in a cool frame as a period of rest must be regulated according to the time they are required in fruit—from one month to four, or nearly as much; but it is not practicable to tell within a week or more when the fruit will be ripe. We have gathered about twenty-five quarts (1½ lbs. to the quart) since about the third week in August. Those, however, who wish to grow a regular crop *must* provide some means of

protection from rain and frost in October and November, such as that afforded by spare lights. It is not absolutely necessary to have forced strawberry plants for securing this autumn crop of fruit. It may be done in the following way:—Having the borders some four feet or five feet wide, about the proper fruiting time, or sooner if the season is more than ordinarily wet, place some spare lights over the plants, and by this means, and by removing all the fruit before it is ripe, give them their period of rest. Do not keep the lights over them except the day is wet (which also I ought to have stated above), for this will cause a current of air over the plants. Withhold water from them till they are wanted to be started into growth, except they should be actually dying for the want of it. Or some may be grown in pots, as for early forcing, and these are much more manageable, as they can be removed from place to place as desired, and in autumn can be carried to an orchard-house, or even the back or front of a greenhouse, where they will get abundance of light and air. It will be found that forced plants will not do for pots, as they will give but a very poor crop. Since November I have gathered some twenty-five quarts, and there are still fruits in all stages of growth, but the frost has affected those not covered.—*George Lee, Cleveport, in "Florist and Pomologist."*

The Cherry Plum (*Prunus myrobalana*).—With such a pretty homely name, one would be justified in supposing this a common plant, whereas it is not by any means so, though it deserves universal cultivation, for two reasons: 1st. It is the earliest of ornamental flowering trees. Before a single tree in the orchard or garden shows a flower, it is a snowy mass, looking as conspicuous in its lonely beauty as a white-sailed clipper on a dark sea. The flowers are sweet-scented, a little more than three-quarters of an inch across, white, with a brush of yellow stamens in the centre, and produced abundantly all over the tree. 2ndly. Its fruit is edible, and it is worthy of cultivation for that alone. On this point Mr. A. F. Barron says: "When at Burghley Park Gardens, Stamford, I observed several good-sized trees of this pretty little plum, quite heavily laden with fruit. I was informed that it was very much used by the Marquis of Exeter's family, when quite ripe, for dessert, but principally for tarts, for which purpose it was greatly esteemed and more relished than the Morello cherry, which it somewhat resembles. The fruit is also used for bottling and for preserving, like other plums and cherries. Through its habit of early flowering, however, we generally lose the fruit by frosts, except in unusually open seasons, and in some favoured situations, as at Burghley, which is high and dry. The tree is of slender growth, but attains a great size—from thirty to forty feet; the leaves are very small and rounded; fruit, medium sized, of a slightly oval shape, its colour pale red, with a long slender stalk like a cherry. Indeed, when gathered, a dish of them more nearly resembles one of red cherries than of plums. The flesh is yellowish, sweet with a slight acidity, and juicy. Ripe early in July, but will hang on the trees a long time. It has many synonyms, as Early Scarlet, Miser Plum, Virginian Cherry, Roblet, &c." Enough has been said, we trust, to show that it ought to be made as common in our gardens and pleasure-grounds as the red Hawthorn. If in some low situations it fails to set its fruit, its early bloom will please, even if the cold rains whiten with it the winter-beaten grass.

PUBLIC GARDENS.

PARKS AND PUBLIC GARDENS IN AMERICA.

(Continued from page 46.)

I WAS much disappointed with Philadelphia, which, though a large, wealthy, and, in many respects, a very interesting city, is very oppressive in the monotony of its long, straight streets. In many of the streets here, too, the house-sewage passes to the gutters through little channels cut in the footway. In hot weather this is anything but a satisfactory arrangement, and it looks more like what one would find in an Irish town awakening to a sense of improvement than in the city of brotherly love. There is a square here planted with the native trees of America, many of them old specimens; but, as usual, they were planted just as if in a dense wood, and with the usual result. They did not add much beauty to the place, nor fully develop their own; nor could they be advantageously seen. But here, again, once out of the town, and in the magnificent Fairmount Park, the visitor is at once struck with the splendid and spirited way in which public parks are made in America. Imagine a piece of ground, stretching back from the margin of a broad winding river with picturesque and rocky banks, 3,000 acres in extent, and boldly and beautifully diversified in all parts! If this park be wisely treated in the natural manner, and all the money and thought spent upon it devoted to embellishing it with hardy trees and other subjects that thrive in the region, it will surpass anything we know of; but if it falls into the hands of those who, instead of enriching it with natural beauty, go far to remove all traces of that by making the beautiful surface geometrical here and there; by constructing expensive fountains and costly bridges; by statuary, &c.—in a word, by denaturalising it—it will be a great misfortune for public gardening. Here, too, there is a wonderful cemetery, hundreds of acres in extent, on beautifully diversified ground; and clean, well kept, and well planted. In this cemetery I gathered specimens of a beautiful *Gordonia*, a shrub with fragrant white flowers, something like those of *Magnolia glauca*; and the whole was in effect a vast and well-kept garden.

Of Baltimore I have the same story to tell: a vast public park, as sweetly diversified as a bit of Switzerland, and commanding noble views of the surrounding country. Here, too, I

saw the trail of the serpent just alluded to, in the shape of two long lines of ponderous vases, ranged along a short drive near the entrance, all of the same pattern, looking like stone sentries keeping the streets. If the Baltimoreans let that sort of thing go on, Nature will soon become quite subordinate to the stone-cutter or the stucco-moulder in their beautiful park.

Boston is, to my mind, more agreeably laid out than any other large American city. The streets are not rigidly rectangular, as is generally the case, but are more like those of an English city, and certainly cleaner than those of any of the other large eastern cities. It has an immense advantage, too, in being cut up by very broad salt-water boulevards. Boston Common, which all have heard of, does not, to the stranger, seem an attractive spot, and a public garden formed on one part of it is, to our mind, as ill-looking a pattern as man ever designed for his delight. There is no breadth and no repose in it, but a dotting-about of beds and borders everywhere, and a piece of water in the centre appears to have been designed from the pattern that would result from placing three fiddles with their necks together, and then tracing a mark around them. It will be apparent what I mean—a hybrid between the geometrical and the natural form of fountain basin; the whole surrounded by a vertical margin of stone. But I hear Boston, like many other cities in the States, is thinking of a new park, and I doubt not that it will be worthy of her status among American cities. Here I noticed a very desirable kind of wide street between two rows of houses, having a belt of grass in the centre, with trees and shrubs and flowers, the roads passing on each side of this and between the central strips of grass and garden and the houses. Here, too, is a beautiful cemetery—Mount Auburn. In this, as in other large American cemeteries, a pleasing and, to a stranger, a novel way of naming the paths, walks, and rides through the cemetery, is in use. Thus, we see "Cowslip Path," "Lavender Path," "Primrose Walk," "Oak Avenue," and so on through quite a catalogue of names—mostly pretty English names. Some of the paths, however, are unfortunate in their names, *Pelargonium*, *Cratægus*, &c.; but let us hope that these dreadful ones were only discovered after all the English names of flowers and trees had been exhausted.

Unfortunate Chicago, before the fire one of America's great cities, and in Europe reputed to be the great city of the West, by some unhappy mistake often called the "garden city," is not a nice place. It is large and thriving, but the situation is very low, and its surface not broken up by the grand rivers and estuaries that sweep through the great cities of the eastern coast. Looking over its surface from a high building, it is more suggestive of Chelsea or the flats of Rotherhithe than of Manhattan or Boston Harbour. There are a few fine streets, and some hundreds not fine; and there is a tremendous population of rats that hive under the wooden footways. Here, too, the sweet practice of leaving the garbage in the gutter for many days prevails, and some of the streets are long enough for a pilgrimage. The city is on the margin of the great sea-like and clear Lake Michigan. One would think they would welcome its glassy surface and sweet air, as in no other part near does Nature come to speak to them, so to say. Not so: they throw their rubbish into it, and drive dirty railway waggons along its shores, and in various similar ways shut it out from the view of the town. Here at least two parks are in course of construction by, we believe, Mr. Olmsted, the designer of the Central Park at New York, a gentleman excellently qualified for the work, and who has the broadest and truest notions of the most essential things in public gardening. In connection with these parks, fine tree-planted boulevards are being made to connect one park with another, and to open up, in an effective manner, parts of the suburbs which will one day, no doubt, be densely covered with houses.

Washington, the capital, is well and boldly laid out; the streets magnificent in breadth, and frequently well planted with trees, though much remains to be done in this way. With streets 100 feet wide, you may plant trees without darkening the windows. The situation of and the views from the city are very fine, and there is not a little interest for the horticulturist here, in consequence of this being the head-quarters of the Agricultural Department.

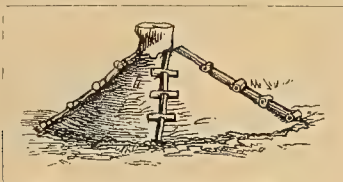
THE SQUARES OF LONDON.

(Continued from page 85.)

THE gardening in our squares is of a peculiarly lugubrious description, and of a style quite apart. Hardy subjects are not made a study of, and the bedding plants with which the country is ablaze in many parts are rarely seen. Year after year the same tone of slimy melancholiness is assiduously preserved. The trees crowd upon each other, and only those that tower above all, and assert their beauty and dignity in spite of the gardener, are seen to advantage. Any flowers planted usually soon perish in the solemn shade. The walks, generally designed so as to cut through and destroy the prettiest spots in the square, appear to receive most attention, but it is sometimes shared by the ugly, high, and elaborate seats piled round the bases of the beautiful trees so as to interfere with the effect of their stems as seen across the lawn. All the necessary seats, as well as tool-houses and arbours, should be placed near or towards the sides, where they would be useful without being obtrusive. It is quite easy to place all such objectionable features so that while as convenient as if piled up in the centre, they shall not be objectionable from any point of view.

The gardeners of the squares are a mysterious, not at all understood race. Occasionally, an individual may be seen emerging from a public-house in the near neighbourhood, pipe in mouth, and presently, gaoler-like, unlocking the gates of his gloomy retreat and disappearing within its shade. That is all we know of him, so we will pass him by for the present. Any beauty our squares possess is independent of their designers or care-takers. All present nearly the same dead level of feeble monotony. An idea, however, has been carried out in Golden Square, so original that it deserves an illustration, which will also save verbal description. The materials employed have all the merit of simplicity—earth, old drain-tiles, and a chopping-block! If it be too much to hope for a system which would beautify our squares, may we not pray for a public inspector with power to remove any objects that make them resemble the playgrounds of lunatic asylums?

The best feature of the London squares are their noble trees. Driving or walking through the north-western districts you frequently come upon Planes which would command admiration in the



Bed in Golden Square, July 13, 1870.

largest forests. Huddled together, at first, with a number of miscellaneous trees, these, thanks to their splendid constitutions and noble stature, towered above the masses of overcrowded shrubs around them, and spread forth their grand old boughs so freely that each tree seemed as if it wished to fill up the square. Free from disease, regardless of dust, asleep, but how very beautiful in sleep! When the multitudinous fires are active around them in winter, these glorious trees give us in our dreary waste a glimpse of the beauty of the grand wild woods. And let it not be thought that the Plane is the only tree that would thrive perfectly in our squares, even in the most smoky and crowded parts. It would take a list longer than this article to enumerate all the beautiful deciduous trees and shrubs that grow in the temperate and colder regions of the world, and the great majority of which would do perfectly well in our London squares, if properly planted and attended to. It would be perfectly easy, even with our present knowledge, to select as many beautiful trees that would thrive in the squares of London, as would represent in them the brake and forest beauty of every important cold region in America, Europe, or Asia. To select such trees and shrubs, and plant them so as to secure to each a due amount of light and air for its development, would prove a very desirable occupation for those interested in our squares.

The few kinds that have raised their heads above their fellows eloquently tell the advantage of paying chief attention to the planting of hardy trees. Here, for instance, is a peep into Lincoln's Inn Fields, which may help to show some of their beauty. This square, fortunately, is not cut off from public view on all sides by miserable masses of Privet and crowded Lilacs, and here and there isolated trees are seen that would be remarkable around our finest and oldest country seats.

It is utterly impossible to give an idea of the islets of lovely and brilliant flowers into which our squares could be made by this plan.

The system of planting evergreens should, on the other hand, be discontinued, except in the case of a few kinds in suburban and open squares. The best plan would be, with all the evergreens annually purchased for London planting, to make a gigantic bonfire on the 5th of November every year. Many of them being of a resinous nature, would afford the boys a very satisfactory blaze. We should in this way effect two objects—save our squares from being defiled by the soot-begrimed dying evergreens, and quickly spend at the same time the



View in Lincoln's Inn Fields, June 1870

large sum of money which people will persist in throwing away on evergreens every year.

One noteworthy way of producing variety would be the devoting of one square to the trees and shrubs of a particular country; one, for example, might have British trees and shrubs alone, another American trees, another Chinese and Japanese trees and shrubs, and so on. The greatest improvement that could be effected in the London squares would be the intelligent planting of hardy trees and shrubs; an improvement, moreover, which could be carried out at a comparatively small cost. It would be permanent, too; and permanence in these matters simply means saving of constant trouble and expense. But there is no reason whatever why the squares should be devoted to hardy trees and shrubs alone. On the contrary, the best way would be to allow much latitude, so as to secure variety. When our municipal bodies begin to understand the management of city gardens, one of the first principles they will discover is that each square and small garden should differ as much as possible from



View into a properly arranged Square.

its neighbours. Some of the suburban squares might be devoted to that evergreen vegetation which cannot be grown in the central parts; some in all parts might be gaily decorated with bedding and fine-foliaged plants; others chiefly with hardy border and spring flowers; one might even be devoted chiefly to rock plants, and so on. But nothing of this kind could be attempted unless all or most of the squares were under one responsible head, who could determine what was best to do in each case, and select a man acquainted with the

special branch to carry it out as well as possible. As arranged at present, all the squares are managed almost exactly alike. How to unite them under one responsible and efficient chief or department, it is not my object to point out; at present it may be impossible to do so; but assuredly we shall never know how much our squares are capable of pleasing and instructing us till a reform of this kind is effected.

Of the opening of most of our squares to the public I have said little, but those who have seen the happy crowds who frequent the sparkling little squares in Paris, will probably consider this an important aspect of the question. Private interests and public prejudice may be against it now, and may long continue so, but I have no doubt that in the interest of all it is the true plan. It will yet, I trust, be adopted in all parts of London, as the advantages enjoyed by those who "possess keys" are surely not such as need prevent their offering the boon in question to the poorer inhabitants, many of whom, perhaps, seldom have an opportunity of seeing more of nature than is visible in the streets of London. Once devoted to public use, and under intelligent supervision, a modest allowance from the public purse would suffice to convert the squares into some of the most beautiful gardens that ever refreshed the spirits of man. They would save many from the attractions of the public-houses, which are now permitted to flaunt their destructive allurements at every corner. No part of a city should be without places where persons might meet and talk and rest in the open air. In Continental cities, what with the seats along the tree-planted boulevards and squares, this is quite possible; but how very different in London! With us men are literally driven to the public-house; and public-houses necessarily with us assume an importance unexampled in any other country—forming, indeed, the chief feature in our street scenery. The squares would also, even if they did nothing else, help to save the nation of London children from the gutter. An important subject in connection with squares and city gardens is that of playgrounds. No system of city gardening can be good which does not meet this want. It is not enough to have open spaces or beautiful little gardens; we should keep the children from the filth and dangers of the crowded streets. The best way, in the case of all large cities, is to have, as far as possible, squares or open spaces arranged as playgrounds alone. These should, as a rule, be planted with large trees, so that nothing could interfere with the sport below. This plan would have the effect of drawing off the most frolicsome and noisy elements from the garden squares, leaving them quiet, and almost free from danger of damage. As a rule, no playground should be made in a garden square. The smaller class of square would do best as playgrounds, and there are not unfrequently in large cities open spaces which, by a trifling expense, might be made into recreation grounds of this kind.

The numerous old cemeteries in all parts of London would, if properly embellished, prove as useful as any squares of similar size; and some of the large suburban cemeteries, now so much surrounded by London that they must soon be closed, would make excellent public gardens. To no other use should they be put, and it is in nearly all cases quite practicable to make old cemeteries into pleasant city gardens without displacing the monuments, and thereby destroying the associations of the spot. All such places should be religiously preserved for ever to the public.

Since writing the above, I have visited most of the great cities in the United States. They have few squares, and those very badly arranged, and I am more than ever convinced of several things—first, that London is even now better provided with squares than any other large city; secondly, that these squares are managed so as to conceal any beauty of which they are capable; thirdly, that, by a system, some of the main features of which I have endeavoured to indicate, these squares might be made beautiful in themselves, and have the most beneficial effects on the aspect of many parts of London. — *British Almanack and Companion*.

A Winter Garden in Rome.—Among the various improvements likely to take place in the Eternal City as a consequence of the cessation of sacerdotal rule is the creation of a winter-garden in its centre. Attached to the garden there is to be a magnificent theatre, and also a *café* and a grand arena for open-air performances and concerts. It is somewhat strange (though some may think otherwise) that no recent improvements of this kind have been originated in Rome by the Papal Government; the creation of the noble Piazza del Popolo and the beautiful promenades of the Pincian Hill having been suggested and carried into execution during the French occupation at the beginning of the present century. As Palms, Camellias, Agaves, and other beautiful plants which cannot contend with the severity of our British frosts, will bear the comparatively mild winter of Rome with but little injury, the projected winter-garden may be made highly picturesque and attractive. A December walk in the Villa Borghesi, which is one of the pleasures of Rome, is

sufficient evidence of the fine effects that may be produced by judicious planting. The groves of evergreens, and the early springing up of Cyclamens on the grassy slopes of the Villa Borghesi, render that promenade a very delightful one to strangers, who, in such places fully realise all those dreams of the beauty of Italian scenery and the softness of the Italian climate which are, in too many respects, so sadly disappointing. H. N. H.

NOTES AND QUESTIONS ON PUBLIC GARDENS.

Want of Plan in London.—Mr. Lowe has been thrashing another deputation. East London has got a park—Victoria Park—and wants to enlarge it. The Government, however, had advanced the money for the park on condition of being recouped out of the sale of certain reserved lots, and is accordingly selling them for building purposes. A deputation of East Londoners, headed by Mr. Reed, on Saturday fortnight waited on Mr. Lowe, asking him to suspend the sales; but he refused, describing the facts, and declaring that if East London wanted the land East London must pay for it. The statute was clear, and England cannot pay for East London. The argument is unanswerable; but Mr. Lowe forgets that it is not the fault of London, but of the country at large, that it is without the institutions which every other city enjoys, which create municipal feeling and elicit local liberality. Nobody does or can bequeath a fortune to East London, as he might to any city with a decent constitution. We believe the failure of successive Cabinets to organise London costs the metropolis half a million a year in legacies and gifts alone.—*Spectator*.

Hampstead Heath.—Mr. Le Breton, the chairman of the Parks and Open Spaces Committee of the Metropolitan Board of Works, writes to the *Times* that the brief report of his speech at the meeting of the Board which appeared in that paper of Saturday week does not convey the full effect of the remarks which he made with regard to Hampstead Heath. What he then stated was that the Act of Parliament for the preservation of the heath required the Board to maintain that open space as nearly as possible in its present state and natural aspect, and to drain, level, and improve where wanted. He said that it especially was the duty of that body to repair the mischief which had been done by digging and removing sand and turf, to restore the herbage, fern, gorse, heather, and broom, to plant judiciously, and generally to endeavour to bring back the heath to the beautiful wild condition in which it was some years since. Mr. Le Breton adds that persons unacquainted with the provisions of the Act desire that the heath should be laid out as a park; but, even if this were allowable under the statute, he doubts whether it would meet with general approval. The purchase of the heath, owing to some legal difficulties, was only completed at the end of last month, and no time has been lost by its present owners in taking measures for the protection of the trees, some of which are in danger of falling, obtaining plans for drainage where wanted, and generally doing all that is necessary for restoring the heath to its former state, and for improving and preserving it.

Desecration of City Graveyards.—Are we not becoming too much accustomed to the idea that anything, however sacred, may be turned into money? Is not this the case with regard to burial-grounds? They fetch a large sum and they disappear. After the Great Fire of London care appears to have been taken in rebuilding the City to reserve in the main the burial-grounds of the parishes in which the churches themselves were not rebuilt. They are dotted as green spots all over the City, as many must often have observed. When the present extensive buildings of the Bank of England were erected, one whole parish was swallowed up. It was generally understood that its churchyard was respected, and is represented by the pleasant open garden court which gives such cheerfulness to the offices around it. St. Clement Danes' parish appears to view the subject in another light, and makes short work of the matter. Some years ago one of its burial-grounds, situate in Portugal Street, was disposed of for the site of part of King's College Hospital, and all trace of its former use has now disappeared. We have just heard that it has parted with another of its burial-grounds, adjoining Clement's Inn, for the site of a portion of the New Law Courts. One burial-ground, its principal one, in the middle of which the church of St. Clement Danes' stands, still remains to the parish. An effort is being made, in connection with the Law Courts, to induce the parishioners to sell this also. Can we hope, after what has been done, that they will be proof against it? I trust we may. Sites can be got without invading these small churchyards, which have been bought over and over again by those who lie in them.—*W. Butterfield, in "Times."*

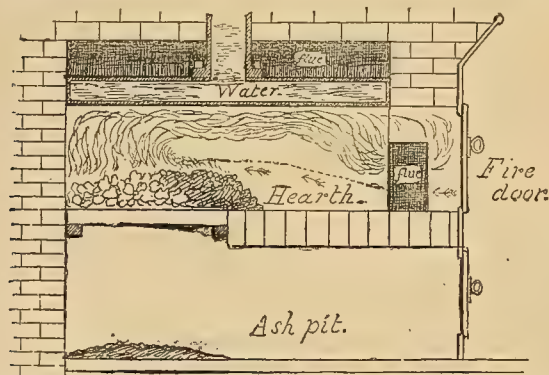
Watering Roads.—Some idea of what might be done by improved management is given in a report drawn up by the chief surveyor of St. Pancras, and laid before the vestry of that parish at its last meeting, on the subject of "street watering." In 1856 the surveyor, Mr. Scott, had a diary of a water-cart kept during a week in the height of the watering season, and he found that through an average working day of 10½ hours (exclusive of the intervals for breakfast and dinner) the time of the cart was thus occupied:—Filling at the stand-post, 1 hour 20 minutes; distributing water on the roads, 50 minutes; travelling to spread the water and back to the stand-post, to and fro, 8 hours 7 minutes. Since that year additional stand-posts have been established, and from observations taken in 1864 and again in 1867 Mr. Scott finds the following results:—Filling, 2 hours; distributing, 1 hour and 30 minutes; travelling to and fro, 6 hours 30 minutes. This, however, is a favourable average; as, where only one cart works from a stand-post, so that there is no loss of time by waiting, the maximum time occupied in filling is but 2 hours 10 minutes. As the distributing will occupy only about 1 hour 36 minutes, the time occupied in travelling to and fro is 6 hours 14 minutes under the most favourable circumstances. It may, therefore, be taken that only one-fifth of the working day is occupied by filling, about one-seventh in spreading the water, and about two-thirds of the day in travelling to and fro. By additional water-posts it has been reduced nearly to the minimum under the existing arrangements, and no further economy can be effected without a complete alteration of the system. A change proposed by Mr. Scott is the adoption of a water-van that will hold 450 gallons, instead of the ordinary water-cart, that holds about 220 gallons. This water-van, he alleges, will be in every way an improvement upon the water-cart, which does not distribute the water equally over the surface, and by reason of the height of the distributor from the ground causes a cloud of dust to arise (whenever the weather is hot and the surface dry) from the force with which the water falls upon the road. The van, holding 450 gallons of water, will occupy nine minutes in filling and six minutes in spreading the water, but it will only occupy three hours and fifteen minutes in travelling to and fro, so that in seven hours it will accomplish as much work as the present water-cart effects in ten hours. By substituting 50 of these vans for the 71 water-carts which during the watering season are employed in St. Pancras, Mr. Scott estimates that a total saving of nearly £1,000 a year will be the result, and that a great improvement will be effected in the method by which the roads are at present watered.

A Warning.—God grant that the very sight of the calamity with which we have stood face to face may fall out in some valiant, practical resolve, which may benefit this whole nation, and join all hearts as the heart of one man to do that which is pointed to by plain and terrible facts—that, as far as we have power, no man, woman, or child in Britain, be he prince or be he beggar, shall die henceforth of preventable disease. Let us repent of, and amend that scandalous neglect of the well known laws of health and cleanliness which destroys thousands of lives yearly in this kingdom without need or reason, in defiance alike of science, of humanity, and of our Christian profession. Two hundred thousand persons, I am told, have died of preventable fever since the Prince Consort's death a few years ago. Is that not a national sin and needless disease, by striking once at the very highest, shall bring home to us the often-told, seldom-heeded fact, that this same disease is striking perpetually at hundreds among the very lowest whom we leave to sicken and die in dens unfit for men, unfit for dogs—if this illness shall awaken all loyal citizens to demand, and to enforce, as a duty to their Sovereign, their country, and their God, a sanitary reform in town and country, immediate, wholesale, imperative—if it shall awaken the ministers of religion to preach that, till there is not a fever alley or a malarious ditch left in any British city—then indeed his fair and precious life will not have been imperilled in vain, and generations yet unborn will bless the memory of a Prince who sickened as poor men sicken, and all but died as poor men die, that his example—and it may be hereafter his exertions—might deliver the poor from dirt, disease, and death.—*Canon Kingsley.*

GARDEN STRUCTURES.

A NEW MODE OF SETTING THE SADDLE BOILER.

As saddle boilers are usually set they require attention every two or three hours, and, indeed, the length of time during which boilers generally will last without fuel is a point on which too little thought has hitherto been bestowed. In my case my aim has been to set my saddle boiler so as to lose as little heat as possible. As it is usually fixed the flames rush out at the further end, curl round the flues, and avoid the sides of the boiler. My plan has been to distribute the flames as is done in warming a brick oven, and to place the fuel in such a way that any cold air which might find its way through the bare grate should not reach the sides of the boiler. This is effected by lowering the flue opening, a principle always observed in the construction of the splendid furnaces which may be seen in the manufacturing districts. When the flue opening is thus lowered, the hottest air cannot escape until it has parted with its heat. But the great point is to have the flue to come out at the door end, thus completely avoiding that through rush of air so universally experienced in the old way of setting this boiler; while



in my plan the cold air, running over the fuel, assists in its combustion, after which it rises and floats thoroughly heated under the boiler top.

My saddle boiler, set in the old way, produced feeble results on account of the defects just pointed out, and the constant influx of cold air through the door, which cannot be kept out however well the door is fitted; but when I altered the setting of it I had no further trouble. The pipes under the new arrangement always remain hot for ten or twelve hours together. The accompanying woodcut will illustrate what I have been doing. It will be seen that the grate is made smaller, and that it is confined to the back end, while the dark aperture close to the door will be recognized as the outlet of the flue; the further end being bricked up so as to leave the boiler space like a small oven. Under such circumstances the flue may go down the sides and over the top of the boiler in the usual manner; but, let it be observed, that the top never heats; therefore the flue may as well go right away and leave the top uncovered.

In stoking, let the hot fuel be at the back and the cool in front, as seen in the representation. Below the dotted line the air is cold, and the direction it takes is shown by little arrows; the directions of the flames will indicate the hot air currents.

If I were setting a saddle boiler, I should carry the flues straight

back to the right and left of the boiler, then unite them at the further end, and put a damper vertically down into the flue. This would retain the hot air completely, but if the damper is up the chimney, the heat will accumulate there also. Fire ascends, and therefore your boiler ought to be higher than the flue and damper.

The Cedars, Chiswick.

A. DAWSON.

NOTES AND QUESTIONS ON GARDEN STRUCTURES.

Hot-Water Apparatus.—Now that so many buildings are heated by hot-water apparatus I beg to offer a few remarks upon their preservation. 1. The water used for filling them should be only rain water, which will prevent the boilers furring for many years. 2. The water should be changed each year, it being run off quickly as possible, so as to carry all sediment with it. 3. Where the boilers are of cast-iron, the upper or furnace door should never be opened until after having nearly closed the damper in the chimney, so as to prevent any sudden rush of cold air into the furnace. A sudden rush of cold air in severe frosty weather across a hot cast-iron boiler is very likely to crack it—particularly the bottom ring of a tubular boiler: and although a hot-water engineer and boiler-maker, I like to see all work last out its fair time.—*Daral Campbell, in "Builder."*

How to Heat a Small Conservatory Free of Cost.—A few years ago a friend of mine bought a house, one of a row; it contained two sitting-rooms on the ground floor—one to the front, the other to the back. In summer the back room was unfit for habitation, owing to the heat caused by a closed range in the wall which separated it from the kitchen of the adjoining house. This suggested to me an idea which has been carried out successfully. In planning a new villa, I placed the kitchen fireplace in the west gable; the space behind the range was left open, and against this was built a conservatory, 14 feet by 8 feet. The open space behind the range is furnished with a wooden door, over which, in the thickness of the wall, is formed an air-flue, having a damper. By shutting the door and opening the damper, the heat from the range is carried off, and *vice versa*. This contrivance may not suit those who wish to maintain a high state of temperature in the conservatory during winter, but a heat sufficient to protect plants from frost, and to cause some to flower during that season, can be maintained *free of cost*.—S., in "*Builder*."—[Another correspondent of the same paper says (assuming the kitchen fire to be out at ten o'clock at night) that by this plan the conservatory would be found to be quite cold in the morning, when a little warmth would be most desirable, and suggests the following as a more efficacious means of heating such structures:—"Use the waste heat from the kitchen during the day to heat a reservoir of water, say sixty to one hundred gallons. This can be raised to boiling point in about two hours, and all the ordinary kitchen operations going on just the same; then pass the air over the reservoir and out to the conservatory. The mass of water will retain its heat nearly intact until morning, and thus do effectually what is attempted."]

Roof Gardens.—But where is the space? may be asked. So may be asked, where is the space for a garden in an uncared-for forest? The space for gardens in a city is equal to that of the whole city, less the streets and passages; in short, it is the whole space occupied by the buildings. So then the buildings are to be cleared away to convert the whole city into a garden? Not so, only the roofs of the buildings. . . . Is it impossible to make flat and permanent roofs—roofs permanent as a foot-pavement? I think, nay, I'm sure, it is not a difficult operation, if set about with common sense. We have for ages made flat roofs to ships at sea—I mean the decks. Planks nailed down side by side are caulked with tarred or pitched hemp. The planks are wet naturally in some climates and artificially in others, and their constant swelling keeps the joints tight. We put wine and liquors into barrels—the wine swells the staves and the liquor does not run out. We put wine and liquors into stone bottles, and we cork the opening with an elastic cork—the cork swells and the liquor does not run out. The difference between these arrangements and that of the flat roofs that let in water is, that in the one case the materials are elastic, in the others brittle. For many years past a valuable building material has been in use—slate, sawn or cut into large tables of any required size, from half an inch to three or four inches in thickness. If we suppose four walls to be built up in a square, and overlaid with a solid table of this slate, projecting a foot beyond the walls, and with a descending edge to prevent water running underneath to the walls, it is evident that nothing short of a Swiss flood descending the Rhine, and rising upwards, could get access by way of the roof. But we can't get slates so large. No; but we can get very large slates, and we can put them together so as to be water-tight. How? As we joint wine-bottles with corks, cork the edges of the slates in grooves. They will be very long corks doubtless, but they will be very efficient, and will last a very long time, and can be very easily replaced if needful, without the slightest difficulty of access, and at a very trifling cost. So now we have got a really flat roof with a slope, say of half an inch to the yard, to lead away the rain water, and overhanging the wall, with a cornice all round and a parapet six inches in height, to prevent rain from falling over or into the street. On this parapet is an ornamental railing to prevent accidents. Thus there is a flat pavement on the house-top, as flat as the foot-pavement in the street below. The slates are laid on rafters of iron or wood—or iron and wood, the edges being kept together by iron dogs. But the slates are only an inch in thickness, and are exposed to heat and cold. Well, the rain and the snow will not affect them, for the cork provides against that. . . . And now as to the cost. This kind of roof, once in demand, would be cheaper than ordinary roofs in first cost and immeasurably cheaper in maintenance. The roof would be at least as permanent as the walls. The system awaits only the riddance of smoke for open-air purposes, but for green-house purposes it might be accomplished to-morrow. Every separate house in a row might at once possess what is at present the peculiar luxury of people who happen to possess corner houses. If a London builder about to erect a row of four-roomed cottages were to adopt such a system, it would be equivalent to adding another story as a garden to each house, with the same outlay and without increasing ground-rent. If at the same time he could arrange his fires to prevent them engendering smoke, and carry water on to the roof, he would provide for the operation of washing and drying without slops in the house. But we must get the Legislature at work to compel smokeless arrangements in dwellings as well as in factories. Looking back in these pages, they seem so unusual as to read like a romance. Gardens on our house-tops! Babylonian luxuries! But I am nothing if not practical. And, for my own part, I shall feel greatly obliged to any critic who will demonstrate to me that any part of this proposition is either not practical, or not practicable; in short, not a matter of pounds, shillings, and pence, by which landlords may reap profits and tenants reap a large amount of comfort and health.—*All the Year Round.*

THE PROPAGATOR.

THE ART OF GRAFTING.

"You see, sweet maid, we marry
A gentle scion to the wildest stock;
And make conceive a bark of baser kind
By bud of nobler race; this is an art
Which does mend nature: changes it rather: but
The art is nature.—SHAKESPEARE.

DEFINITION OF GRAFTING.—Grafting is an operation which consists in uniting a plant, or a portion of a plant, to another which will support it, and furnish it with a part of the nutriment necessary for its growth. The plant which receives the graft should be furnished with roots; it is destined to draw nutriment from the soil, and transmit it to the part grafted. It is called the stock. We shall mention a few exceptions where the stock is a simple cutting without roots; but it is planted in such a manner as to be soon furnished with them. The other plant, or portion of plant, which is grafted on the stock should have at least one shoot or eye, and be in good condition—that is, neither withered, nor mouldy, nor decayed, nor wet. It is called the graft or scion; it is analogous to a cutting in communication with the soil, and continues its normal growth through the intervention of the stock. Notwithstanding the intimate union of the stock and the graft, they preserve their individual character and constitution distinct: their layers of wood and bark continue to be developed without the fibres and vessels of one converging with those of the other. It is, as it were, a federative union which leaves to the interested parties their independence. Not unfrequently the union of the grafted pieces suffers a clean severance at the point of contact, either in consequence of the weight of the branches, the violence of the wind, or some other casualty. However, the parts thus broken may be used again, either as stocks or grafts, just as before. Almost all dicotyledonous plants may be grafted. Up to the present the monocotyledonous plants have been tried without success. Their structure does not present the least capacity for the adhesion of the parts when put together; and without this intimate union, grafting is impossible.

OBJECT OF GRAFTING.—The object of grafting is—1st. To change the character of a plant, by modifying the wood, the foliage, or the fruit which it was required to produce. 2nd. To excite the development of branches, flowers, or fruit on the parts of a tree where they were deficient. 3rd. To restore a defective or exhausted tree by the transfusion of the fresh sap of a vigorous kind. 4th. To bring together on the same stem the two sexes of monoecious plants, in order to facilitate their reproduction. 5th. To preserve and propagate a great number of woody or herbaceous plants for use or ornament, which could not be reproduced by any other means of multiplication. Without grafting, our orchards would not contain such rich collections of fruits for all seasons; our forests would be without a large number of important kinds of trees; and we should not experience the pleasure of seeing in our parks such a brilliant array of native and exotic shrubs. There remains one more observation to be made in favour of grafting, that is that the plant, or rather fragment of plant, grafted on another preserves its original qualities and characteristic properties. It will produce branches close or spreading, leaves purple or silvery, flowers white or rose coloured, fruit large or small, early or late, exactly resembling the variety from which it was taken, and without being influenced by the neighbourhood of, or contact with, several similar kinds grouped on the same stock. We could also quote instances of plants which, when grafted, grow more vigorously than when on their own roots. If it is considered that grafting is easy to be practised, that it involves only a trifling degree of bodily exertion, and develops a love for gardening, it will be allowed that it is both a useful and an agreeable operation.

CONDITIONS OF SUCCESS.—In grafting, a great deal of the success depends on the skill of the operator. The other conditions essential to success are affinity in the species, vigour of stock and graft, the condition of their sap, their intimate union, the season and temperature. C. BALTET.

(To be continued.)

THE KITCHEN-GARDEN.

POT CULTURE OF THE TOMATO.

MANY objections have been urged against this mode of growing tomatoes; but owing to the changeableness of our climate, uniform success need not be expected out of doors. It has been asserted that plants in pots would be infested with red spider, but with plenty of water applied to both root and top, that little pest may be kept from ever getting a footing.

Ripe fruits may be had by the end of April by sowing in the previous autumn, and keeping the plants growing on steadily in a pine-stove or cucumber-house, allowing a rather limited quantity of fruit to remain on each plant. To have them by the end of May, seeds should be sown in the beginning of January. The young plants soon come up in a genial temperature, like that of a cucumber-house, and a six-inch pot will be large enough to admit of a good many being raised; a friable loam is a good soil for them during their earlier stages, afterwards they may have a compost consisting of four parts turfy loam and one part stable manure with a few quarter-inch bones incorporated with them. Tomatoes require to be potted very firmly, burying from a quarter to half an inch of the stem at each repotting. But little drainage is needed, and three, five, nine, and eleven, or thirteen-inch pots are the sizes required for the different shiftings. The pots get filled with roots very quickly, from nine days to three weeks at the most being long enough between the shifts. When put into their fruiting-pots leave a space of one-and-a-half or two inches at top for surface dressings of equal parts loam and dung, to which may be added a little bone dust. Liquid manure should be given as soon as the roots find their way out of the bottom of the pots, watering with it every time the plants are dry, until the fruit begins to ripen, when it should be exchanged for clear water. If grown in melon-houses under as much light as can be given them, the plants make rapid progress, and when the fruit begins to change colour they may be removed to a cool-house. It is necessary to pinch the shoots just above the fruit, so as to keep the plants "stocky" and dwarf. About thirty tomatoes is a plentiful crop for one plant; nothing is gained by leaving too many. After the early fruit has been gathered the plants may be placed in a cold frame, keeping up a genial temperature by husbanding sun heat, and paying attention as before to stopping the shoots; remove also all decaying leaves, and water constantly with liquid manure, giving a slight top dressing about once a fortnight. When the soil gets higher than the rim of the pot, arrange it so as to form a sort of basin for the reception of water. Under this treatment, a large quantity of fine tomatoes may be had from a dozen plants in eleven or thirteen-inch pots. In warm seasons, they would doubtless do well plunged at the foot of a south wall, where they should be mulched and kept well watered. I find the Improved Dwarf Orangefield best for pot culture. Goliath produces large and handsome fruit, but it is too robust for pots. Of Defiance I have no personal experience, but it is said to be very suitable for this purpose, being dwarf and remarkably prolific.

Ilford.

R. P. B.

PROTECTION OF BROCCOLI.

Though broccolies vary very considerably in their powers of resisting cold, but few or any of them can be warranted zero-proof or anything like it. Already the frost has nearly reached that point in some localities, and but for its night-cap of snow, much broccoli would have been wrecked. As it happens, I believe most of it has escaped. But frosts equally or more severe are probably in store for us, and as we cannot command the snow to come to our aid, it will be wise to be well provided with protecting material. True, it is almost impossible to find one to equal snow in potency and efficiency. But that is no reason why we should not use the best materials within our reach. Among these may be enumerated asparagus tops, dry bracken, and clean straw. The first are the best. If cut before they are dead-ripe and kept in a dry place until wanted, and then laid lightly over the crowns of the broccoli, it is astonishing how much frost they will keep off. Each delicate spray shuts two doors against the loss of heat, and the material is so light that it cannot injure the plants protected. The common bracken is almost equally good as a protection, possessing the characteristics of lightness in an almost equal degree. Both these protectors are likewise difficult of displacement by winds. So much cannot be said of straw—the first wind is almost sure to displace it. Being composed of single rods, as it were, it has likewise a great tendency to drop between the plants. For these reasons it should only be employed when the others cannot be had. Some use boughs of Spruce Fir or branches of evergreen shrubs. They will keep off frost, but they bring other evils, such as the dropping of the needle-like leaves of the former into the broccoli, and the flavouring of it with laurel or other leaves. Still, with these

drawbacks, boughs are good protection against frost. But every gardener grows asparagus, and if the tops are carefully preserved, enough will mostly be found to shelter the whole stock of broccoli from the rigours of winter to such a degree as to carry this most valuable crop safely through.

D. T. F.

NOTES AND QUESTIONS ON KITCHEN-GARDENING.

Fennel.—The common Fennel of our gardens (*Foeniculum vulgare*) was formerly much cultivated in America; and in the early days of New England it was the custom of old ladies to carry sprigs of it to meetings, to keep them awake during long sermons. This practice is not yet entirely obsolete; and, in the more primitive portions of the country, the patch of fennel may still be seen, and the meeting-house is redolent of its odours. Another use for the plant was found by those who kept bees, who were in the habit of rubbing the inside of the hive with it at swarming-time, under the impression that the odour would attract them to their new domicile. It is sometimes smoked like tobacco, as a remedy for colic. In classic times the fennel was held in great esteem. Pliny tells us that it was so much used in the kitchen, that few meats were seasoned, or dishes served up, without it. The modern Italians still cultivate it as a salad herb; but it has not found much favour in England in this capacity. Phillips, however, states that it eats very tender and crisp when earthed up as celery, which should be done at least fourteen days before it is used. The same author, referring to the old superstition that snakes were very fond of fennel, and cleared their eyes with its juice, says that he planted it on a bank in his shrubbery where he had frequently seen snakes, and frequently found the stalks wounded and eaten nearly half through, although the reptiles, whom he supposed to have been the offenders, were never caught in *flagrante delicto*. The evidence seems to us scarcely strong enough to convict the snakes as the culprits.

How to Grow Good Horse-Radish.—Any out-of-the-way corner it is generally thought will suit Horse-Radish, but my plan is to put it in one of the best quarters of the garden. The following is the way in which I plant it every year, and for four years in succession on the same piece of ground. I trench the ground two feet deep, giving it at the same time plenty of rotten stable manure. I then form some four-foot beds, like those for onions, slightly treading them. Between the beds I make alleys about eighteen inches wide and four inches deep. Then I go to my old Horse-Radish bed and take the roots all up. The thickest pieces I save for present use; the next size I secure for plants for my new beds, selecting for this purpose roots as long and straight as possible. With the back of my pruning-knife I clear all the fibres off them, and with a long smooth planting-stick make holes sideways in the beds in such a way as to leave the ends of the roots under ground the same depth as the tops, say three inches, planting about one foot apart. This should be done in November, and in spring all the tops will break out from the sides of the beds; the roots will have four feet of space to grow in, and by planting sideways plants for another year can be readily secured. In this way I have grown in one year a single stick of Horse-radish twenty inches long and six inches round from a very slender root.—*THURSTON SOUTHWORTH, Castle Head Gardens, Grange, North Lancashire.*—[We have never seen Horse-Radish grown in the way just described; but straight clean sticks of it have been produced as follows:—The ground, a light black sandy soil, was manured and deeply trenched. Dibber-holes, in rows, were then made in it, some fifteen inches deep, and into these were dropped crowns from old roots, the holes being left open. Thus treated, we have seen sticks produced in one season as thick, but, if we recollect rightly, scarcely so long, as that named by our correspondent.]

THE AMATEUR'S REMEMBRANCER.

In-Door Department.—However wintery the weather may be it is surprising how much floral beauty may be had in-doors even at this season, if, in addition to a little conservatory or greenhouse, there is a forcing-pit, heated by hot water and furnished with a bark bed in which to plunge the pots. In this, bulbous plants may be brought into flower at any time, and among these must not be forgotten that sweet-scented, beautiful little plant, the Roman Hyacinth. Of that universal favourite, too, the Lily of the Valley, there can scarcely be too many. Another charming plant that will stand gentle forcing well is *Luculia gratissima*, the great Hydrangea-like clusters of blossoms of which rank among the most fragrant of Christmas flowers. Roses and similar shrubs should also be brought forward in succession. Start some Vines in pots, in order to get a few bunches of early Grapes. For Cucumbers maintain a moist, growing temperature of from 60 degrees to 70 degrees, or even a little more in the middle of the day, and water occasionally with weak liquid manure. Sea-kale and Rhubarb may now be pushed slowly into growth; but do not follow the old-fashioned way of covering them with heaps of leaves and manure out of doors. Take up the roots, place them in a covered box for example, and bring them forward in a little warmth. Both Sea-kale, Rhubarb, and Chicory may be forced and blanched in this way.

Flower-Garden and Shrubberies.—Where the latter are so planted that the shrubs flow over on to the turf, little attention in the way of cleaning will be required, and this is the way all shrubberies should be arranged. Shrubs encroaching too much on one another, or running out too far over the grass, may now be pruned in. Keep walks clean and neat. Choice beds of Tulips and other bulbs should be protected with mats or other means from frost. For the coral garnished branches and spray of Hollies there is now great demand for weaving into wreaths and other tasteful devices for house decoration, and those who keep a few evergreens in pots, plunged in some out-of-the-way corner, for the ornamentation of entrance-halls, windows, &c., will be busy getting them up and dressed for that purpose. Among these should be some of the gold and silver Hollies, which are very effective by gaslight. Little groups of Holly, with different coloured leaves, intermixed with dwarf Firs, *Laurustinus*, *Skimmias*, *Aucubas*, especially such as have been induced to bear fruit, Laurels and Box associate nicely with statuary, and add life and interest to niches, recesses, and other places in which they may be placed. In warmer positions such beautiful berry-bearing plants as the different varieties of *Solanum*

Capsicastrum, *Ardiasias*, some of the new Japanese *Aucubas*, and dwarf Orange trees might be used with advantage, especially if intermixed with bright-leaved *Dracenas*, and such plants as *Poinsettia pulcherrima*, the great scarlet bracts of which are very brilliant and striking. With materials such as these, and cut flowers for table ornament arranged according to the directions given by our tasteful correspondent, "W. T.," our homes need require little more in the way of Christmas decoration.

Fruit and Kitchen Garden.—Pruning and nailing must be proceeded with whenever the weather is very favourable for such work. Finish up planting of all kinds, and throw up vacant ground rough, to be acted on by frost. If not already done, lay down broccolies with their heads to the north, or take them up wholly with balls, and replant thickly in some sheltered place, covering, during severe weather, with light, dry pea haulm, fern, or boughs of evergreens, a protection which should also be applied to such as have been left in their growing quarters. Give air on all favourable occasions to young cauliflowers in shallow frames, or under hand-glasses or cloches, to stand the winter. Carrots sown late, to draw young, should receive some slight protection on the occurrence of frost. Lettuces and Endive should also be protected under temporary frames. Clear autumn-sown onions some dry day from weeds, and sift some dry earth amongst them. In frosty weather, wheel out manure to quarters where it will hereafter be wanted.

J. M.

OBITUARY.

DR. BERTHOLD SEEMANN.

THIS distinguished botanist and traveller died at the Javali Mine, Nicaragua, on the 10th of October last, at the early age of forty-seven. He was an intrepid traveller, and had assisted in explorations in many parts of the world. Although lately much engaged with important mining concerns in Central America, he was none the less enthusiastic botanist and collector, and quite recently our gardens have been greatly enriched through his efforts. Dr. Seemann was born at Hanover, in the year 1825. After receiving an excellent education in the Lyceum of his native city, he obtained the degree of Doctor of Philosophy at the University of Göttingen, and was appointed, in 1846, naturalist on board her Majesty's ship *Herald*, in which capacity he made a voyage round the world, and three cruises to the Arctic regions in search of Sir John Franklin. He next dared to face—and faced with success—the perils of scientific investigation in the South Sea Islands and in the dismal swamps of Central America, while at the same time he edited the solitary English scientific "Journal of Botany" and the "Flora Vitiensis," which latter he just lived to complete. As a scientific writer Dr. Seemann was widely known by his "Narrative of the Voyage of H.M.S. *Herald*," published in 1853; "A Popular History of Palms," in 1855; "The Botany of the Voyage of H.M.S. *Herald*," in 1857; "Viti—an Account of a Government Mission to the Viti, or Fiji Islands," in 1862; "Popular Nomenclature of the American Flora;" "Paradisus Vindobonensis;" "Twenty-Four Views of the Coast and Islands of the Pacific;" and "Dottings on the Roadside in Panama, Nicaragua, and Mosquito," written in collaboration with Captain Bedford Pim, and published in 1869. Dr. Seemann was also a frequent contributor to the leading scientific journals of London and editor of the "Bonplandia." He was likewise a Fellow of the Linnean Society of London and Vice-President of the Imperial German Academy *Naturæ Curiosorum*. We deeply regret the loss, in the prime of his life, of such an energetic and accomplished naturalist.

The French Horticultural Relief Fund.—It has been determined to transmit all the moneys collected for this fund to M. Rivière and some of his colleagues, for distribution as they may think best. This seems to us the best course to pursue under the circumstances, as the sum collected (£540, or thereabouts) can alleviate but a few of the most pressing cases, and these are best known to the French gentlemen entrusted with the distribution of the fund. The losses are estimated at something like £105,000; let us, therefore, hope that British sympathy will be exerted more heartily in behalf of the sufferers before the subscription list is finally closed.

Crystal Palace Company.—At the annual meeting which took place the other day, it was stated that the past year had been a satisfactory one. The average yearly attendance during the last eighteen years, it was said, amounted to 1,659,000, whilst last year the number was no less than 2,120,000, or the highest number that had ever visited the Palace in any one year. The total earnings for the year amounted to £139,330, and the expenditure to £96,028. After providing for debentures and preference stocks the balance would be sufficient to pay 2 per cent., and still leave a margin; but, upon maturely considering the subject, the directors felt it to be their duty strongly to advise the meeting to accept the smaller rate of 1½ per cent. The outlay for permanent repairs had already been very heavy, for in the past year alone not less than £15,000 was so expended, or an increase of £3,324. And they had been advised by their engineer that there were other repairs, especially the renewal of the roof, which would not bear delay, and must be done if the company would keep the building in a safe and sound condition. The expense on that account, therefore, in the coming year was not likely to be less than in the past. The aquarium, it was mentioned, paid a small rent. Since its opening it had been visited by more than 40,000 persons, and the receipts were upwards of £1,200, which encouraged the hope of still greater success in the future. Another new source of revenue was the establishment of a curling pond, the entire expense of making which was borne by the Curling Club. It was suggested that some restriction should be placed upon the issue of free passes, which last year reached the enormous number of 100,000.

THE GARDEN.

"This is an art
Which does mend nature: changes it rather: but
THE ART IS NATURE."—*Shakespeare.*

All communications for the Editorial Department should be addressed to WILLIAM ROBINSON, "THE GARDEN" OFFICE, 37, Southampton Street, Covent Garden, London, W.C. All letters referring to Subscriptions, Advertisements, and other business matters, should be addressed to THE PUBLISHER.

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EVERLASTING FLOWERS.

(THE RHODANTHES.)

THESE interesting subjects deserve a better fate than usually befalls them. Many lovely things deserve the name, but they are so badly grown or so badly selected and arranged that the very name must be offensive to many sensitive persons. The close-fitting bundles sent from Germany are cases in point. They often contain flowers, too, that have no real claim to the term "everlasting." The most evident mistake made by those who gather and preserve everlasting flowers is their neglect either to gather or properly preserve the loveliest of all everlasting flowers—the different varieties of *Rhodanthe*.

If cut at the right time, the whole plant retains its fulness and beauty, and the flowers that pure but delicate rosy tint, till *Rhodanthes* are fit to gather again the following autumn. By that time, if not protected by a glass, the flowers are often obscured by dust. All the *Rhodanthes* are what is called "half-hardy annuals," requiring some such treatment as follows: Sow in March or April on a gentle hot-bed, or in a close frame without bottom heat, the latter mode succeeding perfectly, unless the seeds are sown too early in the season; they may even be sown in the open borders at the end of April or beginning of May, but will not then flower so early. It matters very little about the *Rhodanthe* flowering early, but it is of the greatest importance that it should flower well; and this may be as well attained by sowing it on a warm light and sandy border the first week in May as by any other means. Cover the seeds with about one-eighth of an inch of fine sandy soil, and take a little more pains with the sowing than is usual or necessary with annual flowers. But, to make sure of a crop, sow also some seed on a gentle hot-bed or common cold frame, to be planted out when an inch high. There are two or three beautiful congeners of this exquisite plant, all worth growing, though it can hardly be said that any of them is more beautiful than the old one; but if they only approached it, they would be valuable. One is called *maculata*, and is more robust, with larger flowers having a dark crimson ring round the centre; there is a pure white variety of this. Another is *atrosanguinea*, a new and distinct species, with dark eye. The most vigorous and beautiful plants are, however, raised under glass for greenhouse decoration, as described in *THE GARDEN* of December 16th, p. 73. If when they flower they are not cut, but allowed to seed away like the other annuals, they will, of course, soon perish; but if on any fine day about ten days after the first flowers begin to open, and when some are fully expanded—colour a lovely rose, with the back or outer portion of the drooping, bell-like flower gradually shaded off to silvery pink, through the little scales which make it look like the neck of a dove; some opening, and numerous pretty buds around those—then cut as much as you want (cut them off near the ground), and place them on a shelf in a dry room—a darkish room for choice. They will prove ornaments for "in-door decoration" which the artificial florist can never approach.

As to arrangement: well preserved *Rhodanthe* blooms with a few graceful ornamental grasses make a lovely composition, and far superior to any of the ugly hay-like bundles so much sold now, with dozens of kinds of flowers dyed and otherwise

jammed into them. The colour of the flowers of *Rhodanthe* is so exquisitely delicate and pretty, and so likely to invite close inspection, that it is desirable to place them under close bell-glasses, where they may remain unsoiled by dust. We know one little tuft of *Rhodanthe* garnished with a spray of most graceful grass (*Bromus brizæformis*) which was placed under a glass shade in 1865, and which now looks almost as well as ever.

PLANT LIFE IN TOWNS.

THE health of towns has become a hackneyed subject, but we seldom hear about the health of plants in towns. Yet the two are not only nearly correlated, but well-nigh identical. Were plants healthy, the inhabitants would probably be so likewise, and the obverse is true. Towns in or near to which plants refuse to thrive are also those most fatal to man. The primary foundations of health in both are heat, light, food, cleanliness, pure air, and suitable water. With the single exception of heat, which in the open air may be assumed to be nearly equal in town and country, it must be admitted that large towns imperil the purity, lessen the quantity, and interrupt the constancy of most if not all the other essentials of health. In many large towns the light of the sun is obscured for more than one-half its shining hours. Therefore, who can wonder at the pale faces which one finds among men, women, and children, and the shabby aspect of plants in towns? Heat is the great quickener, light the chief strengthener, of plants. They ever turn towards the light. The reason why so many die in dwelling-houses is that they have so little light. They linger, pine, and refuse to grow in many towns for the same reason. The pestilence that kills plants by thousands is bred of that semi-darkness which hangs as a death pall over so many of our smoke-capped cities. When that darkness flies before the rigid enforcement of a Smoke Prevention Act applied to every fire, then indeed will plants in towns rejoice, be clothed with new strength and adorned with fresh beauty.

Of the importance of food in sufficient quantity and of congenial quality little need be said. It is alike essential to plant life whether in town or country. Short rations mean weakness; unsuitable food breeds disease. The earth in its natural condition is one great storehouse of plant food. Not such earth, however, as is common to most towns—an "omnium gatherum" of all kinds of refuse. In such unsuitable root-runs, nevertheless, many town plants are expected to find their food. Is it any wonder that they fail? Plants in towns have many special trials to endure which we have little power to abate. But we can provide good earth, fully stocked with food, for their roots. Whether planted on the sides of our streets, in town squares, or in the open parks, every tree should have a space of the following dimensions wholly for its own use: It should measure ten or twelve feet across and four feet deep, and be stocked with the best maiden loam within reach; smaller shrubs and flowers to have provision made for their wants on the same liberal scale. Were this done at first planting we should have fewer complaints of town plants refusing to grow, becoming unhealthy, or actually perishing in so many instances.

Cleanliness is another grand essential to health—it is its parent, alike in the vegetable world and the animal kingdom. The best cure for dirt on plants is the water-hose overhead. Daily, or rather nightly soundings will keep them, in the dirtiest towns, tolerably clean. In public parks and town squares the whole of the gravel, even more than the grass, should be kept thoroughly watered, if plants are to be kept clean. Prevention is better, as well as much easier, than cure. The dust is laid on with more ease than washed off plants after it has been sown broadcast over them by the wind. If the streets and all paths are kept thoroughly watered, the great pest of dust, which works such disfigurement and injury among plants in towns, will be well-nigh abolished; and when that happy day arrives—as come it must, in the interests of plant life, if not in our own—when every chimney consumes its own smoke, town plants may remain as clean, or cleaner, than those in the country: for in the latter we cannot afford to water dusty roads, as is done in all large towns.

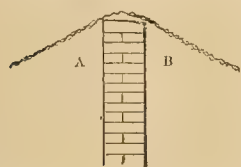
Finally, plants in towns suffer from lack of water. The air is fire-parched and smoke-dried, and the earth is often riddled like a sieve below, and made waterproof on the surface. Town trees are not only starved for lack of food, but literally shrivelled up for the want of suitable water. Drought above and below kills more plants in towns than all the other evils I have specified. The mischief is great; but the remedy is at hand. Water-pipes and sewers run full past the parched plants. Turn a stream of both on to these, and their health and strength will be established. If sewage is not accessible, clean water always is. It will be observed I use

the term "suitable water." All water is suitable but such as is very hard, or poisoned with mineral or chemical substances. Soap-suds is one of the best of applications to almost all plants; rain, or river water, is much better than that of springs. The secret of success in watering is thoroughness. To the roots, much and seldom must be our motto; to the tops, every day, or rather, every evening, if practicable, during dry weather. But these overhead showers must not be trusted to for watering the roots. The latter must have enough to drench them through to their lowest depths.

D. T. F.

Suburban Trees and their Destroyers.—Nothing has appeared in your columns in which I take more hearty interest than in your efforts to arouse public attention to the wretched condition of our London squares, and to what they might be made if properly managed, and also to the want of more trees for both shade and ornament on the principal thoroughfares leading from town to suburban districts. But there is another matter of even more importance than the planting and proper management of such trees as it is desirable to have, and that is, the preservation of those that already exist. London is rapidly absorbing on all sides what a few years ago were outlying districts. If its present rate of progress is continued, this generation will see many of the villages that are now situated half-a-dozen miles from the town properly so called, united to it by interminable lines of bricks and mortar, and, unless an effort is made to preserve the few trees that at present flank the main roads, the suburbs will soon be as leafless as the heart of the city. The road to Southgate is pronounced by all acquainted with it to be one of the prettiest round London. Many of the houses that fringe it are large and substantial, and are inhabited by well-to-do people. Such cottages as still remain are neat in themselves, and possess nice little well-kept front gardens, in which may be found, along with a host of other appropriate things, those universal favourites, the rose and the honeysuckle, revelling in luxuriant growth. Our local horticultural society has done much to stimulate small holders in this direction by offering prizes for the best kept gardens. The roadway is divided from the ample footpath by a broad margin of grass, on which stood a beautiful row of lime trees, which, judging from their appearance, must have been planted some fifty or sixty years ago. Apart from their stately look, these afforded a grateful shade to pedestrians. But now, I am sorry to say, they must be numbered with things of the past, the local board having within the last few weeks employed men to behold the whole of them some ten feet from the ground, leaving them hideous monuments of district mismanagement. After such vandalism as this, surely London wants a Haussmann, not only to rectify the blunders and shortcomings of times gone by, but to prevent such atrocities as that to which I have just alluded.—T. BAINES, *Southgate*.

How to keep Cats out of Town-Gardens.—Has anyone with a small garden in a densely-populated neighbourhood ever been troubled with cats? Has anyone had reason to observe that natural curiosity, that incarnate love of knowledge, which impels the feline race to search for it round the roots of freshly-planted specimens? Have finished beds borne witness to the infernal gambols *au clair de la lune*? I present a "perfect cure," or, what is better, prevention. The material is simple enough, and obtainable everywhere; it is



wire-netting. But how to apply it? At first I had it fixed on the tops of the walls and fences, thus raising them four feet all round the premises. Well, this answered for about an hour and a half, after which interval it was of no service whatever, apparently an attraction. Tabbies and tortoiseshells, tailed and tail-less alike, seemed to approve of and fall

into the arrangement readily. They also brought friends to see the novelty. Now, the grandest discoveries have ever been of the simplest character. By simply taking down the wire-netting and fastening it flat on the top of the wall or fence, like a coping, projecting two feet on each side—if it bend down by its own weight and form an angle so much the better—I have for now six months been able to defy all the assaults of the enemy. I have seen many a grimalkin, perched in a tree, with wistful eye "view the landscape o'er," but never yet has one managed to cross. It might be asked, Why have the wire on your own side too? Stop a bit; the foe may get in through a gate or window carelessly left open, and then, if anyone is fond of what our neighbours call *le sport*, if he admires feats of agility, he will wish to keep the intruder from getting out immediately. Let him close the gate and begin. To watch the pursued pass run or rather fly along up in the angle A, is a delight hardly to be surpassed, except by watching two! To see "the affrighted foe race round the walls and run to each avenue," will be vengeance enough without the whip,

with which, however, it is well to be armed, as I have found a cat in despair face about and attack dogs and children. Let this simple remedy be tried. I will answer for it that the angle B will keep any cat from getting in, and the angle A from getting out, until you choose to let it.—*Penumbra*, in "*Journal of Horticulture*."

TOWN TREES.

THE trees best fitted for street and square planting about large towns, where smoke and dust abound, are such as will look clean, shining, fresh, and flourishing, after every shower of rain. Their foliage, too, should be of beautiful shape, and change to various tints in autumn, mostly falling off all at once, instead of causing a continual litter on the occurrence of every puff of wind for weeks. They should, moreover, be such as will form a nice, pleasant, and variable summer shade, admitting freely light and air in winter. Nothing adds so much to the adornment of towns or villages as judicious tree planting by the side-walks of streets, waste corners, village greens, &c. Such embellishments give to cities an air of verdant beauty, which never fails to interest the casual visitor, and they comfort the inhabitants by their welcome shade during the heat of summer. But independently of the interest which they excite when budding out in the spring, in blossom, or in fruit, they soften and, in a measure, regulate the atmosphere, abating its excessive heat in summer and partially breaking heavy gales and storms.

The following, to some extent, embody these desiderata, and are well fitted for planting in large towns where much smoke, dust, fog, and darkness prevail, viz.:—*Platanus orientalis*, *P. acerifolia*, *P. hispanica*, *P. occidentalis*, *P. pyramidalis*, and *P. laciniata*; *Liquidambar*; *Salisburia*; *Populus alba* and *P. canadensis*; Weeping Willow; Horse-Chestnut, Scarlet-Chestnut; variegated *Sycamore*; *Acer macrophyllum*, *A. platanus*; and *A. barbatum*; *Lilacs*, on account of their early buds and blossoms; *Laburnums*; double and single scarlet and white *Thorns*; and *Syringas*. The common *Robinia* and its varieties also make good town trees.

JAMES BARNES.

SOILS, MANURES, &c.

SOIL FOR POTTING.

ONE of the most common and fatal errors into which the inexperienced fall is that of making choice of inert and finely pulverised soil for potting with. This and insufficient drainage are more disastrous to pot plants than any other two points of culture that can be named. To pot plants in common garden soil which is generally destitute of fibry matter, and at the same time to neglect thorough drainage, is the shortest and surest way of reducing a plant, however hardy and vigorous, to a state of inaction and premature decline. Such soil is destitute to a great extent of what forms the food of plants. Were this its only fault, it might be remedied by the application of stimulants in a liquid form; but the principal want or error lies in its mechanical condition being at variance with the requirements of a healthy pot plant. What is required is organic or turfy matter, which in its gradual decomposition affords food to the plant, and at the same time forms a root medium, which freely admits the wholesome influence of the atmosphere, and has the power of absorbing therefrom the essential gases so necessary to the well-being of plant life. A plant potted in finely pulverised soil, or rather dust, entirely destitute of fibre particles, finds itself, especially after frequent waterings, in a close hardened medium. If young roots are ever formed in a healthy condition they are most difficult to be kept alive, if that be at all possible under such circumstances. Such a body of soil, especially if watered with water in which there is a sediment, soon becomes solid, and no tender plant can thrive in it. The soil most suitable for the growth of plants in pots should contain a large proportion of decomposing fibry matter, such as the roots and herbage which are common to the surface of old pastures. The fibry matter which such soil contains not only presents in its gradual decomposition the constituent elements which form the chief food of plants, but prevents at the same time the soil from becoming compressed and soured. Such soil should be chopped up or teased with the hand without removing the fibre. Sifting should never be had recourse to, except when it is to be used for potting young things into very small pots; and even then, instead of separating the fibre from

the finer soil, it should be all passed through the sieve, simply for the purpose of breaking it up and making it fit for going into small pots without taking the fibre out of it. Soil of this fibry description—fresh and open—should form the chief of mixtures for potting with, and is in itself very nutritious. Manurial substances, such as leaf mould and rotten dung, can be added to such a staple with safety in the case of grosser-feeding plants. The amount of sand added to it must be decided by the character of the roots which various plants make. Heaths, azaleas, and the generality of New Holland plants, which make fine hair-like roots, require a more sandy soil than others; while such as oranges and camellias, which make strong crow-quill like roots, demand a very moderate admixture of sand. The former plants, too, require more of a peaty than a loamy or calcareous soil; but in all cases there should be a large amount of fibrous material. In using such soil, it should always be inclined to the dry side, as, when used wet, it is apt to become compressed and ill-conditioned. A.

House Sewerage.—The distressing illness of his Royal Highness the Prince of Wales has aroused the public to a sense of the danger of having their houses provided with fever-traps. I will explain how I turn the fever-trap into a harmless, useful adjunct to my garden. I have the cesspool, or dead-well, dug as far from the house and well as the limits of my garden will allow; the top of the cesspool is covered loosely with a stone, leaving space for any gas there may be to escape. As soon as the gardener comes to his work, he sprinkles earth upon the previous twenty-four hours' accumulation, sometimes adding a little lime. When he requires any manure for the garden, he goes to the dead-well and takes from thence a highly fertilizing and inodorous compound, equal in every way and similar to the A B C, containing, indeed, some accessories of fertilization that are eliminated in the A B C process. I utilized the sewage from the house and stable in the manner I have described for three years whilst in Hampshire, and am doing the same now in Surrey. The top of the well being pretty open, no gas can accumulate. The application of earth and lime entirely deodorises the matter, by the aid of which I grow roots and cattle-melons of enormous size.—*Auticus.*

Earth-Closets for the Garden.—Ten years ago, and during the time of the formation of the new gardens here, no expense whatever was spared with a view to make everything as complete and comfortable for the work people as it could possibly be made; and the accommodation then provided leads me to speak of the water-closets. On account of these being used by a number of people, say from thirty to fifty, for a period of ten years, they were a continual source of annoyance, being every now and then out of order, and they emptied themselves into a cesspool, which overflowed in a disagreeable way in the sunk fence which cut off the gardens from the park. About twelvemonths ago, therefore, when, from the severity of the winter, pipes were bursting in all directions, I resolved to try the dry-earth closet-system, as we had come to a complete breakdown with our water-closet plan. The site chosen for our new earth-closet was in our rubbish-yard, where there is always abundance of earth thrown out from the potting-shed, and here we erected our closet, or I should rather say, closet and shed combined; the dimensions of which are thirty feet long, eight feet wide, and eight feet high; at one end we fixed the closet, which occupies six feet, the remaining twenty-four forming an open shed for the storage of deodorised faeces when mixed with earth. The closet is entirely shut off from the mixing or storage department; the faeces bin being curtained over by a wooden flap, which is hooked up every morning by the person whose duty it is to cover with earth the soil which has been deposited during the previous night and day. Once a week the bin is cleared out and thrown back to the end of the shed, where it remains until wanted for manurial purposes. The system has now been used for nearly a year, and the quantity of fertilised earth thrown back to the end of the shed does not yet exceed two ordinary cartloads; and this, I believe, might again be used as a deodoriser in cases where earth was not so conveniently to be had as it is with us. This closet, although situated within twelve feet of a much frequented walk, hidden only by a few bushes, gives as little indication of its presence as though it were a hundred miles away. Having no machinery, it does not require the earth, to be either dry or sifted, but used just as it comes from the potting shed. In this case earth has most advantageously superseded water, and peat-charcoal will doubtless soon effectually supersede earth for deodorising purposes, not only for closets generally, but also for the sewage of large towns. Hitherto, even our best engineers seem to have but one idea with regard to the treatment of the sewage question, viz., the erection of enormously expensive steam-engines,

and the purchase of hundreds of acres of land upon which to pump the sewage. For this purpose a town near to where I am now writing was advised by its engineer to spend over £200,000, but the authorities, before committing themselves, asked what this £200,000 would give them? "Only an experiment," was all the answer which could be obtained. Therefore, until something more tangible shall have been fixed upon, better perhaps let the pestiferous ammonia continue to flow into our rivers as it has hitherto done. Must another Watt or another Stephenson be created before the sewage difficulty can be solved?—WILLIAM MILLER, *Combe Abbey Gardens, near Coventry.*—[The dry-earth system deserves adoption in every garden.—Ed.]

PLANT MATERIAL FOR PAPER.

At a late meeting of the Society of Arts a paper was read by Mr. R. Johnson, on "Esparto," including practical remarks on the nature, cultivation, past history, and future prospects of the plant: also, a demonstration of the importance to the paper-making trade of prompt and vigorous measures for its preservation. Mr. Johnson commenced by remarking that esparto, or Spanish grass, was at present almost universally used in the paper trade; that most of our leading journals and periodicals were printed on paper made from this material; the imports into this country having increased from 50 tons in 1856, to over 100,000 tons in 1870, and exceeded 130,000 tons in eleven months of the present year: the value having also advanced from £4 a ton in 1858 to the sum of £10, the current price last year. After alluding to the knowledge possessed by the ancients of the value of the plant, its botanical classification, and its appearance and growth, Mr. Johnson said that the best climate for its production was on the sea-coast at moderate altitudes. Here it was fine, short, even esparto, so much prized by paper-makers. In the interior this prime sort will form one-half and sometimes no more than one-fifth of the whole. A sandy or thinly-coated stony soil is suitable, but the grass never reaches perfection in clay. The most suitable zone runs from 32° to 41°, including the southern part of Spain and northern rivers of Africa. When fully ripe in the autumn the leaf or annual growth is pulled off the perennial stock, or *atochon*, which is left uninjured in the ground, ready to send forth shoots in November or December. The operation of harvesting should always take place in dry weather. Immense waste has taken place owing to want of care in managing the crop. It is estimated that at the time it was first used for paper-making the quantity in Spain amounted to about 220,000 tons; but since then large quantities have been allowed to rot in the ground, or have been grubbed up to make room for cereals or to serve as thatch. When the sudden demand took place, instead of going back to dormant lands in the interior, the collectors called on the coast for double crops, which had a most deteriorating influence on the crop, and in some districts led to the complete extinction of the plant, not that double cropping in itself was injurious, if carefully and judiciously done, but the harm was caused by the host of careless harvesters. Careful cultivation is essentially necessary for the growth and preservation of the plant, which otherwise will vanish away. Mr. Johnson then gave some practical suggestions on the best mode of preserving and propagating esparto from personal experience, including observations on raising the plant from the seed, the time of sowing, mode of transplanting, and the method of burning. The latter mode consisted in firing the old *atochas* or roots, by which means the soil is cleansed, and stimulating the plant, it being believed that the *atochas* so produced are quite as healthy and long-lived as the seedlings. This mode can only be applied to old lands; and with reference to new lands, the sowing process is to be preferred to transplanting. The process of burning has several advantages: it destroys the old worn-out *atochas*, it cleans the roots of the young plant, and leaves in the soil an efficient manure to sustain and stimulate the young plant. As previously stated, the amount of esparto formerly grown was estimated at 220,000 tons, but at present it is doubtful whether more than 150,000 tons could be mustered.

Mr. Hyde Clarke suggested that the growth of esparto grass should be encouraged in Asia Minor, where the climate was suitable, and no doubt every facility would be afforded by the Ottoman Government, as it had already done for cotton, and suggested that the Council of the Society of Arts should take the matter up as one of great importance.

Other speakers followed, and from the general observations made it appeared that as it took about fifteen years to bring the plant to maturity, the establishment of new esparto-growing districts would not bring the relief to the paper trade which was required in providing an immediate supply of some cheap and good material. The fibre of wood had been tried, but had proved a failure, and it was added that it must be regarded simply in the light of adulteration.

THE HOUSEHOLD.

The Egg Plant.—In America the fruit of the egg plant grows as large as a moderate-sized gourd, and it is there a delicious vegetable. We might try them in pits and frames in summer, planting them out on a gentle hotbed, and giving them a very sunny position. Many say they do not understand how others can like the egg plant. We can: cooking is everything. The best directions are given in the *American Agriculturist* by one of its house-keeping readers. Cut the fruit across into thin slices, say a quarter of an inch thick; salt and lay these together over-night; in the morning take them from the brine, and sprinkle finely-powdered cracker over both sides of the slices; then fry brown (not black), in just enough fat to keep them from sticking to the griddle. Some use Indian meal, instead of cracker, but the cracker is best. We eat them thus cooked, and esteem them a really cheap delicacy, though we once thought them poor stuff. A subscriber at our elbow says:—"Cut them into slices nearly half an inch thick; sprinkle on salt; lay them together with a light weight on the top; in the morning drain from the brine, roll in flour, and fry in butter, and they can't be beat."

Russian way of Dressing Cucumbers.—The cucumber is sliced in the usual way. A few celery leaves must be previously chopped very fine, and mixed with a good quantity of the best oil, sufficient vinegar, pepper, and salt being added to give it the proper piquancy. This mode of dressing cucumber makes an agreeable change in summer to many palates. As the flavour of celery is very powerful, proper caution is requisite.

The Miniature Savoy Cabbage.—This has been one of the most useful of our green vegetables during the recent severe frost. The seed was sown March 28th, and the plants were put out in the usual way when forward enough. They have formed compact hearts the size of a tea-cup to that of a breakfast-cup. Those who doat on solid savoyas as big as drums would despise these little things; but they suit our taste well, because elegant, tender, and delicate; whereas gigantic savoyas are inelegant, tough, and coarse, no matter how skillfully they may be cooked and served. The miniature savoy bears much the same relation to the savoy proper as the elegant and delicate London colewort, or "collard," bears to the cabbage proper; and these two little treasures of the kitchen-garden are equally unprofitable if judged by mere dead weight or bulk of produce. We have received the miniature savoy under a variety of names, such as "Tom Thumb," "Little Pixie," and "New Early Green Dwarf," but there appears to be only one stock of it; at all events, we can find no difference in our several samples to justify difference of name.—S. H., in "*Gardeners' Magazine*."

Colorado Produce.—Grace Greenwood, in a letter to the *New York Times*, giving an account of Denver autumn fare, writes:—"The buildings devoted to farm products and mineral specimens were always crowded, and were to me by far the most interesting departments. I had seen elsewhere as grand-looking stock, but nowhere on earth had I ever beheld such immense, such Brobdingnagian vegetables. Think of early potatoes, sound and sweet to the core, weighing 6 lbs. apiece! Consider a turnip weighing 22 lbs.! Bring your mind up to a cabbage of 50 lbs.! Shudder before an awful blood-beet of 16 lbs., and make obeisance before a pumpkin actually weighing 130 lbs.! I really reverence that pumpkin, that mountain avalanche of summer sunshine. I would make a pulpit of it, or the platform of Woman's Rights Convention, or put it to some other sacred or dignified use. Think of Spanish cucumbers by the yard, and wheat, oats, and barley more than six feet tall. You need not be surprised to have a Colorado friend write to you from his ranch in this wise:—"sitting in the cool shade of a stalk of barley growing by my door."

When to Peel Potatoes.—One party argues that it is necessary to remove the skins before boiling, to permit hurtful gases to escape, and to allow the water to enter the potato, to cook it thoroughly. As to the gases, there need be no fear. Good sound potatoes contain no gas that is noxious. Instead of opening a way for the water to readily enter the potato, we think it desirable to keep it out as much as practicable. Potatoes contain water enough in their composition to answer all purposes for cooking, as is seen in the moist substance of a baked potato, which is generally conceded by almost everybody to be better than the boiled article. It is stated that a pound of the substance of this vegetable contains about three quarters of a pound of watery juice, to two or two and a half ounces of starch. In cooking, the water of the juice is absorbed by the starch grains, which swell and often burst the cells. The albumen coagulates and forms irregular fibres. There is, then, no necessity for letting water enter the potato through openings made in the skin. Even if potatoes boiled whole were no better than those peeled before cooking, economy would decide in favour of the former practice. Part of the substance is necessarily wasted by peeling raw. It also takes more time than after cooking. They will keep hot much longer if the skins are left until used at the table; but it is generally thought preferable to mash and otherwise prepare them before placing them before guests.—*American Paper*.

Vegetables in London Dining-Rooms.—It is my fortune to dine occasionally in what are considered the best London dining-rooms, in which the meat is generally irreproachable, the wines drinkable, the beer perfection; but I hardly ever get any vegetable that is edible. Nothing but an extreme weakness for asparagus could have induced me to face it as served at Simpson's, the Rainbow, and other London dining-rooms this year. Not only its smallness—though it is sometimes very small—not only the meagre size of the "dish" served up to an adult Christian, do I complain of, nor its price, but the way in which decayed and blackened and dirty "sticks" are served up among the better ones. It is bad enough to have it poor and thin; it is bad enough to have but very little of it even in that state; but it is intolerable that the cook should not bestow on the removal of the decay that arises in the conveyance of this vegetable from the market gardens of London and Paris to the pot, or while it is lying in state in Covent Garden, as much attention as he does to assorting his potatoes. As for the lettuces—leathery, hard, and dirty even in the month of May—they are only fit to throw to rabbits that have good teeth and get plenty of exercise. There is no more reason why they should be so than that we should have crab apples instead of Ribston pippins. But the radishes, the radishes! Unless your readers were all unhappy wretches who had run short of provisions in traversing some uninhabited country, and tried many a bitterly-disappointing root, I could hope to give them no idea of the hard, long, spongy, fibre-girt, acrid-tasting roots that do duty for radishes in London dining-rooms. These have no more in

common with the delicate little masses of crisp succulence which well-grown and timely-gathered radishes present, than a wiry old swede turnip, ready to start for seed, has with a tender garden turnip gathered a few months after its birth. No doubt the majority of persons who frequent such places have no idea of a better radish, or we should not have these rats' tails disgracing the civilization and cultivation of the nineteenth century. Ignorance may be bliss in the case of the creatures one pities as they munch these masses of thready and bitter tissue, but it is all the time very bad for their digestion and teeth, as well as offensive to the eyes and ears of sensitive person.—V., in "*Field*."

Frijoles.—From the town of Taos, in the extreme north, to the Isthmus of Tehuantepec in the south, there is not a Mexican cottage, however humble, where frijoles are not cooked and eaten at least once, and often twice, during the twenty-four hours, and that too, where there are plenty of other edible substances of superior quality—as, for instance, the banana, the yam, the sweet potato, the manioc root, and an endless list of other roots and fruits, available for food. The frijolé is nothing more than what we are accustomed to call a "kidney bean," and known to our French neighbours as the "haricot." It is true, the kinds eaten in Mexico are somewhat different from either our scarlet-runners or dwarfs. But they are only varieties of the same plant; differing from the French haricots more in the colour of their outward cuticle than in their essential substance or flavour. The kind commonly used in Mexico—that mostly met with on the *table-lands*—is a small black bean (phaseolus Hernandezii); while another sort of a brownish-red colour is cultivated on low-lying tropical lands of the coast. The latter has the reputation of being a superior kind—considered as an article of food. Frijoles in Mexico are not eaten, as with us, pods and all, in their green unripe state. Before coming into the kitchen they are fully ripe, and shelled clean of their capsules—in short, they are in sacks. In Mexico these beans are first boiled until they have become thoroughly soft. To effect this a little lye is sometimes thrown into the earthen pot in which the boiling is done—just as in preparing Indian corn for *tortillas*. When well boiled the beans are next submitted to a simmering process, being mixed with a little lard and some chili pepper—not the dry, pulverised dust, known to us as "cayenne," but the green, pulpy pod of the capsicum, crushed between the two stones used in *tortilla* making. In addition to the lard and capsicums, the frijoles are further savoured with just a *soupçon* of onion, or it may be garlic; thus producing a dish that, for piquancy, is not easily excelled, and, all things considered, can scarcely be equalled in cheapness. If introduced into England, and naturalised in our cottage homes, it would prove a real blessing—cheaper than even dry bread and cheese, and far more palatable than a scrap of badly-cured American bacon—the only article of so-called flesh-meat which labourers have usually the privilege of tasting. The frijolé will grow in the climate of England as well as upon the soil of Mexico: indeed, it does grow here, thriving most luxuriantly, and yielding a hundredfold—since it is but the scarlet-runner, or the still more prolific "dwarf." And capsicums can also be cultivated in any quantity, while onions are grown everywhere. Lard is not dear—at all events, it is the cheapest of culinary aids—and in the cooking of frijoles only a very small quantity is required. This dish, of course, calls for an accompaniment of bread, just as any other stew or soup; and in Mexico it is eaten with the universal *tortilla*—the latter, as is well known, being torn into pieces, and employed as a scoop or spoon, that is swallowed with each mouthful of the stew.—*Food Journal*.

Salads and Salad-Making.—The art of making a salad is one of those attributes with which every person credits himself, whereas in truth it is possessed by a very small number of the gifted few. The English, as a rule, are as crude and coarse in their salads as in their cooking. A hard, overgrown, cos lettuce, some tough, pungent, fibrous, or woolly radishes, a few onions, and a bunch of watercress put into a dish, with some common malt vinegar, pepper, mustard, and salt, constitute to the majority of English people the *beau idéal* of a salad. We would as soon gaze with Nebuchadnezzar, or turn ruminant at once. There are salads and salads, graduating from the simple repast to the most elaborately prepared viands, culminating in the glories of delicious lobster salad. Even the simplest form of salad admits of preparation on several different principles. Our own method is diametrically opposed to the common practice, but let our readers give it a trial; they can but return to the other system if they do not like our directions. The ordinary plan may be exemplified by the following directions for a lettuce salad: Wash and pick two or three well-bleached lettuces, taking off the outer leaves; then dry them well in an open wicker-work basket made with a handle, swinging it to and fro at arm's length to get rid of the water, and cut them across a few times (not very small); mix a saltspoonful of salt into a tablespoonful of vinegar until dissolved, and pour it over the salad, adding half a spoonful more vinegar to suit the palate if desired; then pour in three tablespoonfuls of Lucca oil, sprinkle a little pepper over this, and mix the whole with a wooden spoon and fork, and keep turning the salad over and over as you mix it, until it has well imbibed all the ingredients. A few nasturtium flowers are often added, which give a far more pleasant zest than cayenne pepper; watercress, purslane, or mustard-and-cress may be introduced if agreeable. In this plan the vinegar is first added to the washed salad, and a large amount of stirring is required to diffuse the oil, so that the salad should not taste oily. Our system is the opposite. The lettuce (and we prefer that most delicious of all lettuces, the soft Neapolitan, the merits of which are appreciated but by few *cognoscenti* in this country)—the lettuce, we say again, should not be washed if the process can be dispensed with, but if necessary each leaf should be separately wiped, cut up, and put in the bowl. If you must wash your salad, you cannot be too careful in draining all the water from it, for every drop of water left in a salad tends to spoil it, no matter what amount of talent has been bestowed upon the dressing of it. Great care is also necessary in picking the salad, so as to exclude every leaf that is the least tainted or discoloured. It is a great mistake to cut up lettuces and endives into fine threads; this operation at once destroys the freshness, taste, and character of the dish. Of course I do not mean that cos lettuces simply split in two should be made into a salad; but there is a happy medium, which is always best in most things. Besides, it is by no means the largest lettuces which make the best salads; the cos lettuce, which we call Roman lettuce, is all very well in its way, but the cabbage lettuce—the *laitue pommée*, when it is well *pommée*—is by far preferable. This should be cut into quarters like an orange, and no more. Now add the oil, and stir until each portion is covered with a thin film; then stir together in your salad-spoon the salt, vinegar (which should be real French), pepper, and a little powdered white sugar, without which no good salad was ever made. Add these to your lettuce, stir, eat, and be thankful. If you like additional flavours, they may be added. Mustard may be mixed with the vinegar, and cayenne used with or instead of common pepper. The remotest suspicion of scraped onion or shallot may be added—not large slices, which will make you odorous for a week—and other vegetables, as beetroot, cresses, lamb's lettuce, &c., may be introduced; but let the grand principle still remain, namely, that the salad be dry, and that the oil be universally diffused before the vinegar is added. By so doing salad is never greasy, and the vinegar and other adjuncts preserve their true flavour, not being absorbed by the vegetables. So much for the preparation of a simple salad.—*The G. C.*, in "*Queen*."

THE FLOWER-GARDEN.

HERBACEOUS PLANTS FOR EXHIBITION.

ABOUT two years ago the Royal Botanic Society judiciously offered a prize for twenty-four hardy herbaceous plants, and fearing that there might be little or no competition for it, I did my best to back the Society's efforts, in what I thought to be a good direction, by sending a group, as I was anxious the class should not fall to the ground. I am, therefore, pleased to find that the Royal Horticultural Society has taken the same matter in hand, and that they offer many prizes for plants of this kind, viz. :—

May 15th.	12 Hardy Perennials in 12-inch pots.
June 19th.	6 Peonies in pots.
July 17th.	12 Hardy Perennials in 12-inch pots.
"	6 Delphiniums in 12-inch pots.
"	6 Pentstemons in 12-inch pots.
"	6 Phloxes in 10-inch pots.
"	6 Lobelias in 8-inch pots.
Aug. 21st.	12 Hardy Perennials in 12-inch pots.

Besides cut blooms of Peonies, Phloxes, Pyrethrums, &c.

In order, therefore, that these prizes may be well contested, I have made out a list of such plants as will constitute the basis of a good collection, from which specimens for exhibition may be selected. The names are those under which they are generally known, and they represent plants which flower from April to September, and which are suitable for pots, viz. :—

Alyssum orientale	Hesperis matronalis	Phlox Premices des
A. saxatile compactum	purpureo-pleno	Bouheur
Anemone alba	Hieris corymbosa	P. Princess Troubetskoy
Anthriscum Liliastrium	I. Garretiana	P. Purple Prince
Aquilegia cærulea	Iris nucleata	P. Roi des Roses
Armeria cephalotes	I. germanica	P. Roi des Blancs
Astilbe (Spiraea) japonica	I. g. Enchantress	P. Souvenir de Ferns
Aubrietia deltoidea	I. g. grandiflora	P. Amabile
grandiflora	I. g. Jacquesiana	P. Dame Blanche
Ærionema mem-	I. g. Duchesse de Nemours	P. Ninon
branceum	I. g. Elbordi	P. Virgo Marie
Betonica grandiflora	I. g. pallida	P. Mons. Ingres
stricta	I. g. Versailles	P. Souvenir de Soultzmott
Calyptegia pubescens	I. g. Wührer	Polygonatum multiflorum
flor. pleno	Liatris spicata	Physostegia virginiana
Campanula carpathica	Lupinus polyphyllus	Potentilla Louis Van
C. carpathica alba	L. polyphyllus albus	Houtte
C. coronata	Linum flavum	P. Phœbias
C. coronata cærulea	L. campanulatum	P. Le Dante
C. grandis	Nierembergia rivularis	P. Dr. Andry
C. persicifolia	Oenothera fruticosa	Primula cortusoides
C. p. plena	(E. Fraseri)	P. amena
C. p. albo-plena	Oenothera taurica	P. nivalis
C. p. maxima	Pæonia tenuifolia flore	Pyrethrum floribundum
C. Trachelium albo-plena	pleno	plenum
C. turbinata	P. officinalis rubra	P. fulgens plenissimum
C. turbinata grandiflora	plena	P. Gustave Hertz
C. Van Houttei	P. Caroline Allain	P. imbricatum plenum
Centauria montana	P. Etienne de Gand	P. Iveryanum
Convallaria majalis	P. Eugénie Verdier	P. Lady Blanche
C. majalis stricta	P. Festive maxima	P. Madame Munier
Coreopsis lanceolata	P. Jeanne d'Arc	P. Monsieur Barral
Delphinium Barlowii	P. Madame Calot	P. niveum plenum
versicolor	P. Madame Furtado	P. Rev. J. Dix
D. M. le Bihan	P. Modeste Guerrin	P. roseum plenum
D. Madame H.	P. pulcherrima	P. rubrum
Jacotot	P. Reme de Roses	Spiraea palmata
D. Keteleerii	Pentstemon glaber	Statice latifolia
D. Bella Donna	P. procerus	S. latifolia alba
D. coronet	Phlox divaricata	Stematis speciosus
D. formosum	P. Nelsonii	Tritoma Uvaria glauces-
D. Hendersonii	P. subulata	cens
D. Le Mastadonte	P. Aurora Boreale	T. grandis
D. magnificum	P. Comte de Lambertye	Trollius napellifolius
D. Jules Bourgeois	P. Edith	Tradescantia virginica alba
D. Nahamah	P. George Villo	T. virginica azurea
Dielytra spectabilis	P. Liervallii	T. v. rubra
Doronicum austriacum	P. Lucien Tissarand	Trillium grandiflorum
Gaillardia Loisei	P. Madame Cannert	Veronica arctifolia
Gentiana acutula	d'Haimde	V. verbenacea
Geranium pratense fl. pl.	P. Miss Logan	V. caucasicæ
G. sylvaticum fl. pl.	P. Mr. Malet	V. multifida
Harpallium rigidum	P. M. Edouard André	V. maritima alba
Hesperis matronalis	P. Pius IX	V. Guthriana
albo-pleno	P. Professor Koch	

Tooling.

THOMAS BROWN.

Wall Plants.—Walls afford the best positions for many half-hardy subjects that do but little good in the open air without their aid; walls, if well-covered and carefully attended to, are among the most useful aids to a garden. Well covered in every part with good climbers, the stiffest and most awkwardly placed of wall surfaces becomes a thing of beauty, and may afford interest and flowers at all seasons, from that of the wintry bloom of the clear yellow Jasminum nudiflorum to the heats of early autumn, when the fine Clematises become masses of flower. The climate of the British isles is so much varied that plants which grow as standards in the south may require a wall in the north; in the south we may have walls covered with

sweet Verbena, and even with Pittosporum. In the south we grow the fig as a standard; in the north it can barely exist with a wall. But in all parts we may make good use of every particle of flower-garden wall, no matter what its texture, aspect, or height. The first and most important consideration in the covering of garden walls is the selection of the plants. But even where these are well selected, there is frequently a mistake made in the training, by paying no proper attention to train the tree over the wall in a spreading manner, but, on the contrary, allowing it to run "up to a head," so to speak, each plant being topheavy, and narrow and naked at the bottom. Instead of taking one good specimen and making it cover a full portion of the wall, people plant them rather thickly, and then keep continually clipping away the luxuriant shoots that ought to widely furnish the wall. The best shoots should be taken out in a fan-like manner, so as to cover the wall to the very ground. In training them out, in fact, the strongest shoots should be taken to the right and left, perhaps to send up straight shoots themselves. The object should be to keep every part of the wall covered, the centre of the tree as much so as the top of the wall, and in fact all parts equally. When once the trainer is impressed with the desirability of covering the wall equally in all its parts, he will have no difficulty in doing so. A great point is to make the strong-growing kinds cover a great deal of surface. Confine them to a small space, and you must cut them away fortnightly, or allow them to run disgracefully wild.—V. G. R.

DIMORPHANTHUS MANDSCHURICUS.

THIS is one of the noblest shrubs for a long time introduced to our gardens, and one which especially commends itself to us at a time when plants of noble port and foliage are beginning to be more generally esteemed. It is a magnificent hardy shrub, of erect habit, with very large, much-divided, spiny leaves, which greatly resemble those of the Angelica tree of North America, and in this



Dimorphanthus mandschuricus.—Hardy deciduous shrub section.

country attaining a height of six feet to ten feet, which it will probably much exceed when well established in favourable positions. It is certainly the most remarkable fine-foliaged shrub that has been introduced into our gardens for years, and is therefore of the highest importance for the sub-tropical garden. As to its treatment, it seems to thrive with the greatest vigour in a well-drained deep loam, and would grow well in ordinary garden soil. As to position, isolation in some sheltered but sunny spot will show it to great advantage; but it may also be grouped with like subjects, always allowing space for the spread of its great leaves.

The Earliest Spring Flowers.—Can you name a few of the very earliest spring flowers that would bloom well? I leave my garden early in April for town, and want to grow mostly those that bloom very early. L. J. G.—The following will doubtless answer your purpose, viz.:—Helleborus niger, and others; Russian violet; Czar violet; Hepaticas, blue and pink, single and double; Myosotis disitiflora; Anas alba; Aubretia grandiflora; Blue pansy; Erica carnea; Saxifraga oppositifolia; Primrose, double blue, do. white, do. purple; Daisy, white, Anemula-leaved daisy; Iris, dwarf early; Lamium maculatum; Tussock fragrans; Dwarf wallflower, Belvoir var.; Oxeye, improved; Winter Aconite; Snowdrop; Scilla bifolia; S. sibirica; S. pinnatifida; Crocuses; Dogs-tooth violet; Hyacinth; Anemone; Tulip; and Daffodil.—W. INGRAM, Belvoir.]

VARIEGATED PELARGONIUMS.

THESE having become great favourites for the decoration of our flower-gardens in summer and for beautifying our conservatories in winter and spring, a few hints as to the best mode of successfully keeping them during the winter, and the most expeditious and safest way to propagate them in early spring, summer, and autumn, may prove useful. Growing all the best and rarest kinds, propagating thousands of them, and having myself raised many popular varieties, I will simply describe my own most successful practice. The variegated pelargonium is very impatient of dampness about its foliage and too much moisture at the root. It is therefore necessary at all times to guard against any extreme in either case, and particularly in the winter season. We will begin with the treatment of the plants in September, after they have been taken up from the flower beds or borders, and give our mode of treating them from that time till May, when they may be planted out in the open bed again. After that the only care they will require is such as need not be described here.

The soil most suitable is a nice, soft, yellowish loam, mixed with well-decomposed leaf-soil and clean river or Reigate sand. The pots the plants are to be grown in should at all times be perfectly clean, especially on the inside; for if dirty pots are used, when it becomes necessary to re-pot the plants, it will be found, on turning them out of the pots preparatory to shifting them into larger sizes, that large numbers of the most healthy roots are broken off and clinging to the old soil left on the sides of the pot; this must always be avoided. If the pot is perfectly clean when the plant is put into it, the ball will turn out entire by simply turning the plant upside down, and gently tapping the edge of the pot on the bench, and at the same time pressing the large piece of potsherd over the hole in the bottom of the pot with a small piece of wood, or with the forefinger. To drain the pots well should be borne in mind, and this is done by placing one piece of broken potsherd over the hole, then several other pieces above and around it; on the top of these should be placed some pieces of fibrous turf, to prevent the soil from trickling down amongst the drainage.

Having a quantity of soil mixed as above recommended, the pots clean and properly drained and the plants taken up from the beds, we will proceed with the work of potting them, after having reduced the quantity of foliage on each plant and just nipped off the points of their roots. It is always advisable to reduce the foliage before potting any plant taken up from the open ground. When this is done the roots will the more readily commence their work; when all the foliage is left on the plant more is required from the roots than they can perform. In reducing the foliage the leaf should not be cut off close to the stem; it is better to leave the foot-stalk of it entire, with a very small portion of the leaf still attached to it. The cut stalk will then gradually dry up and drop off of its own accord in a week or ten days' time, and the wound at the base of the stalk will be partly healed before it drops off, thus preventing the plant from suffering any injury; but when the leaf is cut off near the stem it often happens that in decaying it taints the stem, so to speak, or at all events decay is conveyed to the stem of the plant, causing that to rot. Whenever this decay is observed it should at once be cut out clean with a sharp knife, else in a very short time it will eat its way through the stem of the plant. Many valuable plants are lost in this way.

In potting the plant hold it in the left hand, and continue shaking it whilst the soil is being thrown in about its roots with the right; this will cause the soil to settle itself nicely about its roots, but care must be taken not to have the plant placed too deep in the pot. As soon as the pot is filled up with soil give it a few taps on the bench, keeping the plant steady in its place in the centre of the pot by placing the thumb of each hand firm against the stem of the plant on each side. A little more soil should then be placed on the top; this must be pressed moderately firm with the thumb of each hand. If the soil is in a nice moist state, no water will be required for a week or ten days after the plants have been potted. After potting they should be placed in a rather close house or frame

for two or three weeks, by which time they will have commenced rooting freely, when they should be put in a more airy situation, and allowed to enjoy all the light of the season. They must be frequently looked over, and every little bit of decaying leaf must be at once removed. The plants may be kept in a situation similar to that recommended above till the first week in February, giving them but little water during the winter months; and whenever it is found necessary to water them it should always be done early in the morning, giving all the air possible afterwards, so that the atmosphere may become dry before shutting-up time; this will prevent the foliage from taking any harm during the night when the house is shut up close.

In the first week of February the plants should be all shaken out of the soil they have been growing in all through the winter; this should be done very carefully, the object being not to injure the roots. The same care must also be observed with regard to clean pots, and for this potting they should not be too large; the smaller the pot the better for the first potting. If the roots can be got into it without their being too much cramped or injured, so much the better; the roots will occupy the soil much quicker. The soil must be in a nice state of moisture. The plants will not require water for a week or more after potting, unless the weather should happen to be very frosty; when large fires have to be kept up, the plants will want water oftener. When water is given, it should be applied copiously, so that the whole of the ball of soil may be well soaked. It is always the safest and most proper plan to give a thorough good soaking when water is given, and the plants should never be watered before they actually want it. If proper care is taken in this way, the plants will soon begin growing away very freely, and will be ready for a shift into a larger pot by the third or fourth week in February. At this shift the soil recommended above may have a small quantity of well-decomposed cow manure (in a perfectly dry state) added to it. The same care must be observed with the soil as in the autumn or winter potting—it must not be too wet nor too dry. It should also be as nearly as possible of the same temperature as that the plants are growing in.

By the time the plants have been potted, a fortnight after the second shift, their roots will have reached the sides of the pots, and their tops will have commenced growing away freely. The work of propagation may now be commenced. The same mixture of soil as recommended for growing the plants will do for this purpose, only it will require more sand mixed with it to keep it porous; and the best plan is to strike the cuttings in single thumb or small sixty-sized pots, which must be clean and well drained. There should be about two inches of drainage put into each pot, which may consist of any of the following materials—viz., broken potsherds, oyster shells, or charcoal. In either case a portion of it must be broken into small pieces and placed on the top of the larger pieces, to keep the soil from trickling down amongst the drainage. The soil should then be placed in the pots, pressing it moderately firm, and filling the pot up to within half an inch of the rim; a quarter of an inch of good clean sand should then be laid over it and pressed pretty firm. This done, all will be ready for inserting the cuttings into them. For taking these off a very sharp knife should be used, so that the cutting may be taken off as clean as possible; and when the stock of any variety is small, and the object in view is to increase it as rapidly as possible (this is usually the case with new varieties), a little judgment is required in taking the cutting off so as to preserve the dormant eyes at that portion of the shoot next the cut. As soon as the young shoot has developed five leaves it may be taken off. The cutting should be separated from the plant a quarter of an inch below the position of the oldest leaf, and in trimming it a portion only of two oldest leaves should be cut away, leaving the leaf stalk entire. When the cuttings are ready a small dibber will be required for making a hole for the cutting in the centre of the pot. The dibber must be a little larger than the cutting, and quite flat at the end; the hole should be more than half an inch deep. The cutting may then be placed in the hole made by the dibber; the base of it should sit flat on the bottom of the hole. The space left between the sides of the hole and the cutting should be filled up with fine dry sand, which will trickle into every little crevice; and as soon as the cutting is secured by means

of two little hooks made out of deal or any other soft wood, the soil should be watered; this will consolidate the sand about the stem of the cutting, perfectly excluding the air from its base. The two hooks should be put in reverse, one pointing one way, and one the other. These should be hooked on to the leaf stalks, by which means the cutting will be kept perfectly firm in the pot—a very desirable object in the case of new and rare kinds.

After the cuttings have all been potted, they may be placed in a temperature of 60° or 65°, in a position as near the glass as possible; and if the pots can be plunged about half their depth in any sort of material having an average bottom-heat of 45° or 50°, they will strike much quicker. As soon as the cuttings are rooted, they should be shifted into three or four-inch pots, and kept in a nice growing temperature, and abundance of air must be given them on all favourable occasions. By the end of April these rooted cuttings may be decapitated, and the top of each put in, in the same way as described above. By this time also there will be two or more cuttings fit for taking off on the stump of each of the shoots from which the earliest were taken; these also may be taken off and propagated in the same way. The work of propagation may thus be carried on till the end of May or the second week in June; after this time the cuttings will strike with less trouble if pricked out in the open ground, fully exposed to the sunshine after the first week or ten days. Up to that time it is better to partially shade them by merely sticking small pieces of evergreens amongst them; this will prevent their foliage from being scorched by the sun. If it is desired to grow the plants on into large specimens for the greenhouse, they will require shifting into larger pots about once in six weeks or two months during the spring. During the whole of this time great care will be necessary in watering, and abundance of air must be given on all occasions. An average temperature of 50° is the most suitable for these beautiful plants during the winter months; as the spring advances an increase of temperature may take place, but it should never exceed 70° whilst the plants are grown under glass, and only reach that temperature during sunshine.—*J. Wills, F.R.H.S.*

NOTES ON HARDY FLOWERS.

Among tall Asters the best are *turbinellus* and *Novæ Angliæ ruber*, and among dwarf ones *discolor* and *horizontalis*. [There are a good many other first-class kinds].—*Astragalus Tragacantha* I never could succeed in growing from cuttings.—The great secret of growing *Aubrietias* well is to cut them back after flowering.—In some gardens it seems impossible to grow *Bulbocodium vernum*; I cannot grow it here. [We have noticed it thrive on deep bad clay soil].—Does *Cotyledon umbilicus* generally grow in damp places? In this neighbourhood it is on the driest of old walls.—Who has *Crocus Cartwrightianus* in cultivation?—*Dracocephalum grandiflorum* is a most capricious plant. I have had it often, and never could keep it. [It ought to thrive in well-drained sandy loam, with plenty of moisture in summer].—*Eryngium yuccifolium* is very similar to *E. bromeliæ-folium*, but it is certainly more hardy.—*Erythronium americanum* is not worth growing, for it utterly refuses to flower. I have had it for years, but have never seen a flower on it.—*Geranium argenteum* cannot be called hardy. [It is so in some places on the rock-garden in well-drained spots].—*Gypsophila paniculata* is one of the most useful of flowers for nosegays with which I am acquainted.—Single shoots of *Hemerocallis fulva variegata* taken up in the spring and potted, form the best table plants I know of.—*Heucheras* are useful for filling up corners—as, for example, square corners of beds close to the gravel.—*Hieracium aurantiacum* becomes a dreadful weed if allowed to go to seed.—*Iberis jucunda* is very distinct and pretty. *I. Pratii* is said to be very fine. It seems very hardy, but has not yet flowered with me.—*Iris susiana* is a grand fellow, but I never knew it remain more than one year. [Requires a pit to thrive and increase].—*Lychnis Lagasceæ*, I think, should be treated as an annual, for it has a tendency to flower itself to death. [It is a good perennial on rocks].—*Lysimachia Ephemera* should be grown in moist shady places.—*Mazus Pumilio* is not hardy. *Meconopsis aculeata*. Who has this? In this country it is an annual, and grown from seed.—*Meum athamanticum* should not be allowed to flower.—*Mirabilis Jalapa*, I believe, is not taken up in the winter at Kew and Chelsea.—*Narcissus Bulbocodium* often entirely disappears, even where it had seemed most healthy. How is this?—*Nertera depressa*. Mr. Niven says the right name is *N. scoparioides*, and that it should

be grown under glass. I think he is right.—*Nierembergia rivularis* is not hardy with me.—*Omphalodes Luciliæ*. Is this hardy?—*Onosma taurica* is very apt to die after proper flowering.—*Oxalis Valdiviana* is an annual, but takes good care to sow itself.—*Parochæstus communis* will live out of doors, but certainly not flower.—*Ramondia* should be always on the shady side of the rockwork.—*Saxifraga ligulata* is an excellent plant for the greenhouse in winter: it is scarcely hardy.—With respect to *Triteleia*, the whole plant smells of garlic, except the flower, which has a perfume like that of primrose.—*Tropæolum polyphyllum* I consider to be one of the best of herbaceous plants, but it does not last long in flower.—*Tulipa Clusiana* is a very shy bloomer.—*Umbilicus spinosus* I think is quite hardy, but the slugs attack it most fearfully.—*Vesicaria* should be kept constantly free from seeds; old plants soon lose their beauty and die.—*Zapania nodiflora* perishes in hard winters.—*Colchicum chionense* I have had many years. It seldom flowers, and then the flower is not equal to that of *variegatum*; but it is worth growing for its curious narrow undulated (almost crimped) leaves. It is very slow of increase.—In regard to *Fuchsias*: I believe that south of the Trent they are all hardy, except those of the fulgens section. A few miles from here I saw this year many of the fine greenhouse exhibition kinds which had stood out for years uninjured.—I don't think *Limnocharis* would long stand a winter, even in water that did not freeze.—*Vicia sylvatica* is a most lovely ornament of our woods, but I advise no one to take it into their garden.—*W. H. ELLACOMBE, Bitton Vicarage.*

THE TREE CARNATIONS.

THE reason why Tree Carnations are not to be seen more at this season of the year must be either that their culture is not properly understood, or that they are not sufficiently appreciated by the possessors of gardens. The latter reason seems to be to me impossible, for who is there that doesn't love a Carnation flower at this, the dullest of all seasons? The unsightliness presented by their straggling habit of growth during the trim summer months may be supposed as another reason why they are not as they should be just now. In short, I think they are looked down upon in summer too much, and are apt to be shoved aside for some other showy, trim-looking plant, in the same way as early forced roses are too often huddled into any out-of-the-way corner, to be chilled, parched, soddened, and tattered.

Tree Carnations, to be in perfection at this season, require attentive summer care, and I have always found that in-door care is the safest, and with it more heat (dry heat), with plenty of air. To have Carnation flowers all the year round in quantity, one must have a quantity of plants. Of course we could cut them every day in the year, not from the same set of plants, but from sets of plants—plants of all ages, from the rooted cutting to those four years old. The oldest plants we rely upon chiefly for flowers at this season, and the younger at spring-tide. To keep up a stock of plants we put in a batch of cuttings at any time—every month, say—one cutting to the smallest pot, in sandy loam, or loamy sand rather, for the sand predominates by being added, and they are placed under a hand-light or bell-glass. Two hand-lights are kept going for the purpose. When a batch is rooted, others follow. They are potted on gradually from two to twelve inch pots; and while in sizes less than six-inch they are stopped sufficiently to form a good bottom of from five to ten or more breaks. In this form and condition they are potted into the ten or twelve-inch pots in a pure loam, without any manure or any stimulating mixture whatever, further than a dash of sand. They get, when once the pots are full of roots, a liquid-manure watering every week from the manure tank.

Further than this, they get only that which common sense dictates, namely, staking and tying with care every growth that cannot support itself. Hazel stakes we find best for the larger plants, and Privet ones for the smaller ones; a painted stake should only be used when these are not to be got. Further, care must be used in putting long enough stakes after the second year, as the growths are sometimes over three and four feet long. We have many times seen people look critically on such long spindley-looking plants; and some gardeners, who probably have been brought up in the faith of the necessity of training everything to a formal shape, have passed them by as beneath their notice. But a dozen blooms at this season soon compensate for the want of symmetry in the plant's habit. Whoever, therefore, can't bend his ideas to the plant's wants and requirements must leave Tree Carnations alone, and seek for plants of a more uniform port.

The sorts we grow are the following, and to-day more than a dozen fine blooms have been cut, and as many more could have been furnished had they been wanted:—Henshaw's Scarlet, Rembrandt, Eclipse, Hector, Comte de Douy, Beauty, M. Valiant, Eugène Ducreux, Charles Baltet, Prince of Orange, The Bride, Jubilee, Belle Rose

Lady Stuart, and several seedlings of merit. Of course the summer-flowering variety, *Souvenir de la Malmaison*, finds a favourable place in the collection. Tree Carnations rank as high as the *Gardenia*, *Camellia*, and *Daphne*, and are infinitely superior to *Cinerarias* and other kinds of flowers usually to be seen at this season. We grow our plants on the side stages of our heath-house, where they have plenty of head room, which they really require, for some of the plants are fully five feet high and two or three feet through. I may remark further that we cut the flowers a day or two after they are opened, if likely to be wanted in numbers, and place them in damp sand in a cool room, as we do *Gardenias* and such like flowers. In warmer, much warmer, localities, I have grown Tree Carnations out-of-doors in summer, and lifted them in autumn; but never did I find them so satisfactory as when kept always in pots—for this reason, that I failed to lift them with sufficient root to winter them well, far less to flower them to my liking.—H. K., in "*Gardeners' Chronicle*."

WIGANDIA MACROPHYLLA.

(W. CARACASANA.)

This noble plant, a native of the mountainous regions of New Granada, is, from the nobility of its port and the magnificence of its leaves, entitled to hold a place among the finest plants of our gardens. Under the climate of London it has made leaves which have surprised all beholders, as well by their size as by their strong and remarkable veining and texture. It will be found to succeed very well in the midland and southern counties of England, though too much care



Wigandia macrophylla (W. caracasana).—After Vilmorin.

cannot be taken to secure for it a warm sheltered position, free good soil, and perfect drainage.

It may be used with superb effect either in a mass or as a single plant. It is frequently propagated by cuttings of the roots, and grown in a moist and genial temperature through the spring months, keeping it near the light so as to preserve it in a dwarf and well-clothed condition; and, like all the other plants in this class, it should be very carefully hardened off previous to planting out at the end of May. It is, however, much better raised from cuttings of the shoots, if these are to be had. It may be also raised from seed. *W. macrophylla* has the stems covered with short stinging hairs, and bearing brownish viscid drops which adhere to the hand like oil when the stem is touched.

NOTES ON NEW HARDY PLANTS.

SOME account of two or three novelties in this way, though certainly not of the highest value, may nevertheless not be without interest. The first is the so-called *Aquilegia aurea* of Roezl, collected by him in 1869 and distributed by his friend M. Ortgies, of Zurich. Of the few seedlings of this raised by myself, several bloomed during the past summer, and differed from each other only in vigour. Its habit of growth is somewhat slender, the stem reaching nearly, if not quite, two feet in height, with the characteristic biternate foliage of the genus, closely resembling in detail that of the *A. cærulea*. The flowers are of medium size, with straight spurs as in *A. canadensis*, but distinguished from that species by sepals which are ultimately revolute, and by the broader limb of the petals. The colour of the flowers is not, however, golden as the name would imply, but a pale straw-colour. As a garden plant it is perhaps less showy than many other species, but will be acceptable from its distinct shade of colour as well as for its novelty.

Next I have to introduce a malvaceous plant, also one of Roezl's introductions, and sent out last season by a French firm under the name of *Malva aurantiaca-rubra*, a most objectionable compound, and one which must inevitably have been set aside, even had not the plant in question proved to be but a re-introduction of an old acquaintance. It is a greyish, half-shrubby perennial, clothed with stellate hairs even to the calyxes, and grows about eighteen inches high, with somewhat weak stems and semi-trailing branches, at least those near the base. The foliage is heart-shaped, variously lobed, and incised, on longish stalks. The flowers are rather small, in axillary clusters near the top of the stems and branches, of a pale orange red, and present a rather pleasing contrast to the silvery grey of the foliage. It blooms throughout the summer and succeeds in any light soil. As already hinted, it has previously been cultivated in British gardens, having been introduced by Douglas long since, under the name of *Malva Munroana*, and has recently been transferred to the genus *Malvastrum* by Dr. Asa Gray, the specific name being retained.

The third name on my list is a Patagonian annual crucifer, *Crambe filiformis*, a name suggestive rather of coarseness and culinary herbs, than of anything at all fitted for the domains of Flora, at least that portion of them devoted to ornamental gardening.

The present species is, however, remarkable for its graceful, airy, growth, which constitutes its chief attraction, the flowers themselves being small. It commences blooming when only a few inches high, and in its earliest stages might excite but little interest, but as the season advances it throws out innumerable slender, thread-like branches, studded near their extremities with neat whitish four-petalled flowers, forming ultimately a compact little bush about a foot or more in height, and as much in diameter. It continues in blossom till the end of the summer. Though sent out by an Erfurt firm as an annual, the root appears likely to survive, so that it is probably at least a biennial.

Ipswich.

W. THOMPSON.

A New Japanese Ornamental Grass.—We now have the pleasure of bringing to notice an entirely new ornamental grass which was sent from Japan by Mr. Thomas Hogg, under the name of *Imperata japonica*. This grass has long and narrow leaves, which are variegated with green and white. The flower-stems, which are produced in great profusion, are four or five feet high, and bear at the top a cluster of flower-spikes along which the small flowers are arranged. Each of the small flowers is surrounded at its base by a ring of silky hairs as long as itself. When the grass is quite ripe, or when the clusters are cut and placed in a warm room, the spikes bend gracefully and the hairs spread and give the whole head a most beautiful appearance, not unlike that of an ostrich feather. These heads will be highly prized as parlour ornaments, as they retain their beauty for an indefinite time. The name under which Mr. H. sent the plant is probably one given by some of the foreign botanists in Japan. It is, however, not an *Imperata*, as its manner of flowering is quite different from that genus. We have not at hand the materials for a proper determination, but it agrees well with the brief description given of *Eulalia japonica*.—*Earth and Home*. [We had the pleasure of seeing this grass in Mr. Hogg's garden in New York in 1870, and admired it much as a large variegated grass. The flowers, however, are very beautiful and curious. It is probably not yet in this country.]

Forget-me-Not.—Our well-known *Forget-me-Not* (*Myosotis palustris*), like many more old favourites, has had of late to make room for fashionable flowers of the day; yet the endearing name, *Forget-me-Not*, would have been enough of itself, one would have thought, to induce everybody to plant a small patch of this *Myosotis*, which soon spreads and becomes a bed, and when dressed once or twice during summer, by removing the old flower-stems and dead leaves, it continues to produce flowers in abundance from early spring until late in autumn. A good many different kinds of *Forget-me-Nots* grow wild, both in England and in southern Europe; but none are so attractive or so much admired as *M. palustris*. Nor did its beauty escape our forefathers; for we find that a collar of gold enamelled with *Forget-me-Nots* was presented by the ladies of the Court of England to Lord Scates, brother to the Queen of Edward the Fourth, as a token of their approbation and regard for his heroism and loyalty as a distinguished English knight. I may add, that all who wish to begin its culture will find it growing in marshy situations, or by the margins of streams. It will be found to be quite at home in the bog-garden; but so accommodating are its habits, that it will grow almost anywhere, and under cultivation, its general appearance is much better than that which it has in a wild state.—A. D. ALLISON, *Bishop Auckland*.

YOUNG CONIFERS IN THE FLOWER-GARDEN.

Our general tendency is to plant conifers much too near the house, and in positions where they cannot attain full development. The wisest planter will ask himself, Am I placing this tree so that it may attain its fullest development? and act accordingly. Some of the most graceful conifers attain the largest dimensions, as for example, *Thuja gigantea* and the *Deodar*; but that they attain great proportions is no reason whatever why they should not, when young, be planted to adorn any position for which their grace and size may adapt them. The remedy is to remove them when they have gone beyond the desired size. Graceful as are young plants of the *Deodar*, of the *Retinosporas*, and *Cypresses* when well-grown, healthy young specimens of the true *Thuja gigantea* (commonly sold as *T. Lobbi*) seem to surpass them all. At least we have never seen anything in the vegetable kingdom more graceful than young specimens of this at Mount Shannon, Cork. The leading shoot especially was very striking. It seemed like a fishing-rod laden with the most exquisite fronds of ferns, each standing quite clear of its fellows, by reason of the rapid growth of the central shoot. We now have quite a number of conifers distinguished by this ravishing beauty of form when young. Few, however, surpass the *Deodar* in the numerous districts where it does well.

THE FORMAL MARGIN.

No really good effect is possible in the general aspect of ornamental gardens till two simple improvements are carried out: these are the covering of bare borders, and the breaking up of the harsh and formal lines that belt nearly every shrubbery or pleasure-ground plantation with ugliness. Referring to the last only in this instance we need not remind the reader of what every person who looks into a garden must know, of the wearisome, spiritless primness that engirdles us everywhere.

The remedy is simple, yet nobody thinks of applying it. Like all really essential principles and improvements in gardening no involved arguments are necessary to explain it. But we, unfortunately, are not yet departed from the strait-laced phase of gardening. We cut in everything that stretches forth its shoots, mercifully to hide our foolishness. The first thing stupidity will ask itself on reading this note is, How are we to get the mowing done? What should we think of those who arranged a house chiefly for the convenience of the dusters? Mowing may be perfectly well done without in the least injuring the most picturesque fringe to a plantation. There is no need to go beyond the outer leaves of the outlying subjects: a little spray of long grass here and there is an

ornament, not a blemish. The effect of our gardens and public parks is materially injured by the dreary expanses of wide bare borders. In summer the effect is bad enough, but it is tenfold worse when the naked ground is sheeted with the winter's slime. On the other hand, when the trees and shrubs are allowed to throw their graceful arms over the ground, and none of these bare-dug surfaces are to be seen, the unoffended eye dwells with pleasure on the trees and shrubs. All true landscape-gardeners should save us from rigidly formal margins, and every gardener should know that to dig and trim and curve his borders into formality is to steal from them every grace. All his efforts should tend to hide instead of exposing naked earth, and to break the margins of beds of shrubs in many ways instead of carving them all to one unsightly pattern of stiff, rigid formality.

YUCCAS.

Among all the hardy plants ever introduced into this country, none surpass the various kinds of *Yucca*, or "Adam's Needle," as it is commonly called. There are several species hardy and well suited for flower-garden purposes, and, more advantageous still, distinct from each other. The effect afforded by them, when well developed, is equal to that of any hothouse plant that we can venture in the open air for the summer, while they are green and ornamental at all seasons. They may be used in any style of garden—may be grouped together on rustic mounds, or in any other way the taste of the planter may direct. If we had but this family alone, our efforts to produce agreeable and picturesque effect with hardy plants could not be fruitless. The free-flowering kinds, *filamentosa* and *flaccida*, may be associated with any of our nobler autumn flowering plants, from the *Gladiolus* to the great *Statice latifolia*. The species that do not flower so often, like *pendula* and *gloriosa*, are simply magnificent as regards their effect when grown in the full sun and planted in good soil; and I need not say bold and handsome groups may be formed by devoting isolated beds to *Yuccas* alone. They are mostly easy to increase



Cedrus Deodam.—(After Alphand).

by division of the stem and rhizome; and should in all cases be planted well and singly, beginning with healthy young plants, so as to secure perfectly developed specimens. Hereafter will follow a further description and account of the culture of the most important kinds.

YUCCA ALBOGLOIA.—A fine and distinct species, with a stem when fully developed as thick as a man's arm, and rising to a height of from six feet to eighteen feet. Leaves numerous, rigidly ascending, dark-green, with a slight glaucous bloom, eighteen to twenty-one inches long, and broad at the middle, with the horny margin rolled in for two inches or three inches below the point, and finely toothed in the remaining portion. Flowers almost pure white, in a vast pyramidal panicle. This plant is hardy, but the fact is not generally known.
(To be continued.)

THE PROPAGATOR.

THE ART OF GRAFTING.

AFFINITY BETWEEN SPECIES.—The laws of the affinities of species are almost unknown. The observations hitherto made have been undertaken in a practical rather than a purely scientific spirit, as in the fertilizing of plants. The results obtained up to the present can only be regarded as matters of fact. No theory has as yet been deduced from them, except that kinds to be united by grafting must be of the same botanic family.

For instance, the peach and the apricot are grafted on each other with difficulty, while both do well on the almond tree and the plum tree. All the cherries unite with the Mahaleb: but it will not succeed as a graft on any of the cherries. The sweet chestnut prospers on the oak; but will not do so if grafted on the horse chestnut, which belongs to another family. The medlar and the quince, which have solitary flowers, flourish on the hawthorn, whose flowers are in corymbs. The *Chionanthus*, so nearly allied to the lilac by its panicle flowers and simple leaves, only succeeds well on the common ash and on the flowering ash, which have compound leaves. On the other hand, the *Sorbus*, with pinnate leaves, is more vigorous when grafted on the thorn, whose leaves are more entire than when grown on its own roots.

The grafting of evergreen trees on deciduous kinds presents more than one singularity.

The Photinia, allied to the beam tree, the *Eriobotrya*, allied to the medlar, are grafted on the medlar, and not on the hawthorn. On the last, as a stock, the *Cotoneaster* and the *Pyracantha* do well. The *Mahonia* flourishes on the *Berberis*, and the common laurel succeeds on the bird cherry and even on the wild cherry, from which it differs so much in appearance.

The grafting of deciduous plants on those that are evergreen has, in almost every case, been attempted in vain. Those who are fond of oddities can, with the assistance of grafting, have on the same thorn stock at the same time fruiting branches of the pear, the medlar, the beam tree, the Service-tree, the mountain-ash, the European and Japanese quince, and also see there the flowers of the double and red thorns, the *Cotoneaster*, and the *Pyracantha*.

They may gather from the same plum-stock plums, apricots, peaches, nectarines, almonds, the corymbs of the Canadian cherry, and flower garlands of the Chinese and Japanese plum. But these whimsicalities are unworthy the attention of cultivators.

Whoever wishes to study grafting in the works of celebrated ancient authors on horticulture will find a string of absurdities, some of which we shall mention. Virgil speaks of a plum-tree which bore apples after having been grafted, and recommends the grafting of the pear on the ash. Martial advises the grafting of the cherry on the poplar. Columella, whose works are equally trustworthy, would have the olive grown on the fig. Palladius speaks of the walnut being grafted on the *Arbutus*, the pear on the almond, and the citron of his native island of Sardinia on the mulberry-tree. Pliny considers thunder injurious to trees grafted on the white thorn.

Madame de Genlis, it is said, grafted the rose on the holly or the black currant, in order to obtain green or black roses; and the Abbé Rozier recognised the possibility of it. Others united, in their imagination, the apple to the briar, hoping to gather therefrom Calvilles; the orange to the holly, in order to acclimatize the former in open woods; the vine to the walnut-tree, so as to have grapes full of oil. They are merely so many hallucinations, like the story of a cornel grafted on a peach-tree in a garden at Troyes, published by M. de Caylus in his "History of the Conjunction of Plants." The ancients are not the only persons guilty of falsification in the matter of grafting. There have been many instances of it in our own time, and we shall long continue to hear of black roses being produced from a black currant stock, &c.

MUTUAL VIGOUR OF THE PARTS.—It will always be better to unite by grafting only such subjects as have between them some analogy in point of vigour, time of commencing to vegetate, and hardiness. If any difference should exist, it would be preferable that the graft should be of later vegetation

than the stock, and also more vigorous and hardy. Tender varieties suit well with a stock of moderate vigour; but on a weakly stock they produce a worthless tree. When grafted on too vigorous a stock, it is difficult for them to absorb all the sap furnished by the roots; an evenness of growth cannot be established between the stock and the graft. Then follow weakness and disease—disagreeable results. The reverse of this, to have the graft more vigorous than the stock, is more admissible. The pear-tree on the quince, the apple on the paradise, the cherry on the Mahaleb, give us proofs of this. The tree will be less vigorous than if perfect harmony existed between the two parts, and, its growth being thus tempered, it tends more to the production of fruit. Very great differences in the matter of vigour may be lessened by means of double grafting, in which we first graft on the stock a variety of intermediate vigour, and on this, later on, we graft the variety which we desire to propagate. The stock should always be strong enough to receive the graft. If it is weakly, although the graft will unite with it, the future tree will always be tender. Stocks that have been planted a year at least should be employed. The number of the grafts on each stock should be in proportion to its vigour, so as to obtain the favourable results which will follow from the exact adjustment of the powers of vegetation. Sometimes grafting is successfully performed, during the repose of the sap, on stocks taken up out of the soil, which are replanted immediately after grafting. The graft, on its part, should come from a pure source. The tree which furnishes it should be healthy, if it is desired to transmit health and hardiness. In the raising of plants, it is easier to prevent than to cure disease. The degeneration—more apparent than real—of species and varieties is especially due to the selection of bad subjects for propagation. The parent plant or tree which furnishes the scions should always be of a strong, healthy constitution.

INTIMATE UNION OF THE TWO PARTS.—In every kind of grafting it is indispensable that the two parts grafted should be in close communication, not by means of the epidermis or the pith, but through the generating layer—that is, the new and living layers of inner bark or albumen, in the tissue of which the cambium flows. A perfect joining is not effected except on this condition. The multiplicity of points of contact is favourable to a more complete union, which will also be assisted by a similarity of texture between the scion and the stock, especially as regards the herbaceous or woody nature of their tissues. Lastly, the speedy cohesion of the parts depend on the skill of the operator, who should know how to avoid wounds, or to cicatrise them; and to preserve them from the action of the atmosphere.—*C. Baltet's "L'Art de Greffer."*

(To be continued.)

THE FRUIT GARDEN.

FOUR NEW PEARS.

THE domains of Pomona are at present so richly furnished that it may be asked, "What new pears can be announced as surpassing in merit those already known?" It would appear, in fact, that after the Epargne, Beurré Giffard, André Desportes, William, Beurré d'Amanlis, Monsallard, Bontoe, Madame Treyve, Sénateur Vaisse, Souvenir du Congrès, and Comte Leleux, no other good summer pears could be discovered. We are inclined to think, and with good reason, that of recent varieties of autumn pears none can surpass in quality the Beurré Baltet, Beurré Benoit, Seigneur, Beurré Hardy, Beurré Superfin, Fondante des Bois, Hélène Grégoire, Louise bonne d'Avranches, Thompson's, de Tongres, Beurré de Naghin, Marie Louise, Doyenné du Comice, Duchesse d'Angoulême, Napoleon, Beurré Dumont, Doyenné Boissard, Van Mons, Sucrée de Montluçon, Ne plus Meuris, Fondante du Panisel, and Beurré Bachelier, all of which are pears of unexceptionable quality; and, finally, that the Beurré Diel, Triomphe de Jodoigne, Figue d'Alençon, Léon Grégoire, Jules d'Airoles, Passe Colmar, Beurré d'Hardenpont, Orpheline d'Enghien, Nouvelle Fulvie, Marie Benoit, Duchesse de Bordeaux, Passe Crassane, Olivier de Serres, Doyenné d'Hiver, Doyenné d'Alençon, and Bergamotte Esperen will long remain unrivalled as first-class winter pears.

In these prefatory remarks, let us not forget our fine old acquaintances the *Beurré Gris*, *Doyenné d'Antonine*, *Crassane*, *St. Germain*, and winter *Bon Chrétien* (which are not to be surpassed in the flavour of their fruit, but which are, unfortunately, not always of robust growth, unless when grown on a wall), nor the delicious little pears, *Doyenné de Juillet*, *Citron des Carmes*, *Rousset de Reims*, *Avocat Allard*, *Monseigneur Sibour*, *Colmar Nelis*, *Zéphirin Grégoire*, *Castelline*, *Beurré Millet*, and *Joséphine de Malines*, which for family use are more highly esteemed than the enormously large *Van Marum* and *Belle Angevine*.

Do not, however, be mistaken. The pear-tree is so variable in its fruit (different kinds ripening at different periods throughout the four seasons), that there is always room in the list for any new acquisition which recommends itself by the vigour, habit, or productiveness of the tree, or by the size, shape, and colour of the fruit, and, above all, by the rich qualities of the flesh, which may be sugary or vinous, sweet or acidulous, juicy or perfumed, whatever may be the season at which it ripens.

These considerations have induced us to give the first place in the list of pears to *Clapp's Favourite*, the *Poire de l'Assomption*, the *Fondante Thirriot*, and the *Beurré Baltet père* :—

CLAPP'S FAVOURITE.—Raised in America, it has been highly extolled by Downing, and is in every respect deserving of the praise which he has bestowed upon it. The tree is magnificent in the vigour of its growth and in appearance, and in point of productiveness leaves nothing to be desired. The fruit is of the largest size, very handsome in shape and colour. Sometimes it is so highly tinted with carmine, that one would imagine it to be a *William*, an *Epargne*, or a *Louise bonne d'Avranches*; at other times it takes the appearance of the *Poire d'Amour*, or the *Bon Chrétien de Vernois*, and remains yellow, with a fine green under-tint. The flesh is fine, snow-white, melting, and of a delicate flavour. It ripens about the middle of August. *Clapp's Favourite* will be highly prized at the most sumptuous desserts, and will be a valuable subject for the speculative cultivator. It does well either on its own roots or grafted on the quince; accommodates itself to the pyramid or palmette form, and succeeds equally well in the open ground or on a wall. If the wall is fully exposed to the sun, the fruit should not be allowed to ripen on the tree. In 1871 *Clapp's Favourite* and the *Souvenir de Leopold First* produced the two largest pears that we gathered.

POIRE DE L'ASSOMPTION.—If we consider the enormous prices which are sometimes asked for new varieties, this pear is well worth the 2,000 francs its raiser, M. Ruillé, of Beauchamps, in the Lower Loire, demands for the sole right to its possession. Imagine a tree like a thick-stemmed *Colmar d'Arenberg*, with short branches laden with fruits which resemble sometimes a large short *Colmar* or a broad *Duchesse*, sometimes a pyriform *William* with an indented skin, of a delicate yellow streaked with red and sometimes tinted with carmine. The flesh is delicate, melting, exceedingly juicy, sugary, perfumed, and refreshing at all its periods of ripening, which extend from the middle of August to the end of September. The tree may be grown as a pyramid, palmette, small candelabrum, and cordon, in the open ground or on a wall, in the sun or in the shade. It is particularly well adapted for the columnar form, which is its natural habit, and which, as occupying but a small area, is calculated to secure it a place in every fruit-garden. It does well either on its own roots or grafted on the quince.

FONDANTE THIRRIOT.—This, named after its present possessor, who at first intended to call it *Triomphe des Ardennes*, grows on a very vigorous, branching, tall, and productive tree. The fruit is rather large, and grows on long stalks in clusters. In shape it is cylindrical-obtuse, sometimes pyramidal or truncate; the colour being of a fine green, passing into light yellow, spotted and shaded with rose-colour. The flesh is white, delicate, often melting, often half brittle, always sugary. It is best in quality in the earlier stages of its ripening, which takes place in September and October. The tree, which is vigorous both on its own roots and when grafted on the quince, is well adapted for orchards or fruit gardens, as a tall standard, pyramid, vase, candelabrum, in the open ground or on a wall.

BEURRE BALLET PÈRE.—This, raised from seed by the writer's father, is a fruit of the largest size and first quality, produced in abundance on a tree of low and handsome habit. The form of the fruit varies from the pyramidal top-shape to the thickly-rounded; the colour passes from a lively green to a sulphur yellow, with a slight tinge of vermilion and a few reddish spots. The flesh is very delicate and melting, juicy and with a fine and agreeable flavour. The earliest begin to ripen in the commencement of October, but the usual or regular

period of ripening is during the whole month of November. At the present time (the first fortnight in December) we have some fine specimens still hanging on the trees. The tree is robust, of low habit and handsome growth, either on its own roots or grafted on the quince. It adapts itself to all forms of training, whether as a pyramid, column, palmette, candelabrum, goblet, or standard, in the open ground, or on walls with different aspects. The superior property which the fruit possesses of hanging long on the tree indicates that the *Beurré Baltet père* is well adapted for planting in orchards exposed to winds from all quarters; but it should be gathered before the first white frosts come on. During four years in which we have studied this pear in our experiment-grounds and pomological schools, its good qualities have never once disappointed us.

Troyes, France.

CHARLES BALLET.

A New Way to "Make" Fruit-Trees.—Mr. Sullivan Hutchinson, of Bristol, New Hampton, received letters patent last May for a new and novel invention for making productive fruit-trees in a single year from fruit-bearing limbs. Limbs that can be spared from trees that bear desirable fruit are transformed into independent trees, which will bear right along, just as though they had not been severed from the parent stock; and in a short time become fine, thrifty trees, retaining the habits of the parents from which they were taken. This is what Mr. Hutchinson claims his invention will do, but from the imperfect description we have had of the process, it is impossible to give a very clear idea of how the thing is done. Into the limb, however, which is intended for the future tree, small roots are grafted just above where the limb is severed. Below these roots the branch is girdled. About and below the roots is placed a box filled with earth. This operation is performed in the spring. During the summer the roots grow, and life is thus established between them and the limb above. In autumn the limb is severed at the place where it was girdled, and set in the ground in the same way any young tree would be. The next year, according to Mr. Hutchinson's statement, this new tree will bear fruit just as though it had not been cut from its parent. To what extent this operation may be carried, and how successful it may prove, remains to be seen. Experiments to a considerable extent have been made in Bristol and New Hampton, and we hear that farmers in various parts of the State are buying town and farm rights with the intention of testing the practicability of this new system of producing early-bearing fruit-trees. If successful, a complete revolution in our manner of obtaining apple trees will be the result. Instead of buying trees from the nursery, which require years to come into bearing condition, the limbs from our old trees will be converted into new ones that will give us fruit at once.—*Gardener's Monthly*.

Striped and Variegated Fruits.—Although fruits are mainly valued for their edible properties, says Mr. Barron, in the *Florist and Pomologist*, yet if equal excellence can be obtained under a more beautiful exterior, the combination of the two qualities is certainly to be preferred. Some object to the colouring of striped fruits, and fancy that they have too much of a painted look about them to be good to eat; but many of these fruits are as well flavoured as the ordinary kinds. The following is a list of all the examples of striped fruits which I can at present call to memory :—

FIG.—Col di Signora Blanca Panachée: green striped with bands of bright yellow.

PEARS.—*Beurré d'Amanlis Panachée*: beautifully marked with broad bands of rosy red and yellow, very striking and pretty constant; desirable. *Duchesse d'Angoulême Panachée*, or *Duchesse Panachée*: the quiet green of this fruit is prettily set off with broad stripes of deep yellow. *Louise Bonne d'Avranches Panachée*: this is *Louise Bonne de Jersey*, very prettily striped with broad bands of rosy red and yellow; very handsome. *Virgoulense*: fruit pale yellow, striped with rosy red. *Culotte de Suisse*: fruit light green, striped with yellow. *Winter Crassane*: fruit pale green, striped with yellow.

APPLES.—*Reinette Rayée*: this is an exceedingly pretty little fruit, very evenly and regularly marked with broad bands of rosy red and yellow. *Reinette à Feuilles d'Aucuba*: fruits striped with yellow slightly rosy; leaves resembling those of the aucuba. *Henry Morning*: very beautifully striped with rosy red. *Yorkshire Greening*: this is at times prettily marked, but not constantly so. *Devonshire Red Streak*: slightly striped. There are besides many apples showing streaks of colour, but they are not sufficiently distinct to be here noticed.

GRAPE.—*Aleppo Chasselas Panaché*: this is a most singular variety, some berries being prettily striped with black and red, or white, some half black, others half white or red, others again wholly black, red, or white; leaves striped with green, red, and yellow; flavour inferior.

APRICOT.—*Abricotier Panaché* (the striped apricot): fruits medium-sized, pale orange, shaded on the exposed sides with bands of reddish orange and pale yellow; leaves prettily blotched with yellow.

CHEERRANTS.—*Striped-fruited*: the fruits of this variety are yellow, distinctly striped with red; it is, however, a very shy bearer. *Commune à Feuilles Panachées* has also the fruits slightly striped, and the leaves variegated.

MELONS.—*Queen Anne's Pocket*: the fruits of this are quite of an ornamental character, small, round, and prettily striped with broad bands shading from dark orange to pale yellow. All the other varieties of *Cucumis Melo Dudaim*, to which this variety belongs, are more or less early striped. There are, besides, numerous varieties of gourds, which are wonderfully beautiful in their striping; but these, though botanically coming under the designation of fruits, since they are not practically used as such, are here passed over.

How to induce Seedling Fruit-trees to Bear Early.—At a meeting of the Royal Horticultural Society, the following communication from the Rev. W. Kingsley was read:—"Everyone knows how very long is the time between sowing the seed of a fruit-tree and getting fruit from it, so that few men of fifty years of life have the courage to propagate seedlings. I believe the time may be shortened most materially, and that a very few words will explain the correct way of growing seedling fruit-trees. I have been led to the idea by the difficulty I have had in getting some grafted trees into bearing, and by observing that precisely the same sort of growth occurred in some trees that had originated in suckers from old ungrafted trees. In almost all these cases, whether apple, pear, plum, peach, or orange, the wood was thorny; and though I cut back, and used the cuttings for scions, all had the same thorny and fruitless character. However, in experimenting upon a set of seedling peaches, some were allowed to grow wild, some steadily pinched in, some cut in closely and pinched, and some trained as single rods; all these last fruited as soon as the shoot got beyond the thorny part of the stem. It then occurred to me that it was only necessary to get beyond this part of the growth as quickly as possible. This is done by encouraging the growth of the young seedling to a single upright shoot, and then using the point of that shoot as a scion on a strong stock; then the shoot from this scion is to be again trained at full length, and its point again used as a scion. In this way a shoot may be got having buds twenty feet or more from the root in a couple of years. I can speak from experience of the success of the process in the case of peaches and oranges, and some plums; pears and apples I have not yet tried. In this way I got over the difficulty with thorny pear trees. The trees that I could not get to fruit had been grafted with scions taken off too near the root, the sorts being new ones. By selecting the scion near the root, or far from it, a grafted tree would be produced that would bear only after a long interval or quickly, according to the gardener's will. At any rate, what has been said shows the importance of choosing the points of the leading shoots as scions for forming dwarf trees."

GARDEN DESIGN.

LANDSCAPE TREATMENT OF FARMS.

IN reference to the possible connection of landscape art with lands submitted every year to agricultural and economic uses, I propose to examine the matter in detail. If all farm-lands showed only the method of Alderman Mechi, and his system of pumping liquid manure by steam into the middle of any field—to be distributed thence by hose and sprinklers—should prevail, we should have, of course, only flat surfaces and rectangular fields to deal with. But it is safe to say that it will not prevail upon most of our farms for many years to come; yet it is none the less true that farm-lands are chiefly valued for the crops they will carry, and for the annual return they will make. Are lands under such rule of management susceptible of an æsthetic governance as well? Will treatment with a view to profit discard, of necessity, all considerations of tasteful arrangement? I think not, and for reasons among which I may adduce the following: Judicious location of a farm-steading, with a view to profit simply, will be always near the centre of the lands farmed: this is agreeable, moreover, to every landscape-ruling in the matter. The ricks, the chimney, the barn-roofs, the dove-cots, the door-yard with its skirting array of shrubbery and shade trees—if only order and neatness belong to them, as good economy would dictate—form a charming nucleus for any stretch of fields. If there be a stream whose power for mechanical purposes can be made available, economy dictates a location of the farm buildings near to its banks: taste does the same. If there be a hill whose sheltering slope will offer a warm lee from the north-western, a due regard for the comfort of labourers and of beasts, to say nothing of early garden crops, will dictate the occupancy of such sheltered position by the group of farm buildings: taste will do the same. If such slope has its rocky fastness, incapable of tillage, and of little value for pasture, economy will suggest that it be allowed to develop its own wanton wild growth of forest: a just landscape taste will suggest the same. If there be a broad stretch of meadow or of marsh land, subject to occasional overflow, or by the necessity of its position not capable of thorough drainage, good farming will demand that it be kept in grass: good landscape gardening will do the same.

Again, rolling hillsides, which, by reason of their declivity or impracticable nature, are not readily subject to any course of tillage, will be kept in pasture, and will have their little modicum of shade. The good farmer will be desirous of establishing this shade around the brooklet or the spring which waters his herd, or as a sheltering belt to the northward and westward of his lands: the landscapist cannot surely object to this. The same shelter along the wayside is agreeable to all æsthetic laws, and does not surely militate against any of the economies of farming. Indeed, I may remark here, as I have already done in the progress of these pages, that the value of a sheltering belt of trees is not sufficiently appreciated as yet by practical farmers; but those who are not insensible to the quick spring growth under the lee of a garden-fence, will one day learn that an evergreen belt along the northern line of their farms will show as decisive a gain in their fields or their orcharding.

Again, in the disposition of roadways, there is no rule in landscape gardening which is not applicable to a farm. Declivities are to be overcome by the easiest practicable grades, and the curves which

will insure this in most landscapes are those which are justified at a glance by the economic eye, as well as by the eye of taste. A straight walk up and down a hill, is a monstrosity in park scenery; and it is a monstrosity that cannot be found in pasture-lands, where cattle beat their own paths. Even sheep, who are good climbers in search of food, whenever they wend their way to the fold, take the declivities by zig-zag, and give us a lesson in landscape art. An ox-team, in worming its way through woodland and down successive slopes, will describe curves which would not vary greatly from the engineering laws of adjustment.—*Rural Studies.*

OAK LODGE, ADDISON ROAD, KENSINGTON.

THAT "in small proportions we just beauties see," is well illustrated in garden design. It is most rare to find a large place "well laid out." Places of this description of any size are unfortunately too rare, but for the truest examples of taste in garden design we must go to comparatively small places. The best example we know of a well-arranged garden in London is the one of which we now furnish a view of part of the grounds. As we have not at present a plan of it, we will confine ourselves to saying a few words on the portion shown in our plate. Perhaps the first thing asked by some of those who have not seen the charming garden, of which our illustration gives but a feeble notion, will be, Why is a rock-garden in such a position? Because a formal and ugly duck-pond and island were there before the garden was designed, and the lease stipulated that there they should remain. Permission was, however, granted to modify the scene a little, provided the water, &c., were not done away with. Here, then, was a problem: a small formal pond and an ugly formal bank just in the place where a clear-seeing landscape-gardener would desire a little repose and a spread of velvety grass. But it was solved, and ably solved. The ugly bank became a varied mass of picturesque rock, seamed with graceful ferns and trailing shrubs; the water fell into what seemed a natural hollow in the earth, and around it sprang up tufts of Iris and Yucca. Rich masses of specimen Rhododendrons crest the rocks. The rocks, in fact, form a sort of retaining wall for the masses of earth to accommodate these plants. Some old pear-trees and a pair of grand old Wych elms were carefully preserved, and grandly add to the effect of the scene. Mr. Alfred Dawson, who sketched and etched the view for us, does not usually betray any animosity to a well-garlanded rock-garden, but in this case he has, while giving us the rocks faithfully enough, been somewhat cruel to the graceful drapery of vegetation with which they are clothed by ignoring its existence to a considerable extent. It is a mass of artificial rock cleverly and artistically constructed, but, like all masses of the same species of rock, it is not suitable for alpine and rock plants, &c. The opposite side of the rock is very much more attractively varied with gently swelling banks and tastefully grouped masses of shrubs; and there are various other very praiseworthy features about the grounds. Although the place is only a few acres in extent, and in a comparatively closely-built neighbourhood, it seems as free and broad, to one standing on the lawn, as if it were fifty. The boundary-line is so skilfully managed, and the surroundings so carefully concealed by a graceful veil of trees and shrubs, that the feeling of repose is perfect. Oak Lodge is the residence of Mr. McHenry, for whom it was designed by Mr. Marnock.

The Axe a Magician.—While selecting the best site for a mansion, one of the chief objects to be considered is the view to be obtained from the principal windows of the house when completed, such as distant mountains or hills, church spires, towers, castellated buildings; frequently rivers, lakes, and even the open sea. After the house has got a certain length on, the artistic laying out of the grounds is the next point of consideration, and this is generally done by forming kitchen and flower gardens, evergreen shrubberies, and, for the better protection of the house and grounds, finishing off with clumps or belts of trees of various breadths, planted round the outside boundary fence. When the gardens are at first laid out the trees are generally small, and the views so extensive that the possibility of their being ultimately shut out is never taken into consideration. As time rolls on, many of these residences become buried up amongst a dense forest of trees, and few of the original panoramic views are visible, unless one ascends to some eminence or gets outside of the



VIEW IN THE GARDENS, OAK LODGE, ADDISON ROAD, KENSINGTON.

wall. Such shut-up places coming into the market are frequently undisposed of for a length of time, owing to their close and damp nature, the unsuccessful owner never for a moment thinking that such closeness can be easily cured. Some parties, more knowing than others, often secure such secluded places, and immediately commence a reformation; the charm worked by the woodman's axe, with the aid of the artist or landscape-gardener, is often marvellous, and at a comparatively trifling expense, in certain cases the nature of the thinnings paying for the improvement affected. After the cutting for utility, as well as for landscape effect, has been accomplished, the debris all cleared away, and the place again put into proper condition, its market value will be found to be greatly increased. In some localities the stem-pruning of a few of the large specimen trees often produces a peculiar but pleasing effect while looking at views between the stems and beneath the spreading branches. In other cases, the heading down of some of the intervening trees and the trimming up the branches of neighbouring ones also tend to bring in views which have long been shut out. In some instances the removal of trees altogether, and the stem-pruning and branching of others, produce views truly grand, and without in the least degree injuring the health of the trees operated on. A mansion-house known to me, situated on a somewhat rising ground about a half a mile from the sea, but which was almost excluded from it by large trees and a thicket of evergreen and deciduous shrubs, by the judicious removal of some of the under branches of the large and wide-spreading trees, the clearing or thinning out of a few of the evergreen and deciduous shrubs, and the partial heading down of others, beautiful views of Inchkeith and the Firth of Forth have been obtained from the principal windows of the mansion. At another large mansion, the removal of a gigantic oak tree in front of the drawing-room windows has opened up, on one side, a rich expanse of country, with hills and wooded glens, which before was scarcely visible except through a network of branches, and that during the leafless months of the year. On another property, the breaking through some extensive belts of spruce fir has been the means of varying and improving the foreground landscape, besides bringing into view a range of hills and wooded banks, with here and there the entire outline of a fine old Scotch fir or beech tree, which, if well shaped, forms a beautiful object in the landscape. Although the remarks here given refer to vistas and views as applicable to mansion and villa residences, such effects to be produced by openings are equally applicable to the wooded banks of rivers, extensive woods, and wooded glens quite remote from dwellings. The eye, when once practised to such landscape effects, will find on many large properties numerous spots eminently calculated for such openings.—*Jas. M'Nab, in "Farmer."*

THE GARDEN IN THE HOUSE.

FORM OF DINNER-TABLE PLANTS.

It has been the fashion for three or four years past to bring into descriptions of many of the new plants that have been introduced during that time the assertion that they are suitable (or invaluable) for dinner-table decoration. This may mean that the leaves or the flowers of the plant are capable of arrangement in a vase so as to look well upon a dining table; but that is not the meaning which these words convey to the majority of those who read them. When a plant is mentioned as desirable or useful for any particular purpose, readers in general, and gardeners especially, conceive that the writer refers to the whole plant, and not to any individual part or parts of it; and as a result of such recommendations we often see plants put upon dinner-tables that are utterly unfit for such a position. I have been led to notice this at the present time in consequence of some remarks which have recently appeared with respect to *Amarantus salicifolius*, of which beautiful plant I was favoured with a very early view. I may therefore count myself amongst the first and oldest of its admirers since its introduction into England, and I regret to see it proposed to be used in an unsuitable manner. It is noteworthy and characteristic of their good taste, that the firm who introduced it do not advertise the plant for dinner-table purposes.

The following are extracts from the remarks to which I refer:—"*Amarantus salicifolius* promises to be the finest-foliaged plant for dinner-table decoration for 1872. . . . It is a free-growing plant of admirable habit, forming a dense weeping pyramid of about a yard high, and nearly as much through. . . . It will obviously give a new character to dinner-table decoration." Assuredly it will be a novel feature, as well as a most unmitigated nuisance, if plants three feet

high and three feet in diameter are allowed to be placed on a dining-table. I do not say that the plant cannot be made available for dinner-tables. To us in the metropolis it has the great drawback that it does not begin to assume the beautiful colours in its leaves until the London season is over, while those who, in the country, can use it as an in-door plant will find it more suitable for breakfast and luncheon decoration than for dinners, as its colours do not show to advantage by artificial light. It is quite possible that, for daylight use, good dwarf plants might be obtained by late sowing, and also that suitable plants might be "manufactured" by removing all the lower branches from a plant of the usual size, thus converting it into a standard, with a stem about two feet high; but I scarcely like to suggest such interferences with the natural appearance of so elegant a plant: and the more so, since there are so many plants well suited to the purpose, without requiring to be tortured into forms foreign to their normal style of growth.

It cannot be too often repeated, for the information of those who write or talk about the suitability of plants for dinner-table decoration, that plants for that purpose must come under one of the following categories, or they are inadmissible:—They must either be below fifteen inches in height, so that those seated at the table may see over them; or they must be standards, and have no branches or leaves within twenty inches of the cloth, so that diners may see under them. Any object that interferes with the view across a dining-table between fifteen and twenty inches above the cloth, is an inconvenience to those at the table, and should never be allowed. W. T.

THE CULTURE OF PLANTS IN ROOMS.

(Continued from p. 90.)

In order to grow perfectly good and fine specimens in a room, the best thing to do is to select small plants in small pots, so that the subjects may become gradually acclimatized to the atmosphere, and capable of supporting it permanently. In this way a partial deterioration of the foliage may occur, which, however, will not be followed later on by any serious diminution of the appearance or beauty of the plants, and, moreover, in small pots the roots suffer less when any injury occurs to the leaves. A normal condition of health can, in the last case, be sooner re-established by placing the little plants in the most favourable part of the window until they have grown sufficiently strong to be moved elsewhere. It is only after the establishment of the new growth in the atmosphere of the room, when the plants have been thus accustomed to it, that they are to be shifted into larger pots, for which directions will be given further on.

Some instances from the author's experience will show that when a man does not allow himself to become discouraged, but rather gives double attention to such plants as appear to droop at first, he is likely to be well rewarded for his care.

A feeble specimen of *Dracaena concinna* was brought from the plant-house into the dwelling-house. All its leaves, except a few, dried up and withered, but they began to grow again, and stronger and stronger from year to year, so that now, after the lapse of six years, the plant retains the greater part of the leaves produced in the room, and has grown to be such a strong and handsome specimen as one is seldom fortunate enough to raise in a plant-house. In the first year only small and narrow leaves were produced, but after that time they grew larger, broader, and more luxuriant from year to year, and never showed any of the ugly spots which are so often seen on the leaves of these plants in plant-houses. Now the plant has a crown of forty healthy leaves, which are more than two inches broad, and more than two feet long. About the same time with the *Dracaena concinna*, a specimen of *Dracaena Jacquinii*, Kunth. (*D. ferrea*, "Hort.") was removed into the dwelling-house. In spite of every attention this plant always looked miserable, finally lost all its leaves, and, in consequence of the partial decay of its roots, was shifted into a smaller pot, and placed in the window. Before it had stood there quite a year, it had put forth a new and strong growth; was then shifted into a large pot, and soon made a fine specimen, with twenty leaves a foot and a half long and three and a half inches across, of a dark red colour, which it preserved pure and without spots. A specimen of *Dracaena marginata* (Lam.), about a foot high, was also brought into the room. In the course of three years it had grown five and a half feet high, and preserved all its leaves (except those which were produced in the plant-house), so that, from one foot above the ground to the top of the plant, it was thickly covered with foliage.

The last instance we shall mention is that of a specimen of *Cordyline*

cannæfolia (R. Br.) Knowing from experience that the best way to grow a good specimen of this plant in a room is to remove it thither in a young state, we brought in in a two-inch pot a very young plant, the roots of which reached the sides of the pot. Soon after its removal all the leaves died off one after another. However, the plant was placed in a sunny part of the window, and in July (it had been brought into the room in April) it produced the first new leaves, and at the same time roots which filled the pot. It was then shifted into a larger pot, and by autumn had produced eight new leaves, of which the largest were one and a quarter foot long, including the leaf stalk, and one and a half inch across. In the course of the following year it developed twenty-four new leaves, three feet long and three and a half inches across, so that it soon became a particularly handsome specimen, and remained for a long time thickly covered with leaves from the ground up.

These few instances may suffice to show that evergreens which are intended to be kept permanently in rooms, must first be gradually inured to the atmosphere, and must first have made a new growth, in it, before they can be looked upon as fully acclimatized. But the amateur who, when his plants on their first introduction into the dwelling become ill-looking and sickly in consequence of the change, removes them, and supplies their places by others, will very seldom succeed in growing good or durable specimens.

The following precautions should be observed, in order to prevent, as much as possible, any injury to large plants when removed from the plant-house into the dwelling house:—

1. Do not select any specimens in a growing condition, but choose those which have made their full growth, or such as are only commencing to push. The younger and more recently formed the leaves are, so much the more susceptible are they of being spoiled by being introduced into the atmosphere of a room.
2. Choose, if possible, the summer for introducing the specimens from the plant-house into the dwelling-house, as, the air being admitted into both these places at that season, the difference in the moisture of their respective atmospheres is not so considerable.
3. In removing plants into a warm room for the winter, do not select any which are growing in a low, moist plant-house, but such as have been already hardened in the drier air of a high and dryish house. Care should be taken in this respect, not only with plants which are intended for permanent culture in the dwelling-house, but also with those which are only placed there for temporary decoration.
4. Plants when first introduced into a room should be placed as near as possible to the window, with some shading from the direct rays of the sun in spring and summer. This protection will only be necessary for a short time after the introduction of the plants.
5. Plants removed from a moist plant-house should be sprinkled with water every morning and evening for the first week, which will prevent the injury which would result from the excessive evaporation from the leaves.

In foregoing remarks we have discussed the question of the introduction of plants into the rooms of dwelling-houses, but we must here impress upon all amateurs the caution that they will imperil, and probably destroy, all the results of growing plants in rooms, if they attempt to remove periodically into the open air, or into a plant-house, any evergreen subjects that have once been used to the atmosphere of a room. The following is an instance in the experience of the writer:—From some *Cordylines* which had been grown for years in a room, a selection was made of those kinds which are well known to be capable of enduring the open air in summer. These were placed in a glass-roofed balcony with open sides. Here, very soon indeed, *Cordyline rubra*, *C. violascens*, *C. australis*, *C. spectabilis*, and *C. stricta* put forth a new and a stronger growth than they had made in the room. A specimen of *C. australis*, which had been already cultivated in the room for two years, and was covered with a mass of handsome overhanging leaves, especially distinguished itself by the development of leaves much larger, broader, and of a deeper green, just such as this species only produces when placed in the open air in summer. In the midst of this growth, these experiment plants were taken back into the room in autumn; but the results of moving them were very unfavourable to all the plants. In the course of the following winter, *C. australis* lost all its old leaves and a portion of the new ones as well, and continued in a very sickly condition all through the winter, so that this fine specimen, which had kept its leaves for three years, was quite ruined by the experiment. *C. stricta*, which is one of the most durable plants for room-culture, and which, to be sure, on this account had, when brought back to the room, been placed in a rather dark part at a distance from the windows, gradually lost all its leaves and soon died.

That these injuries, which all the other plants which were thus

experimented on likewise suffered in the loss of all their old leaves and a portion of the new ones, could only be attributed to their having been shifted from the room to the open air, was manifest enough from the fact that all the other specimens, which passed the summer in the room, continued to grow away uninjured as in former years. The falling off of the old leaves was in this case entirely the result of the reaction of a summer's growth made under different conditions and influences, and which cost the plants the loss of the advantages of several years' acclimatization in the room. The partial loss of the leaves of the new growth resulted from this circumstance, that that growth was not quite completed when the plants were brought back into the room, where the higher temperature stimulated them to a further growth in the course of the winter. This part of the injury might have been prevented by removing the plants back to the room somewhat earlier in the season.

It is to be understood that all the preceding remarks on the acclimatization of plants in rooms are applicable only to the more important evergreen ornamental plants, whether intended for the temporary or permanent decoration of apartments.

For the management of plants flowering in winter and spring, the rules just given will be useful; but for summer-flowering plants, such as fuchsias, pelargoniums, &c., the room is merely a winter shelter. As we have devoted separate chapters to the various aspects of room culture, we shall give the necessary directions in the proper place.

What has been said respecting evergreen ornamental plants will apply equally to all flowering plants with evergreen foliage, which are wintered in ordinary dwelling-rooms with a temperature of from 10° to 15° Réaumur. Such are camellias, Indian azaleas, &c., of which many amateurs purchase very handsome specimens at high prices. The buds with which these specimens are thickly covered excite lively expectations of future flowers. But it happens otherwise. In spite of the greatest care one bud after another drops off without opening, and with them all hope of flowers fall equally to the ground.

Even when camellias are grown in a plant-house, a change of position usually proves highly detrimental to the development of bloom. In a much greater degree is this the case when a camellia, raised in a plant-house and covered with buds, is transferred to the dry air of a dwelling-room. But the amateur who wishes to succeed with these plants should not allow himself to be discouraged by the unfavourable results which always follow for the first year after their removal, but should rather continue his care of them. His perseverance will be rewarded by the success of growing camellias in a dwelling-room to as fine specimens and as well furnished with flowers as it is possible to do in any plant-house. These plants, like the evergreens, should make a new growth in the apartment to which they are removed, and, like them, should not be afterwards shifted to the open air. The special treatment of these handsome plants will be fully given in its proper place.—From the German of Dr. Regel.

(To be continued.)

THE VARIEGATED PINE AS AN IN-DOOR ORNAMENT.

Nothing could be more appropriate or decorative as an in-door ornament than a well grown entire plant of the variegated pine-apple, especially one grown expressly for the purpose, the fine development of the foliage having been carefully attended to. A fine plant so treated, and placed within a handsome majolica vase, large enough to conceal the pot in which the plant is grown, could not fail to be strikingly effective either in halls, corridors, or grand staircases—aye, and even for vases placed upon terraces in the open air during the summer season. The variegated variety differs from the normal form of pine-apple in its foliage being broadly laced with orange-yellow, suffused when younger with reddish-crimson colours, which contrast beautifully with what is left in the centres of the leaves. The fruit, too, partakes to some extent of the varied hues of the foliage, and adds materially to the general effect. It is, moreover, edible, but in flavour it is inferior to any of the varieties which are now grown for the sake of their fruit alone.

The cultivation of this variety is by no means difficult; the soil best adapted for it is a mixture of two parts turfy loam, one part peat, and one part leaf-mould and well-decomposed manure, to which should be added a small quantity of silver or sharp river sand. The plants should be potted in spring, but if they are to be placed in vases or other ornamental devices, it is advisable to use somewhat small pots, in order to ensure

their fitting more readily into such receptacles. Where plants are wanted for such purposes, the soil may be made a little richer in quality, to compensate for lack of quantity. After potting they must be grown in a stove, warm frame, or pit, and where a gentle bottom heat is obtainable, they should be plunged into it, in order to induce a rapid development. When sufficiently large, if required for in-door decoration, gradually inure them to a cool temperature, and be careful that cold water does not remain in the crown of the plant. These directions having been followed, the plants will be ready for any use to which the taste of the owner may choose to put them.



Variegated Pine-apple.

When grown to a large size the variegated pine is a striking plant for exhibition purposes, and if it is intended to use it in that way we should advise it to be grown in a brisk heat, with full exposure to sunlight, as by this method the colours are much brighter than in the case of plants which have been subjected to too much shade.

Of the liability of the leaves to get broken when used as a drawing-room ornament, there need be no apprehension. They are always armed, and will take care of themselves. Indeed, the old Scotch motto, "Nobody shall touch me with impunity," has an especial applicability in the case of this plant. W.

THE ARBORETUM.

OLD YEWS.

YEW-TREE VALE, a dell on the chalk downs near the woods of Wotton and the country of Sylva Evelyn, is one of those fine wild parks adorned and planted by nature herself. Here may be found as many as fifty great yew trees grouped together on an uneven slope, permitting no other growth except that of a few attendant hawthorns, with the green turf under foot. The yews stand in, what is called in America, an "opening," or wood pasture. Around is a game preserve, with a liberal growth of furzes, hollies, junipers, and lesser yews. It is undoubtedly part of the primeval forest, untouched as yet by culture, or even by any chance hand "sticking in a tree"; for everything that grows on this retired site is indigenous. The lesser native evergreens, the butcher's broom, ivy, and mistletoe, are freely sprinkled around; so are the oak, ash, birch, elder, maple, hazel, crab, bullace, and sloe, and the usual hedge-fruits.

The bow has been cut in Yew-Tree Vale. Druidical rites may have been celebrated here, and the golden knife may have sliced the mistletoe from the predecessors of these old thorns. The place has an aspect of Ancient Britain, and its silent repose seems to plead against revolution and deprecate change. May none attempt to beautify its ancient face, and desecrate the vale by introducing any novelty within its precincts!

Many of the trees are now in the vigour of old age such as yews enjoy. One at least has grown younger in appearance, and has

now more life in wood, bark, branch, and leaf than it had twenty years ago, when accident induced that singular effort of rejuvenescence which the yew can exert so powerfully, and which the short-lived fir is incapable of making. A fire was lighted in the hollow of a tree which had stood for many years previously green and grand, and firmly supported by a strong outer shell of wood. Twenty years later the charred marks had disappeared, and at the exposed edges, wherever nature could work, a new growth of bark and wood had repaired the damage, and given the intended victim a stronger hold of life, and, mechanically, a firmer support than it had on the day of the outrage, with a greener growth overhead, and an abundant crop of branches breaking out on the repaired trunk.

Many of the old yews have formerly parted with a slab from their bulging trunks, that has, perhaps, been worked up by shepherds and others into nut-crackers, cups, and little keepsakes, which have had a value, small or great, in the villages round for these hundreds of years. It is curious to see how the hardy giants have patiently repaired the ravages of this rude carpentry by enveloping the section with a new growth gradually overlaying the excised surface. In some instances, an unhealed portion shows the old wood underneath marked by the tool, and evincing by its decay that the robbery of the plank must have occurred hundreds of years ago. There are trees that would be thought sound but for the scars and eyelet-holes, which reveal a mass of decaying wood behind. Occasionally the marvellous power of life produces a new stem from the root, which grows up through the dying parent, nourished by the mould formed by a mass of rotten wood, dead leaves, remains of roosting birds, and dead animals. In one instance, a white beam tree has struck root in the decaying material within the hollow, and has carried its stem through the top of the foster parent, where its silvery leaves appear to grow on the yew in glittering contrast to the sombre hue of the ancient evergreen.

The decay of the wood within, and the cracking of the weakened bole in "windy storms," is the beginning of the end. The next stage is a hollow tree; then perhaps a fire; then reparation; then several more hundred years, till the outer shell and vestige of a trunk is broken by wilful violence, or by sheep and deer rubbing against the time-honoured remains, or striving to enter the hollow for shelter. Then comes utter decrepitude; limbs fall and tear down part of their perishing support, and at last the venerable ruin is rendered to the dust from which it gathered life and strength so long.

Any visitor of Surrey scenes wishing to find out these patriarchs of the yew-tree family may inquire the way to the narrow race-course, or to Newland's Corner, a noted meet for hounds, and the first shepherd he may chance to meet will lead him to the less notorious spot he seeks.

H. NEWLANDS.

THE COMMON LAUREL A USURPER.

THERE is no plant perhaps that deserves the title of "usurper" more than what is generally called the common laurel. No doubt this fine, free-growing evergreen is one of the most desirable of shrubs when kept in its appropriate place, viz., where it has ample space—in large shrubberies, or under trees on the margins of woods and copse, or flanking the carriage drive and boundary fence; for nothing can be better as a dense low background, a shelter from winds, or a screen from unsightly objects and buildings, offices, &c.

In accordance with the ordinary ideas of gardening, this shrub is the first obtained from the nursery, as it is also the cheapest, to adorn the approach to the dwelling or the limited garden at the rear. Placed usually in the very front of the border, and quite close to the walk, it grows most rapidly into a vigorous shrub, its shoots often attaining in a single season to three, four, or even five feet in length. It is impossible to exaggerate the evil of which this rampant shrub has been the cause; the smaller conifers, such as thujas, junipers, and delicate cypresses, as well as bays, laurustinus, arbutus, rhododendrons, and roses, and other refined and compact shrubs, are constantly found to be quite hidden or destroyed by its wealth of shoots. I must confess that I have enjoyed the utmost satisfaction in ordering hundreds to be cut down and carted away, thus not only developing to the view many better things, but opening the finest vistas and distant peeps of scenery, and have rejoiced in many a "bravo" and outburst of thanks for this bold and liberal application of the hand-bill, saw, and hatchet. The term "usurper," however, has yet to be explained; this vaunted, self-called laurel is really no laurel at all; he usurps the name only from the old Celtic word "blaur" or "laur," or "green;" it is simply a species of cherry (*Prunus Laurocerasus*), and has no right to trench upon the classical, noble family of "Laurus," which without doubt is one of the most valuable genera in the vegetable kingdom, being spicy, warm, fragrant, and medicinal. The species include *Laurus nobilis*, or sweet bay; *L. cinnamomum*,

L. Sassafaras, *L. Camphora*, *L. Cassia*, and many others. These are true laurels, and it is to be regretted that not more than two are hardy in Britain, one of these only (the bay) being evergreen. It is high time, then, that this false nomenclature as regards the common laurel should be set right, and the term "cherry laurel," or "evergreen cherry," be given to this ordinary though ornamental shrub. The leaves are believed to be poisonous even to cattle, but the panicles of small black fruit it bears are sweet, and not unpleasant to the taste. They are especially appreciated by tramps of the gipsy community. One word in justice to, and appreciation of, this 'cherry laurel. Its large, oblong, glossy leaves, of the finest golden green, contrast admirably with the more sombre, deep tones of the Portugal laurel (also a *Prunus*), the bay, holly, &c. And here it may be well to name that the Alexandrian laurel is not a true *Laurus*, but a *Ruscus*—*R. racemosus* or *R. alexandrinus*—and is presumed to be the plant with which the ancient poets were adorned, while heroes and victors were crowned with the bay (*Laurus nobilis*).—*E. W. Cooke, Glen Andred, in "Field."*

THE WALNUT (*JUGLANS REGIA*).

THIS is comparatively but little planted, a singular fact when the beauty and value of its wood are taken into account. For gun stocks and much of our finer sorts of furniture, Walnut timber is invaluable. Walnuts, moreover, are free growing trees on almost all kinds of soil, and the crops of nuts which they produce would pay at least the rent of the land on which they grow, while its freehold might be purchased with trees of four score years of age. Walnuts in a landscape also are trees of mark, their magnificent heads of fine foliage in parks or paddocks rendering them especially adapted for such situations. They associate well with Oak, Beech, Elm, Spanish and Horse Chestnut, as well as with various other trees, and they do not rob the land more than their companions do. Their smooth glossy leaves are washed clean with every shower, and the foliage is not so thick as to throw the rain off the grass or to keep air currents from circulating freely among the branches. There are, therefore, no trees either in park or pasture under which herbage grows better than it does under Walnuts.

Besides, Walnuts come into leaf late, make their growth quickly, and lose their foliage nearly all at once, after the first autumn frost. Thus a chance is given to take the leaves out of the way, so as not to injure the grass; while the shining dark young wood, with the greyish mature limbs are left full in view. As to any tree that will grow more quickly into a size to be useful, I do not know where to look for it. I have seen old Walnut trees that measured from sixty to ninety feet in height—diameter of branches from sixty to ninety-six feet, and of bole or trunk, from three to five feet diameter; and, no doubt, larger trees are elsewhere to be found.

Considering, therefore, all its good qualities, what can be the reason that Walnuts are not more extensively cultivated in this country than they are? Is it because young folks will sometimes pillage a few nuts, rather than spend their cash in the purchase of French walnuts? Surely not. That the French grow walnuts more extensively than we do is certain; they find, too, a market amongst us for their nuts, which, had we more trees, we might with advantage share with them.

JAMES BARNES.

The Upright Cypress.—In England this Cypress is recorded to have been growing in gardens early in 1500, since which time it has been planted in almost every shrubbery, and it is still deservedly a favourite with most people. I have never seen *C. sempervirens* in this country much above sixty feet in height; but trees of this size are by no means scarce. There are several varieties of it as regards habit, all of which are useful and highly ornamental. They grow freely, and will succeed almost anywhere and on any kind of soil, but they always start best associated with common shrubs planted pretty freely as nurses, to be cut away or thinned out in due season in order to give space both for root and branch; when fully grown, they seed freely, and with us, in Devonshire, the wood is both durable and useful when converted into house furniture, harps, and other musical instruments, resisting as it does the worm and moth. As to growth, I like to see all plants of noble port with a foot or two of clear bole at the base. Cyresses are not expected to make grand effects in the background of free-growing trees; they are more fitted for planting near the front, or as single trees on grass, or in and about cemeteries, &c. They form striking contrasts with buildings, especially with such as have horizontal roofs; but they will not withstand the smoke of large cities. Cyresses are not vigorous-growing enough to plant among large trees, but with such things as Thorns, Crabs, Amelanchier, Yews, Hollies, Portugal Laurels, Ilexes, Cotoneasters, Laurustinus, double blossomed Furze;

Phillyreas, Bays, Arbutus, Thujas, Junipers, &c., they are quite at home. These, together with Laburnums, purple Beeches, and scarlet-crimson and yellow Horse-Chestnuts, Judas trees, Sumachs, &c., are the materials with which ornamental grounds cannot well be overstocked.—JAMES BARNES.

The Lombardy Poplar (*Populus fastigiata*).—This fast-growing pyramidal tree is not so fashionable with planters now as in years gone by. About a century ago no plantation was made without it, and for shutting out unsightly buildings, &c., in the landscape, it was considered invaluable. Even now it may to a limited extent be introduced into plantations of round-headed trees, to give them life and interest, especially when looked at from a distance, its pointed head producing a pleasing contrast to its less aspiring companions. This effect is more particularly apparent in Cheshire, Worcestershire, Herefordshire, Gloucestershire, and Somersetshire, than in other counties. It associates well with old churchyards, cemeteries, old ruins, amongst pointed-headed cypresses and yews; a plant or two of it has also a homely look at the entrance to a village, or it may be on its green. At the same time it would be out of place to plant this poplar largely anywhere except where it is wanted to plant out unsightly objects.—JAMES BARNES.

The Poplar.—The beauty of Poplars in autumn is far more noteworthy when numbers of trees are taken together than in any single specimen. Sometimes the mountain-ash fades to a splendid red colour and is very beautiful in itself, but it is very uncertain, and one specimen will do so while another will not. The white poplar, however, is the most beautiful common tree in this respect (common, I have said, but it is not half or a quarter common enough as yet) when half of its leaves are turned a fine yellow, while the rest show all manner of weaker tones of yellow till you come to the youngest, which have their own inimitable pearly sheen in the most bewitching contrast with the yellow in the middle of the tree; the great openness of the foliage in this tree also allows a full light to pass through it so as to show it up to the best advantage. By all means plant white poplars on the windy side of your garden. Afterwards, ordinary plants will do better, and the outline of the trees is so soft and sweet.—A. D.

"In small proportions we just beauties see."—Not only those broad and striking effects which belong to a great range of field and wood, or to bold scenery, come within the domain of landscape art, but those lesser and ordinary graces that may be compassed within stone's throw of a man's door. We do not measure an artist by the width of his canvas. The panoramas that take in mountains are well if the life and the mist of the mountains are in them; but they do not blind us to the merit of a cabinet gem. I question very much if that subtle apprehension of the finer beauties which may be made to appear about a given locality does not express itself more pointedly and winningly in the management of a three or five-acre lawn than upon such reach of meadow and upland as bounds the view. The watchful care for a single hoary boulder that lifts its seared and lichened bulk out of a sweet level of greensward; the audacious protection of some wild vine flinging its tendrils carelessly over a bit of wall, girt with a savage hedge-growth—these are indications of an artist feeling that will be riotous of its wealth upon a bare acre of ground. Nay, I do not know but I have seen about a labourer's cottage in Devonshire such adroit adjustment of a few flowering plants upon a window-shelf, and such tender and judicious care for the little matlet of turf around which the gravel path swept to his door, as showed as keen and artistic sense of the beauties of nature, and of the way in which they may be enchained for human gratification, as could be set forth in a park of a thousand acres.—D. G. Mitchell.

TABLE OF MEASUREMENTS OF HEIGHT AND CIRCUMFERENCE OF SEQUOIAS IN THE CALAVERAS GROVE.

Name of Tree.	Circumference 6 feet above Ground.	Height.
	Feet.	Feet.
Keystone State	45	325
General Jackson	40	319
Mother of the Forest (without bark)	61	315
Daniel Webster	47	307
Richard Cobden	41	284
T. Starr King	52	283
Pride of the Forest	48	282
Henry Clay	47	280
Bay State	46	275
Jas. King of William	51	274
Sentinel	49	272
Dr. Kane	50	271
Arbor vitæ Queen	30	269
Abraham Lincoln	44	268
Maid of Honour	27	266
Old Vermont	40	265
Uncle Sam	43	265
Mother and Son (Mother)	51	261
Three Graces (highest)	30	262
Wm. Cullen Bryant	48	262
U. S. Grant	34	261
General Scott	43	258
George Washington	51	256
Henry Ward Beecher	34	252
California	33	250
Uncle Tom's Cabin	50	250
Beauty of the Forest	39	249
J. B. M'Pherson	31	246
Florence Nightingale	37	246
James Wadsworth	27	239
Elihu Burritt	31	231

PUBLIC GARDENS.

WHAT TO DO WITH HAMPSTEAD HEATH.

THE wisest desire we have heard for a long time expressed in connection with a place of this nature is the one attributed to Mr. Le Breton and the inhabitants of Hampstead that their heath should be preserved intact, not "laid out" as a park, formal or otherwise. On Hampstead Heath, notwithstanding its hideous fields of gravel pits and other mutilations, nature is even now more delightful than in our most elaborate parks. Till very recently, London was begirt with a chain of airy commons, which offered many attractions to the botanist and entomologist, though that charm is fast decreasing in the case of Wimbledon and Hampstead. Even yet, however, a bit of sundew may be picked up on Hampstead Heath, while briar and furze hold free sway over hundreds of acres; and one may yet find little lawns with carpet of turf soft as velvet, and fringed with graceful high ferns. Some of us are too apt to assume that the more common or heath type of vegetation is one only fitted to be exterminated by the "improver." But when we understand these things better, we shall find that the efforts of the landscape-gardener must be devoted to preserving what we now too often ruthlessly destroy. There are many spots on Hampstead superior to those we artificially create, and with the added charm of utter wildness. If those entrusted with the care of Hampstead Heath insist that all its wild charms be preserved, they will have made an important step in true landscape gardening. A network of trim roads and walks would be a poor substitute for its wide pathways of velvety turf. The slimy-dug borders of the central parks of London are hateful beside its graceful mixtures of bracken, briar, furze, and thorn.

But preserving all its natural beauty should not prevent us from enriching it. This may be done without injuring it or formalizing it in the least degree. There are many spots in it which it would be pure vandalism to disturb; but there are also many where a sprinkling of hardy-flowering deciduous trees, or a group of the hardiest and noblest ever-green trees, would lend a variety and a beauty which would charm all beholders. Wherever the gravel-digger has been very busy, we must follow, and with some trouble re-embellish the earth he has defaced. It is often possible for the tasteful landscape-gardener to take much advantage of disfigurements of this kind, and by a little grading and careful planting, to render them much prettier and more diversified than before they were created. Without costly planting, or planting that will cause any trouble, or require any attention when once finished, we may get the highest beauty that may be obtained from rolling ground, green grass, and beautiful trees. And what park in existence offers scenes that might be charmingly embellished by tasteful planting more than Hampstead Heath?

For proof of how much such embellishment would gratify and exalt the taste of the people we are left in little doubt by the weird group of *Pinus sylvestris* (Scotch pine) on Hampstead Heath. Some of our best artists have introduced them into their pictures, and they are well known in our literature. There is nothing in any of the London parks so beautiful as this group of Scotch fir, which has taken care of itself for long years unguarded; and surely where such a gratifying result comes from the planting of one kind of tree one need hardly plead for the judicious planting of other kinds? This may be carried out without in the least interfering with the wild beauty of the heath. By the time the pines which have delighted the present generation of artists and tree-lovers begin to decay, a score of groups of other noble trees should be arriving at maturity. It is folly to leave a piece of ground so well calculated as Hampstead Heath for the display of tree beauty an almost treeless waste. It is almost needless to add that the planting advocated need not involve any "laying out" of the ground, but simply the placing of suitable hardy trees in carefully-selected positions. The groups would require a fence for a few years; afterwards they would require no more attention or protection than the Scotch firs have. A trifling expense would suffice for the purchase and planting of the best trees for the purpose.

Other great and peculiar charms might be added to Hamp-

stead Heath by the naturalization of hardy flowers, which would multiply freely and grow healthfully in such a position. There are numbers of charming hardy flowers, such as the daffodils, the blue anemone (*A. apennina*), the globe flowers, wood hyacinths, snowdrop, crocuses, &c., which would be as much at home on the heath as the bracken and the furze. Such as these might be bought cheaply in quantity, dotted about in the short grass and about low wild shrubs, and the result in a few years would be a vast wild-spring and early summer garden surpassing all that art in "trim gardens" has yet effected.

FLOWERS AND FOUNTAINS.

BY NOEL HUMPHREYS.

THE two fountains in Trafalgar Square have been so severely, not to say unmercifully, criticised, that condemnation need not be reiterated. They are already in possession of the unenviable distinction of being the best-abused fountains in Europe, and it will only now be necessary to allude, in some detail, to their admitted meagreness and nakedness of aspect, in order to point out the more clearly how those defects might be alleviated, if not even partially obliterated.

The most magnificent and, on the whole, the most successful of modern designs for town fountains of a strictly decorative character on a grand scale, are indubitably those of the Place de la Concorde at Paris. But even they have a certain indefinable defect—a kind of frigidity or bareness, which, by means analogous to those about to be proposed for the improvement of our comparatively pigmy structures in Trafalgar Square, might easily be overcome. In pointing out that there is a something still wanting to the complete decorative success of the great fountains of the Place de la Concorde, it must not be imagined for a moment that it is sought to depreciate the stately and truly artistic merits of those fine works, which, for their important features of colossal statuary, combined with ornamentation that in itself reaches the level of high art, are certainly not to be approached in excellence by any similar works of recent construction in any part of Europe.

The French have, in fact, been the only nation in the nineteenth century whose artists have succeeded in laying hands on the true artistic principles which necessarily govern the general forms as well as the minor enrichments properly belonging to the class of structures at present under discussion.

Many other examples of French success in this department of art might be cited, which form splendid ornaments to several of the great provincial towns of France, but it will suffice to mention one only, a fountain serving as a magnificent base and pedestal to the statue of Bruat (see next page), which the writer saw and sketched a few months before the late deplorable war. Bruat, who was one of the brilliant and successful leaders of the First Empire, was a native of Colmar, and the monument erected to his memory by his townsmen, is, in every respect, a very nobly-devised and finely-executed work. The principal mass of the structure supporting the statue consists of four richly-sculptured basins, separated by four symbolic figures of colossal dimensions and of great merit as pieces of high-class sculpture. The artistic treatment of these grandly-designed figures might, however, be pronounced by a certain class of critics as "thoroughly French"; though they undoubtedly produce a fine effect, which is the chief object in architectonic sculpture. Moreover, the "drawing" of these grand figures is artistically and anatomically correct, which cannot always be said of works which have the supposed merit of greater sobriety and severity of treatment. The bold and largely-conceived mouldings, and the rich masses of incidental ornamentation also, although but minor features in the composition, are very skillfully and grandly traced, by the hand of a true master of his art; being as superior to those which belong to the base of the Nelson Monument in Trafalgar Square, or to those of the adjacent fountains, as it is possible to conceive. The whole composition is the work of M. Auguste Berthold, a young sculptor, who resides at an old family chateau, which nestles among a rich mass of ancient trees, not far from Colmar, in preference to entering the troubled artistic atmosphere of Paris or any other great city. He has thus determined, as I learnt, to carry on the enthusiastic pursuit of his art undisturbed among the woods of his native Alsace.

It may be urged by cavillers, in depreciation of many of the characteristics of French art generally, that all the best features in many of the noble fountains that have been erected during the present century in various parts of France have been borrowed from Italian models. That may be very true, for in the general style, in the disposition of parts, and in the noble sculpture of the fountains of the Place de la Concorde, the French artists were evidently inspired by the exquisite piece of fountain-work which was designed by

Giovanni di Bologna for the Piazza Vecchia at Florence; and in all probability M. Berthold had also seen and studied Bernini's famous fountain on the Piazza Navonna at Rome, before he designed the structure which is one of the greatest ornaments of Colmar. But, while admitting this, it must be confessed at the same time that such French artists have invariably stamped their works with the distinctive genius of their own age and country, and that their productions have a well-knit compactness and completeness seldom to be found in their Italian models.

The Bruat statue-fountain stands at the entrance of the public gardens, and is therefore backed by the rich greens of great masses of foliage, the dark tones of which form a background against which



The Bruat Statue-Fountain at Colmar.

the outlines of the various marbles define themselves with excellent effect—the sculptured outline of the base being immediately surrounded by a dwarf edging of a low-growing evergreen shrub, while symmetrical masses of richly-tinted flowers form additions of living colour, which have the effect of enlarging the base of the structure and imparting additional importance to its aspect, and, at the same time, softening the sharply-cut forms of the marble into the surrounding space, and warming the general effect by the addition of a floral framework, the absence of which is one of the chief causes of the naked coldness of aspect of our fountains in Trafalgar Square. Those fountains have other inherent defects in regard to the situation they occupy, which cannot very well be mended without their absolute removal, and the replacing of them by larger and better works; for, in the first place, they are on too small a scale, and consequently have a meanness of aspect which no improvements or surroundings can entirely overcome; and, secondly, their form, as small tazzas, with an insignificant elevation in the centre, from which the water was originally made to ascend a few feet and then fall in frothy foam, caused them when first erected to be compared to big saucers with bottles of ginger-beer popping off in the middle; the aptness of which ill-natured *mot* caused it to stick to them with such tenacity, in spite of the dignified silence with which the ridicule was submitted to by those chiefly concerned, that it eventually became absolutely necessary to do away with the gingerbeer-bottle effect. To accomplish this, a dozen or so of separate water spoutings were contrived, instead of the single central one. Had these supplemental jets been produced in some picturesque manner, showing their *raison d'être* through

artistic means, the effect would have been as good as could be expected on so small a scale. But the *modus operandi* was entirely inartistic. The leaden squirts through which the jets are thrown up were left plainly visible, no means being sought by figure, shell, vase, or any other device, to secure an agreeable and pictorial effect and produce a decorative out-shoot for the water; so that when the fountains are not playing, these ugly, black excrescences are in the highest degree unsightly.

Our niggardly grants for purposes of a purely decorative character were, perhaps, insufficient either for an entire reconstruction of the fountains on a large scale, with enrichments of high-class sculpture, or even for clothing the projecting pipes with some artistic device, however simple, by way of rendering them worthy rivals of the Fontaine Louvois (engraved below).

There is, however, a means by which the extreme nakedness and chilly aspect of these, our only metropolitan fountains of a decorative character, might be very considerably abated. All who take an interest in such matters, and who do not pass over with closed mental eyes the changes and daily-varying aspects of our vast city, must have witnessed with satisfaction the temporary improvement wrought upon the dingy desolation of Trafalgar Square by the recent introduction of a few tolerably well-grown Bay trees during the summer months. A touch of living colour is ever-refreshing in the highest degree; and had the trees been bigger and more numerous, the inevitable result of an experiment of that kind would have been very charming, though far from fulfilling all that a love of the stately and beautiful in such an important and central situation might desire. But, at all events, the plan essayed was in the direction which the writer of this article wishes to recommend, with the view of imparting a more cheerful aspect to that dull, black expanse of flag pavement, which a very competent authority once pronounced to be the finest site in Europe for art purposes, and which might still be made a very noble and attractive area, if properly treated.

The plan recommended is simply this: Let a portion of the present pavement be taken up round the basins in which the fountains stand. Let a finely-designed moulding, dwarf but massive, surround the basins at the distance of a certain number of feet, and let the form of the enclosure correspond symmetrically, but not regularly, with that of the basins. The space between the basins and the new enclosure should then be turfed, and in the turf there should be well-devised flower-beds, which, during the whole of the spring, summer, and autumn—that is to say, from the Crocus season to that of Chrysanthemums—should be filled with bold and richly-coloured plants. Few will be found to deny that a very pleasing and satisfactory effect might be produced in this manner at comparatively small



Fountain in the Place Louvois.

expense, especially if the same principle were resorted to round the base of the Nelson Column and in front of the terrace wall of the National Gallery. In the last-named situation the Bay trees, duly supported by the fresh green of an expanse of turf, would produce ten times the effect they have hitherto done when placed separately on the dark, uncongenial pavement.

It may be urged that turf and flowers will scarcely thrive as might be desired so close to the dense and smoky neighbourhood of the Strand, St. Martin's Lane, and the crowded masses of sooty brick-work which form the antifloral region known by the name of Seven Dials. In reply to this objection it is to be remarked, by way of answer, that many of the old City churchyards, especially that of St. Andrew's, Holborn, and that of St. Sepulchre, at the corner of

the Old Bailey, as well as several which are situated in the dark and narrow lanes of the very heart of London, have already been transformed from recesses of mouldy blackness into flower and shrub studded spaces of refreshing green; and that the plants flourish sufficiently well to convey an air of pleasantness to spots which were depressingly desolate before. The inference therefore is, that in the comparatively open space of Trafalgar Square, turf, shrubs, and plants, with occasional renewals, would thrive sufficiently well for all the purposes sought by their introduction, and would form a very pleasing addition to the present nakedness and repulsive frigidity of the fountains. With regard to the fountains themselves, a great improvement might be effected; at small cost, by getting rid of all the unsightly squirt-pipes, and doubling the supply of water to be emitted from a single aperture. The increased supply of water ought to be cast up to a much greater height than that attained by the present vertical jets, and it should issue from a handsomely-designed columnar opening much higher than the present one. This increased supply of water might then be made to fall in a copious cascade into a secondary tazza at a well-calculated elevation above the lower one, from which it should be made to descend, in an unbroken glassy sheet of glistening gossamer-like texture, to the spacious basin below, which might be enriched very advantageously by the introduction of masses of water plants symmetrically distributed.

A few hydraulic difficulties might be set up by opponents to such a scheme; or the expense might be objected to; but difficulties of that kind might be very easily, and even cheaply, got over; and it is to be hoped that all who delight in witnessing the creation of such embellishments for our metropolis as will place it more upon a par with other great cities in its ornamental features, may, even as early as next spring, be called upon to admire such improvements of the so-termed "finest site in Europe," as will make it more worthy of that high sounding designation.

THE INFLUENCE OF OUR PUBLIC GARDENS.

As the young artist looks to Italy for models and for inspiration so look numbers of untravelling amateurs and gardeners to our great National Gardens, and hence a reason why their true character and importance, as regards the art of laying out grounds, should be widely known throughout the land. The chief public gardens of a country must have a powerful influence on its private ones, and it is most unfortunate that with us this influence can rarely be anything but injurious to all the true interests of garden design. Most of our public gardens and parks are designed in direct violation of the very essentials of the art of laying out grounds; many of them show precisely what to avoid, and though this merit is not alluded to in their guide-books, it may, to one who rightly uses it, be of greater importance than any other feature. Descending or ascending to particulars, let us glance at a few of our public places. Look at Kew, in some respects superior to any botanic garden or botanical establishment in the world, but in point of design no higher than a chess-board. That breadth—i. e., an open spread of lawn here and there—is the most essential principle in garden design one would think was known to everybody who ever thought of arranging or planting a public garden or park. Without this, you cannot get any but a confused effect—you cannot fully see the beauty and dignity of our now rich arboreal flora; without this you may have a thousand kinds of noble trees, and get little better effect than you do in a large unthinned plantation. You can, in fact, no more make a really beautiful garden or park without at least one sweet spread of open, turfey ground than you can a lake without water. At Kew, both in general design and in the arrangement of details, this principle is completely ignored, and the good old one of putting in a tree wherever there is a little opening adopted. The result is that the finest botanic garden in the world is devoid of any picturesque beauty. As to the Paris botanic garden it is infinitely worse; there, not only is all the breadth destroyed, but even the very turf has gone!

Take, again, the Royal Horticultural Society's garden at South Kensington, and, leaving out of view entirely the question of style, assume that the geometrical is the only one. This garden was specially designed for flower-shows and for the reception of crowds. Now, if there has been any one thing taught by all previous experience of large flower-shows and the gardens in which they have been held, it has been that the happiest effect is only attained where there is a quiet open lawn on which crowds can promenade at pleasure, and pass from it with ease to the various important points of interest in the garden. And what has been done to meet this want? The design is the most complicated one we have ever seen even for a geometrical garden. Every place where a bit of turf might have spread out to form a foreground, or a setting for the different objects which a garden should contain, is frittered away—here a maze (what an idiotic adjunct to any public garden ranking above that of a

tea-house!); there a short avenue of Lombardy poplars cutting off the view, for no evident reason; beyond, placed on a bank, lest its lovely effect should be lost, a fire-shovel pattern wrought on the earth, with all the beds filled with broken stone-rubbish of various colours. In short, there is no room anywhere except on parched and wearying gravel walks. At every step a sensitive person who visits the garden in the hope of seeing trees or plants or flowers is offended by a sickly low-clipped yew hedge, a dead wall, a flight of steps, a ghastly corridor, or one of the many contrivances by which nature is shut out from the scene; and if a prize had been offered for the very worst kind of garden in which to enjoy a flower-show or plants or trees of any kind, a garden more fitted to win it could scarcely have been designed. In this case, however, the deviation from the right course was so marked that it is not likely to be so harmful, as the manifold contortions of the scene disgusted even the admirers of the style; and since the finishing of this unhappy garden there have been much fewer gardens of the same style made in connection with country houses.

The only one public garden that betrays any judgment or insight into what a garden should be is the small garden of the Royal Botanic Society in the Regent's Park. We speak not of its collections, which are poor, nor of its gardening, but simply of its design when we say that if the judgment which has done so much with eighteen level acres had been equally successful with the vast surfaces in some of our public gardens, they would be models indeed. The Botanic Garden in the Regent's Park is disfigured by absurd conglomerations of rock, by a still more absurd small geometrical garden; but in point of general design it has helped to keep a true spirit of landscape gardening from slumbering among us during one of the most marked periods of retrogression that it has ever lived through. I mean the period of the success of those who preferred the presence of barbarous artificial things in the most important parts of our gardens to Nature's own children, of which we shall never weary—who often spent sufficient wherewith to plant a thousand acres with the noblest trees in the world on a water-squirting contrivance, who, where we wanted peace and variety, gave us the monotony that dulls the sensitive spirit, and the angularity and barbarous gyrations that torture it—wretches so callous to every mercy of nature, and so estranged from all passion of joy in her works, that, when we asked for flowers, they gave us broken bricks and slates, arranged in patterns by their miserable "art." We could name gardens of from five to twenty acres in extent near London and in the home counties which display more merit as regards plan than all the public gardens in Britain put together. Plants and trees and flowers, no matter how disposed, fail not to charm the wearied, dust-pested citizen; but it cannot be too widely known to all interested in horticulture that there is NO GOOD DESIGN IN OUR NATIONAL BOTANICAL AND HORTICULTURAL GARDENS.—*Field.*

PALMS FOR THE GARDEN.

(Continued from page 93.)

CALAMUS ASPERSUS (syn., *C. getta*; Java).—Fronds, erect, clothed with nearly black spines, arranged in whorls of from nine to ten at base. The whole plant has a dark-green hue, and is very spiny. A strong grower, and very elegant where a central plant is required for a water-tank.

C. asperimus (Java).—Plant, erect, and clothed with yellow spines irregularly disposed; top of leaflets gracefully drooping; grows from sixteen to twenty feet in height, and forms a dense bush. A very elegant, free-growing palm, of a yellowish tint.

C. ciliaris (Java).—Dwarf, and erect; when three feet high the fronds are a foot long and six inches wide, grey; spines very slender, pale green; pinnae dense; very compact, and feathery—in fact, the gem of the genus, and very desirable for table decoration where a small plant is required, or for intermixing with orchids for the sake of contrast.

C. depressusculus (Java).—Plant, dense; fronds, compact and spreading; spines on petiole, small, light brown; young plants furnished with fronds, eighteen inches long and eight inches wide, almost flat. A very distinct, slow-growing, and beautiful species.

C. flagellum (Assam).—Fronds, six feet long; pinnae, distant; spines, yellowish. A plant of lax growth, and not very useful in the way of decoration.

C. leptospadix (Java).—A very elegant slender-stemmed palm; fronds, flat and short; pinnae, dense; spines, few, brown; the whole plant velvety in appearance, very compact, producing fronds at intervals of four inches apart. One of the best of palms for table decoration.

C. (Dæmonorops) Lewisianus (Penang).—Plant erect, slightly spreading at top; fronds, from six to eight feet long; spines, yellow. An exceedingly elegant free-growing species for the general

decoration of large houses. *C. Jenkinsii* is so very like this plant, that whoever has the one does not require the other.

C. (Dæmonorops) melanocephalus (Java).—A strong useful plant, with dark shining foliage and habit compact; spines, few; fronds, from two to four feet long, dense.

C. montanus.—Under this name seed was received at Kew from Ootacamond, but the name is a somewhat doubtful one. Though said to be a cool-house palm, it appears to be very fond of heat.

C. pachystemonus (Java).—A tall, free-growing plant with broad pinnæ; spines, long and pale. Where a plant is required to run quickly up the corner of a house, this may be of use, otherwise it possesses little value.

C. Rotang (Bengal).—When young a spreading graceful palm, with dark-green foliage; pinnæ, long, distant; spines, few, black. A plant variously named in gardens, but readily distinguished by its black spines and dark foliage; when old it gets lax in growth.

C. Roxburghii (India).—Fronds, spreading; rather lax; dark green; spines, brown, few. Not one of the best of palms.

C. tenuis (Java).—A slender, erect plant; foliage, sparse; spines, few. A distinct palm but not very handsome.

C. trichrous (Sumatra).—Fronds, erect, forming a beautiful plume at top; habit, dense; spines, yellowish. A very good plant for table decoration.

C. viminalis (Java).—Plant dwarf, flowering at three feet in height; stem, slender, yielding offsets freely; fronds, spreading, two feet long; spines, yellow, small. A very beautiful, useful-sized plant for a small house. (To be continued.) J. CROUCHER.

THE AMATEURS' REMEMBRANCER.*

In-Door Department.—In greenhouses or small conservatories a low, equable temperature must be maintained; and now, when there is little attraction in the way of flowers out of doors, no effort should be spared to have Camellias, Azaleas, Roses, Deutzias, Sweet Indian Daphnes, Cinerarias, Chinese Primulas, Cyclamens, &c., brought forward in as fine condition as possible. Among these perhaps none excites so much interest as the Rose, of which a few well-rooted, carefully-prepared plants in pots may now be placed in gentle heat, and forced steadily, for Roses dislike a high temperature. They should be syringed every morning, along with other inmates of the forcing-pit in a growing state; and as soon as they get fairly into leaf, aphides and rose-grubs must be kept in check—the first by tobacco fumigations, the second by means of hand-picking. Otherwise carefully attend to them; but never allow either Roses or other plants to open their blooms in the forcing-pit. When they approach that condition, remove them to the conservatory or other show house which they are destined to ornament. During winter all plants in pots should be watered in the morning, and, except in the forcing-pit, everything should be kept on the side of dryness, to prevent damp and drip. Give air whenever favourable to plants in frames, removing the sashes altogether in the middle of sunny days from such things as Carnations, Pinks, or Auriculas, but in rainy weather keep them on, tilted back and front. Where Vines are not already pruned, that operation should now be performed without delay. After which, having well mulched the border, the house should be shut up for forcing.

Flower-Garden and Shrubberies.—With the exception of a Christmas Rose or two, we have had little to interest us in the way of flowers, since the Tritomas and Michaelmas Daises left us; but on walls we shall soon have *Chimonanthus grandiflorus*, the blossoms of which when gathered are highly prized in-doors on account of their fragrance. The *Jasminum nudiflorum* will also soon be opening everywhere its bright blossoms, which, when issuing from among Ivy leaves, have a cheerful appearance. With these and other evidences of floral life, lawns smoothly rolled, and clean and comfortable walks, out-door gardens even now afford a certain amount of real enjoyment. Evergreens overgrowing the bounds assigned to them may still be cut back, but the pruning of the tenderer kinds of Roses and other shrubs likely to be hurt by frost had better be deferred till spring. Planting, and alterations in the way of ground work, should now be finished with as little delay as possible.

Fruit and Kitchen Garden.—While open weather lasts push forward pruning and nailing. Orchard trees, often too much neglected, should have their heads opened up a little by cutting out all ill-placed branches, and such as cross one another. If not already done, mulch all root-pruned or newly-planted trees with rich, partially decomposed manure. Clear wall and other trees from insect-pests, and stake and name such as are in need of such operations. Mulch Strawberries with rough stable dung, shaking it lightly over both plants and alleys. Its strength, washed down to the roots, is of much benefit to the plants, while the strawy portion left affords them protection. In the Kitchen-Garden, manuring and trenching must now be pushed forward with vigour. Peas peeping through the ground protect with spruce branches in the event of frost. Broccoli may also still be taken up, and put in closely together where it can at any time receive protection, or it may be pulled up and hung by the heels in some shed or cellar out of the reach of frost. Cauliflower plants should now have plenty of air. Stir the ground among Cabbages, Spinach, and similar crops. Examine Potato and Onion

stores to see that nothing is going wrong, and continue to take up Rhubarb and Seakale, and place them in darkness in gentle heat to force. Sweep and roll walks, and maintain as much interest as it is possible to keep up at this dead season of the year. Stable dung and leaves may now be thrown together to ferment for cucumber and other hotbeds. When fermentation shall have become active, turn the heap over once or twice to permit its rank heat and steam to escape before making up the bed.

THE FOOD OF PLANTS.*

You know that wood is capable of being burned entirely away, with the exception of a small, almost insignificant, residue of white ash which is left. This is the mineral matter of the wood, from the circumstance of its being of the same nature as the matter of which our most common rocks and minerals are composed; whereas that portion of the wood which burns away is called the organic matter, from its being the matter of which the living plant is mainly constituted. When wood is exposed to heat—by being thrust into the fire, for example—it gives off gases which burn with flame. Now, where wood is subjected to heat, and more particularly to the hot flame of the burning gases surrounding it, it becomes blackened, or charred, or converted into charcoal. The same principle is made use of in the production of charcoal for manufacturing purposes. When manufacturers want to produce charcoal, they resort to one or other of two principal methods. One of these is to heat the wood to redness in an iron box or oven, entirely excluded from the air, with the exception of a pipe allowing the gases to escape; and after these gases have been driven off through the pipe, nothing is found left in the iron box or oven but a quantity of charcoal. Another way of making charcoal consists in piling the wood up into a large heap, and setting fire to it. By this means the outside wood, in contact with the air, gets burnt away to a greater or less extent; but the inside wood, being simply heated by the burning which is taking place upon the outside of the heap, does not get burnt away, but gives off its gases which burn on the outside; and what is left in the inside is charcoal, produced by the action of heat upon wood out of the access of air. Now, if you examine a piece of charcoal, it will be found to have lost both size and weight compared with the original wood. But you will observe that the resulting charcoal presents exactly the form of the original piece of wood. The conclusion, therefore, is that wood is a substance partly composed of charcoal; or, in other words, that charcoal is one of the constituents of wood. Charcoal may be said to be an impure form of carbon, and, in practical effect, if not in actual fact, carbon is a simple substance. It is a substance which has not yet been decomposed, and is not, so far as our present knowledge goes, decomposable into two or more different kinds of substance. Now, charcoal is not only a constituent of wood, but also of hay and corn, and, indeed, of vegetable produce generally.

But it is important that we should know, not only that vegetable produce, wood, hay, and corn, contain charcoal, but that we should be able also to form some notion of the amount of charcoal or carbon which they contain. Now, it is found that pure, dry, woody matter contains very nearly half its weight of carbon. It contains in reality forty-five per cent. Now, if we pass from pure woody matter to the consideration of other forms of vegetable produce—such, for instance, as starch—we find that that contains exactly the same proportion of charcoal as woody matter, and that sugar contains very nearly the same proportion. But some other vegetable substances contain a much larger proportion of charcoal, as, for instance, resin and turpentine, and the oils expressed from seeds and fruits, as linseed oil, cabbage-seed oil, and olive oil, &c. All these substances contain a much larger proportion of carbon than is contained in wood. Now, just as certain vegetable products contain more carbon than wood, so there are other products which contain less; and among these I may refer to the different acids, or sour substances, which are found more particularly in the juices of unripe fruit. There, for example, is a fine specimen of tartaric acid—an acid which exists in the juice of the grape, and is produced on a large scale, in wine-growing countries, in the process of converting

* Complete general calendars, written by some of the most able gardeners in the country, are published in THE GARDEN in the first issue in each month.

* Abstract of a lecture delivered by Professor Odling, F.R.S., in the Hulme Town Hall, Manchester, November 24, 1871.

grape-juice into wine. In the same way we meet with citric acid in the juice of lemons, and other vegetable acids in other vegetable juices. Now, all these vegetable acids contain a smaller proportion of carbon than is contained in wood. But having regard to the fact that the great mass of vegetable produce is composed of woody matter, or of substances such as starch and sugar, having substantially the same composition as wood; and having regard, further, to the circumstance that, of other vegetable products, some of them contain a larger, and some of them a smaller, proportion of carbon than is contained in wood, it results that the amount of carbon contained in woody matter may be taken as a fair representative of the amount of carbon contained in vegetable produce generally, viewed as a whole. We may say, then, that the dry organic substance of a growing plant contains, on an average, about 45 parts in 100, or rather less than half of its weight of charcoal. Now it is found that on an acre of meadow land, or arable land, or wood land, there are produced in the course of a single season several thousand pounds weight of vegetable produce, containing not unfrequently as much as two thousand pounds weight of charcoal; while the charcoal of an average crop may be taken at over 1,600 pounds, or nearly three-quarters of a ton per acre. Some notion may, therefore, be formed of the large amounts of charcoal or carbon accumulated somehow in vegetable produce. And when we pass to the consideration of vegetation, not as we see it here, but as it manifests itself in the luxuriant growth of tropical climates, the amounts of produce, and, consequently of carbon contained in the produce, become yet more astounding. Humboldt, among his experiences in South America, records the existence there of forests so huge and so thick, that monkeys might run on the tops of the trees for a hundred miles in a straight line without a single break. And the millions of tons of dry wood, capable of being furnished by these forests, are composed, we know, to the extent of nearly half their weight of charcoal! You perceive, then, that the growing plant, whether large or small, tree of the forest or grass of the field, may be regarded by us simply as a contrivance for producing carbon.

In the case of cereals or other crops that are grown in a single season, it is evident that we remove from the land at the end of the season several thousand pounds weight of vegetable produce which did not exist in the form of vegetable produce a few short months previously. Nevertheless, the actual substance, or weight of matter, constituting this produce must have existed before the growth of the crop, although in a very different form. The several thousand pounds weight of wheat and barley and oats, grown on an acre of land in a single season, were not produced out of nothing; but were produced out of many thousand pounds weight of something pre-existing at the beginning of the season in the form of certain very different kinds of matter, out of which this matter of wheat and barley and oats was somehow constituted. In the same manner, when, in course of time, the acorn grows into a tall oak-tree, the several tons of matter which go to compose the woody tissue of the full-grown oak were not produced out of nothing, but out of many tons of matter which existed, though in a different form, before the acorn was ever planted; and which have been accumulated, and transformed into woody matter, by the plant or tree, during the period of its many years growth. For the matter or substance of which the grown oak is finally composed was not furnished by the acorn, but was furnished to the acorn, or young plant springing from the acorn, by external and very different forms of pre-existing matter. The problem, then, which I wish to put is this, what is the external matter or substance out of which the matter of wheat and barley and oats and hay and wood is ultimately produced? And more particularly, what is the sufficiently abundant substance containing carbon, out of which the carbon of all this vegetable produce is accumulated? for I need scarcely say that this carbon can only be got from some substance already containing carbon. Iron can only be produced from iron-stone, or matter containing iron; copper can only be produced from copper ore, or matter containing copper; and in the same way it is evident that the carbon of vegetable produce can only be obtained from matter containing carbon. What, then, is the primitive matter containing

carbon, out of which, in the course of the growth of the plant, this carbon of vegetable matter is ultimately produced? It is well known that in forest lands there exists a large amount of rich vegetable mould, the produce mainly of the decay of leaves; and this vegetable mould, which has received the name of "humus," is found to be exceedingly rich in carbon. Further, richly carbonaceous vegetable matter of much the same kind is found in a sod of grass turf; and again, matter of a not dissimilar kind is commonly added to arable land in the form of farmyard manure. Now, until about thirty years ago, the prevalent notion was that the carbon of vegetable produce was furnished to the plant by the carbonaceous matter of the soil called humus, or by a matter of a similar nature. The vegetable matter of the growing plant was conceived to be formed out of pre-existing vegetable matter; and plants, like animals, were thus supposed to live upon food more or less resembling in composition the tissues or parts of the plants and animals respectively nourished. Now, notwithstanding the inadequacy of this notion, and notwithstanding its discordance with well-known facts, and with facts that had been for a long time well known, it prevailed for very many years almost without question. About thirty or more years ago, however, the consideration of eminent agricultural chemists both in England and in France was directed to this view of the subject, and very serious doubts of its truthfulness began to be entertained. But the notion was not ultimately exploded until the year 1840, by the celebrated German chemist, Liebig. Now, I do not propose to advert to all the arguments which may be employed to show the inadequacy of this humus theory to account for the accumulation of carbon in plants; but I will direct attention to some of the most prominent reasons only. First, it is probable that in certain rich soils there does exist an amount of humus, or such like vegetable matter, containing a quantity of carbon sufficient to furnish the crop grown upon the soil with the carbon which it ultimately contains. But this vegetable humus is exceedingly insoluble in water; and Liebig made the curious calculation, that if all the rain that falls upon the land during the period of the growth of the crop were to remain upon the land, and to dissolve as much of this humus matter as it is capable of dissolving, so as to become thoroughly saturated with humus; and then, if all this water so saturated with humus, instead of draining away, as we know that most of it does, and evaporating from the surface, as we know much of it does—if all of this so saturated water were absorbed into the tissues of the plants, nevertheless there could not be dissolved in this water, and so supplied to the plant, a sufficient quantity of humus to furnish the quantity of carbon ultimately found in the crop. This, of course, does not amount to a demonstration that the plant cannot get its carbon from the humus of the soil; it is only a demonstration that the plant cannot get its carbon from this humus by the only process of absorption of which we have any knowledge; and, accordingly, it comes to this, that if plants do acquire their carbon from humus, they must get it therefrom in a manner with which we are totally unacquainted. But another argument, and a much more striking one, has reference to the fact, that the carbon of the crop may be increased two-fold, and even three-fold, by adding to the soil matters which contain no carbon whatever.

Messrs. Lawes and Gilbert have found that, taking the average of seventeen years, the gross amount of produce removed from an acre of continuously unmanured land, in the case of wheat, was 2,434 lbs., and that when from this gross produce they subtracted the amounts of water it contained and of ash which it yielded, there remained 1,963 lbs. of dry organic matter; and when they came to analyse these 1,963 lbs. of dry organic matter, they found them to contain 880 lbs. of carbon. And this, mind, is the average produce of seventeen years' continuous growth of wheat, on land to which nothing whatever was added. Now to a similar strip of land the same experimentalists added every year a certain quantity of mineral matter, corresponding to the ashes yielded by each successive crop removed; and on the strip so treated, the amount of gross produce was found to be increased from 2,434 lbs. to 2,912 lbs., the amount of dry organic matter to be increased from 1,963 lbs. to 2,347 lbs.; and the amount of carbon to be increased from 880 lbs. to 1,952 lbs. Now to another strip of

land they added year by year exactly the same quantity of mineral matter and, in addition, a considerable quantity of ammonia salts—the ammonia salts and mineral matter being alike absolutely free from carbonaceous organic matter. And in the case of this strip they found that the amount of gross produce was increased to the surprising extent of 6,394 lbs., while the amount of dry organic matter was increased to 5,149 lbs., and the amount of carbon to 2,308 lbs. These results, it will be observed, are fully as high—in most cases indeed somewhat higher—than are results obtained on a fourth strip of land, supplied year by year with an abundance of farm-yard manure, containing not only the mineral matter and ammonia added to the third strip, but rich also in carbonaceous organic matter. It is inconceivable then that the plant should acquire its carbon from these organic matters of the soil, seeing that the amount of carbon in the crop may be increased twofold, and in some cases nearly threefold, by adding to the soil substances, such as mineral salts and ammonia, which are entirely free from organic matter. It is inconceivable, too, that the original humus in the soil could furnish the carbon contained in a succession of crops for seventeen years consecutively.

Indeed, it is found that many plants flourish best, in a state of nature, upon soils which, if not absolutely free from organic matter, are yet to all intents and purposes free. Thus, according to Darwin, rich harvests of maize are yielded in the interior of Chili and Peru by soils consisting of the merest quicksand, never enriched by manure. According to Colonel Campbell, the soil of the cinnamon gardens at Colombo, and where else the tree is cultivated, is pure quartz sand, as white as snow. Dr. Schleiden, again, observes that the oil palms of the western coast of Africa are grown in moist sea-sand; and that from the year 1821 to the year 1830 there were exported, as produce of these palm-trees, into England alone, 107,118,000 lbs. of palm-oil, containing 76,000,000 lbs., or 32,000 tons, of carbon, these thousands of tons of carbon being furnished by trees grown in a soil that was practically free from organic or carbonaceous matter of any kind whatever. The only further argument with which I will trouble you is based on the observation that when plants are grown upon soils actually containing organic vegetable matter, so far from this vegetable matter in the soil being used up or decreased by any feeding of plants upon it, it is very much increased; so that the more vegetation we get from the surface, the more humus we get accumulated in the soil; and we say, therefore, that so far from humus being the cause of vegetation, vegetation, on the contrary, is the cause of humus—the humus being produced chiefly by the decay of matter formed by vegetation.

(To be continued.)

"An Ice Well on Fire!"—Such were the sounds that greeted my ears one day, now some years ago; and as I was hastening to a scene of apparent confusion nearly half a mile distant, I was told that the man whose duty it was to supply the mansion with ice had accidentally allowed the candle to drop by the side of the well among the straw, which became a mass of flame and smoke, driving him from the well to seek aid from parties at some distance off. Shortly our fire-engine was on the spot, and on my arrival, to my astonishment, a stream of water was pouring into our well-stored ice-house. This I prevented being continued, as now no flame, but dense smoke, issued from the opening. One courageous fellow volunteered to be let down, fixing a line around him in case of suffocation, and he found fire still alive, but placing the hose of the engine in that direction all further danger to our ice ceased, but not until it had been considerably reduced by fire and water. Out of nearly two hundred loads, we saved fifty, which sufficed for use that season. Since this mishap I have never used straw as a lining between the ice and walls of ice-houses. As it is an important part of a gardener's duty to secure for his employer an ample quantity of ice about this season, I may remark that ice stacks should be made in suitable places of various sizes; but none containing less than fifty loads will keep for any length of time, so as to afford a supply for early use. Ice stacks may, however, be considered as useful auxiliaries, not as substitutes, to a good ice well, as they enable us to postpone the opening of the latter until July or August. In the case of both ice well and stack, proper drainage from the bottom must be secured; and never use salt in storing the ice, as is customary in some parts of the country. Avoid the use, too, of straw,

which should only be employed for blocking up the entrance to the well, or for thatching the stack; for when straw gets damp, it assists in wasting the ice. I may add that we stored away in our ice-house and stack nearly three hundred cartloads by the middle of November, this season, an early date for so large a quantity.—DAVID CUNNINGHAM, Moor Park, Rickmansworth, Herts.

Rabbit-Proof Plants.—Experience appears to differ considerably on this subject. In THE GARDEN of December 16th and some of the earlier numbers, several plants and shrubs are named as being rabbit-proof, which no rabbits of my acquaintance, at least, have ever manifested a great dislike to in hard times. These are, if I recollect aright, hollies, cotoneasters, roses, mahonias, and the Pampas grass. The first of these they eat up wholesale here, so that we had the greatest difficulty in getting young plants up. Cotoneasters and mahonias they bark unsparingly. Roses they eat even when their natural food is plentiful, and I have shot them with the bite in their mouth. The Pampas grass they stump to the ground; indeed, the amount of damage half-a-dozen rabbits will effect during a hard winter would hardly be credited. An experienced woodman of my acquaintance declares that nothing but rhododendrons is safe from them in severe winters.—J. SIMPSON, *Wortley Hall Gardens.*

The Long-tailed Titmouse.—This is a bird which ought to be cherished by all possessors of fields and gardens, for there is scarcely a more determined enemy to the many noxious insects which destroy fruits, vegetables, and flowers. Fortunately for ourselves, the Long-tailed Titmouse is very fond of various sawflies which work such mischief among our fruit-trees, and often lay waste whole acres of gooseberries; and it is no exaggeration to say that, to a possessor of an orchard or fruit-garden of any kind, every Long-tailed Titmouse is well worth its little weight in gold. When, then, we come to consider the inestimable and unappreciated services which this tiny bird renders to mankind, we should not only be devoid of all gratitude, but likewise of all common sense, were we willingly to destroy our feathered benefactor.—Wood's "*Homes without Hands.*"

Bitter Willows as a Game Covert.—For the formation of a game covert where profit is not the object, the *Salix monandra*, a bitter willow, is a valuable subject, and is comparatively secure from the attacks of game. There is hardly any situation in which this plant will not grow, and a good covert would be formed by it in one season, as it puts out abundant shoots, which, in rich bottoms, will attain a height of from seven to thirteen feet in one year's growth. Among other kinds in the *S. purpurea* group, *S. Forbyana* is also an excellent willow for the same purpose; but, although these two kinds are not valuable to the basket-maker, they grow into excellent poles for farmers' and other uses. It may be remarked that feathered game has an especial liking for willow plantations, whilst they afford them a more secure protection than any other description of cover. The *S. Kerkii* is equally secure against the ravages of game, and, although not so vigorous in its growth, still it would be found of more value, in a commercial point of view, where profit is desirable. I should recommend cuttings from three to six feet in length, in preference to rooted plants, as being more easily planted, and growing quite as readily, and even more so, on foul and rough land.—Sealing's "*Salix.*"

Bees and Brambles.—In October last, while walking in the glen next to Fairlight Glen, on the Hastings side, I picked up a stick about a foot long, and began to break it without looking at it. It broke into fragments very easily, and when about five inches were left I happened to notice it. I found it was a stem of bramble. The whole of the pith was gone, and the space occupied by a number of transparent cocoons, each containing a maggot, such as one finds in an apple. These cocoons were (as shown in the pen-and-ink sketch I send herewith) end to end, without any interval between them. They were about three-eighths of an inch long by one-eighth in diameter, and of uniform section throughout, so that the maggot did not entirely fill each cocoon. I regret very much that when I left Hastings I forgot to bring the stick away, as I had intended to send it to you. I wrote for, but did not succeed in obtaining, it. Can you tell me the name of the insect? and whether what I have described is its common habit?—A. M.—[From this graphic description, and the excellent sketch received therewith, we at once identify the object as the nidus of *Osmia leucomelana*. We have often found this bee in dead bramble sticks in June. We are frequently asked the cause of the abundance of these dead bramble sticks in summer, and always attribute it to the operations of these bees, which, during the previous year, have eaten all the pith out of the shoots when young and succulent.—Ed. Field.]

Fertilization of Cereals.—I am not aware, says Dr. Syme, in *Journal of Botany*, of any observations on this subject. This year I turned my attention to it from being at work on the grasses for the third edition of "*English Botany.*" and as my residence is in the midst of cornfields, I had ample opportunities of investigating the subject. In wheat and barley the stigmas receive the pollen from the anthers before the latter are protruded, and the exerted anthers I found to be always empty. In the oat most of the protruded anthers are empty, but occasionally anthers with pollen are to be found after protrusion, and stigmas exposed at the sides of the florets, which I have not been able to find in wheat and barley. All the British forms of the *Agropyrum* section of *Triticum*, and *Hordeum marinum*, *maritimum*, and *bulbosum*, protrude their stigmas and unemptied anthers in the manner usual among the *Euryanthæe*. My observations are confined to the county of Fife, and the case of the oat seems to show that the mode of fertilization is not always constant in the same species, so that observations are required in other places. The question is more important than it appears at first sight. I have noticed letters in the newspapers from farmers, predicting a bad wheat harvest because the "wind had blown off the flowers." Now, if the anthers may be blown off without affecting the fertilization no harm is done, and the belief of this may save a needless panic and uncalled for rise in the price of corn.



"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE GARDEN IN THE HOUSE.

FLOWERS FOR THE DINNER-TABLE.

BY NOEL HUMPHREYS.

I HAVE just seen, in the private dining-room of a London Club, such a display of Orchid blossoms, those gorgeous jewels of the tropics, as made that square, unpretending, gas-lighted room a very hall of beauty. No other flowers at once convey to one the impression that we stand in the presence of supreme beauty. They are the floral queens of loveliness, whose charms are unrivalled and undisputed. The very butterflies of their own regions, gorgeous as are the dazzling colours of their painted wings, must cede the palm of beauty to these glorious flowers. Even the golden splendours of *Papilio Priamus*, and the flashing metallic azure of *Morpho Adonis*, sink into a secondary rank of beauty as they flit past the wondrous forms and exquisite tints of these unrivalled blossoms. The colouring of the tropic butterfly is glaring and coarse when compared with the pearl-like graduation of the pervading tints of Orchid flowers, and their striking contrast with the purples, crimsons, and oranges of their markings. And, then, there is the dainty texture of their exquisitely-formed petals and sepals, often of a flake-like semi-transparent tissue, that leaves far behind the cunningest manipulation of the artistic wax-worker in his vain attempts to imitate their beauties. That pale dead wax makes but a sadly poor and brittle petalage compared with the flakes of living beauty that form the Orchid flower, which in its sculpture-like vitality is evidently intended to be "a thing of beauty and a joy" for a much longer period than a common flower. It is, in fact, well known that the flowers of many of the most splendid Orchids endure in all the splendour of their loveliness for several weeks among the balmy shades of the deep recesses in which they delight to hold their court of beauty, secure from the disturbance of any invading wind more ruffling than the warm breath of a tropical evening; and where no too ardent sun-ray can intrude till softened down to tender, caressing warmth by the deep veil of interwoven foliage that meets above their bowers.

What a glorious privilege to possess these exquisite creations of nature in our uncongenial climate!—creations, of which it might be said, "the earth hath stars, and these are of them." To be able to command their growth, to time the period of their expansion to an hour, is a triumph of our civilization in which it is very sweet to indulge. The poet Cowper only expresses dimly the refined enjoyments which improved horticultural appliances and the stores of new beauty which the enterprise of our travelling botanists have since brought within our grasp, when he said,—

"Who loves a garden, loves a greenhouse too:
Unconscious of a less propitious clime,
These bloom exotic beauty, warm and snug,
While the winds whistle and the snows descend."

The genuinely flower-loving poet little dreamt what exquisite and entirely novel beauties of the floral world were destined to be placed at our disposition by means of that artificial protection, the results of which so delighted him; and most assuredly he would have been no less astonished than delighted, if he could have seen the display which I have just enjoyed—a display not raised sparingly by such laborious means as would have rendered each flower precious, but produced by sheer horticultural skill, in such lavish abundance as rendered it possible to cut a whole hamperful for the embellishment of a single meal. As the

result of such successful culture, just such a supply *was* gathered from his private collection by one of our merchant princes, merely to embellish a dinner-table prepared for a comparatively small number of friends—about a dozen—the preparations for whose reception I have just enjoyed the privilege of examining. The table was circular, and in the centre was placed a tall, slender, trumpet-shaped vase of simple glass, twenty-seven inches high, from the mouth of which seemed to be breathed forth, as by some horticultural magic, not delicious sounds, but a cloud-like group of forms and hues—fair and fairy-like, as though they had arisen through that crystal tube from the very spirit-land of flowers. Their forms seemed scarcely those of the flowers of earth, so strange, so weird, and yet so beautiful! so wildly fantastic, yet so exquisitely symmetrical! so chaste and delicate, and yet so gorgeous in their varied tones and tints! Above all the others climbed forth, with a paradoxical angularity of grace, a branching, many-flowered *Oncidium*; a little lower drooped three elegant sprays of the closely-bloomed *Calanthe vestita*. Still lower shot brightly forth, bold and sparkling, several of the starlike flowers of *Angræcum sesquipedale*, from whose brightness seemed to emanate a soft astral light, while the long train-like appendage streaming wildly from them made them look like a constellation of comets about to dart from their spheres. Then came again *Calanthes*, drooping low in their tender tints of white and violet; then a spray—queen of this bevy of fair flowers!—of the exquisite *Phalænopsis amabilis*—a fairy shower of snowflakes, that is to say as to their beauty, but more substantial, more sculptural, not like the snowflake on the lake, white for a moment, and then gone for ever, but created to endure to the very longest limit ordained to floral life, in all its pristine perfection. Then, travelling round the group, came more *Calanthe*, and another comet constellation of *Angræcum*, and a huge pendent spray of *Epidendrum ciliare*, whose sharp intercrossing sepals looked like piled lances, and whose bare and slender flower-stem was hidden by an over-lying and gracefully curving spray of *Odontoglossum Alexandræ*. Other things as rare and as beautiful followed, each coming forth from among feathery fronds of delicate ferns (especially the Maiden-hair), the only kind of foliage, except their own, that the flowers of the Orchid tribe can tolerate association with; but from tufts of this kind of vegetable plumage they seem to issue as congenially as from among the neighbouring greenery of their native dells.

At its base, the trumpet-shaped vase sprang from a shallow crystal saucer, filled with mosses, from the midst of which issued other and larger fern fronds, some reclining gracefully against the slender stem of the vase, and others drooping with a negligent grace on to the snowy table-cloth; a few wandering stems of the climbing *Myrsiphyllum asparagoides* straggling playfully still further afield. Reposing upon this bed of delicate greenery other Orchids lay, revelling in their beauty. *Cattleya exoniensis*, *Lælia elegans*, and several other superb beauties boldly basking in the glare of gaslight as luxuriously as if still growing among the balmy dews and rich warm shadows of their native dells of the prolific tropics; one pale creamy beauty, far beyond all others in loveliness—*Odontoglossum Alexandræ*—exhibiting rich crimson maculations that shone like rubies.

Beyond this central vase and its gorgeous freight of floral magnificence was arranged, circling about the grand central group like a guard of honour, a constellation of lesser vases, each bearing its plume of floral beauty. And this was not yet all the display, for, again, in front of each expected guest was placed a lesser vase, each with its delicate spray of Maiden-hair fern enshrining a single blossom of some exquisite Orchid—such button-hole bouquets as Covent Garden can only furnish forth sparingly, and at fabulous prices.

Surely, the decoration of our dinner-tables by means of such exquisitely-beautiful natural objects tends to invest even the vulgar charms of turtle and *amontillado* with a certain amount of real elegance, and to raise trains of thought above the ordinary level of such occasions; far above the mere materialism of the banquet, towards a more spiritualistic contemplation of some of the most exquisitely beautiful of all created things. The ancients placed roses on the banquet-board not only as a symbol of the brightness of existence, and as expressing in their evanescent beauty the motto, "Enjoy while

ye may," but also with the view of showing that life is not only to be lived, but also to be embellished; and horticulture is evidently one of the many means through which its embellishment may be most advantageously achieved, and by which it may be endowed with beauties of never-ending variety, and its feelings and aspirations perfumed, as it were, with a civilizing and elevating influence.

P.S.—It was intended that a sketch of at least one of the lesser vases, with its Orchid and its fern fronds, grouped by a tasteful and experienced hand, should have accompanied this wandering reverie on Orchid beauty, but the project was given up in despair, as it was found that wood engraving, even of the highest kind, could not convey any adequate idea of the delicate tones of the original flowers.

FLOWERS UNDER ARTIFICIAL LIGHT.

It is a more important matter than at first sight may be apparent to know exactly what flowers are the most effective when seen under the influence of artificial light. Some flowers, as we all know, which are most beautiful in the day-time are dull and dirty-looking at night, and for that reason totally unfit for table decoration. Although this is well known to those who are conversant with the arrangement of flowers for festive occasions, sufficient attention is not, as a rule, paid to the suitability of the various classes of flowers for the purpose, either by the gardener, or those who have the dressing of the *épergnes* and the filling of the vases, when that work is done by the housekeeper or the lady herself. Too much is left to chance; and, instead of growing a certain number of plants which furnish flowers most suitable for the work, no consideration is paid to the matter until they are wanted, and then the flowers that are most plentiful are gathered and used as best they may be. There is no remedy for this state of things unless those who have the arrangement of the floral decorations know exactly which are the best, and then give instructions accordingly. It is a grave question whether *épergnes* ought not to be dressed in a room darkened, and then lighted artificially; there would then be fewer mistakes than are now commonly met with. In my opinion, the whole question of dinner-table decoration is in need of reform, especially with reference to the public exhibitions, which, as at present conducted, do but very little towards educating the public in principles of taste, or in showing which are the most suitable flowers for the purpose. Regard ought to be paid to effectiveness when subjected to the influence of artificial light. As at present conducted, these exhibitions do but little good, for the appearance of flowers during the day-time is alone considered, and it is worthy of note that, at the last exhibition of table decorations at the Crystal Palace, the leading prizes were awarded to stands dressed with flowers, which, however light and elegant they appeared at the time, were utterly unfit for the purpose.

The question, then, arises, what flowers are the most suitable? And I will at once proceed to answer it. First of all, it must be said that shades of lilac, blue, mauve, and purple, must be avoided, and preference given to white and various shades of red. Amongst greenhouse plants, many of the Azaleas and Camellias will be found invaluable. Of the former, *Admiration*, white; *Chelsoni*, scarlet; *Comet*, scarlet; *Fascination*, bright rosy red; *Flag of Truce*, double white; *Flower of the Day*, white, striped carmine; *Francis Devos*, double scarlet; *Grande Duchesse de Bade*, scarlet; *La Superbe*, scarlet; *Mars*, bright crimson; *Reine des Roses*, rosy carmine; *Stanleyana*, rosy carmine; *Virginalis*, white. The best of the Camellias are *Beali*, deep carmine; *Chandleri elegans*, rosy carmine; *Countess of Derby*, white, flaked carmine; *Donckelaari*, red and white; *Gem*, carmine; *Imbricata*, red; *Jenny Lind*, white and rose; *Madame Pepin*, rosy carmine; *Queen Victoria*, carmine; *Victoria Magnosa*, deep carmine. Nearly all the Cape Heaths are useful, as also are the *Epacris*. The best of the latter are *Carminata*, *Eclipse*, *Hyacinthiflora*, *H. candidissima*, *H. carminata*, *Lady Alice Peel*, *Miniata splendens*, *The Bride*, and *Viscountess Hill*. The white and carmine varieties of *Cyclamen persicum* are invaluable either for placing upon the table, or for furnishing cut flowers for the *épergne* or for the little glasses by the side of each guest. The dark rose-flowered varieties are not so good. The Chinese *Primulas*: crimson and white are both good, as also are the carmine varieties. *Dracophyllum gracile*, *Imantophyllum miniatum*, *Kolosanthos*. *Pelargoniums*: all the carmine and white varieties, such as *Gauntlet* and *Blanche fleur*, and the scarlet-flowered zonals. All the scarlet-flowered *Salvias* and *Tropæolums*; *Vallota purpurea*, the flowers of which are not purple, but scarlet; white garden lilies, especially *Lilium eximium* and *Lancifolium album*; *Rhynchospermum jasminoides*; all fuchsias with red or white tube and sepals may be turned

to account. From the stove we can take all the *Achimenes* with scarlet flowers—*Stella*, *Scarlet Perfection*, and *Coccinea* being especially good; *Æchmea fulgens*, *Æschynanthus splendens*. All the scarlet-flowered *Amaryllis*, *Anthurium Scherzerianum*, *Aphelandra aurantiaca*, *A. Roeziana*, *Clerodendron Balfourianum*, *Epiphyllum truncatum*, *E. t. aurantiacum*, *E. t. violaceum*, *Eucharis amazonica*, *Euphorbia jacquiniiflora* (should be grown in quantity); *Gesnera exoniensis*, *G. refulgens*, *G. zebrina splendens*; *Ixora Colei*, *I. coccinea superba*, *I. crocata*, *I. salicifolia*, *I. Williamsi*; *Poinsettia pulcherrima*. This also should be grown in quantity, for the single bracts intermixed with the other flowers and fern-fronds produce a most brilliant effect. Specimen plants are also invaluable for table decoration. *Justicia coccinea* and *J. speciosa*, and *Thyracanthus rutilans*, are all useful, the latter being a real gem, and *Stephanotis floribunda*. Several orchids are useful, especially *Cœlogyne cristata*, *Barkeria Skinneri*, *Burlingtonia candida*, *Calanthe Veitchi*, *C. veratrifolia*, *C. vestita*. Many of the *Cattleyas*, *Cymbidium eburneum*, *Cypripedium niveum*, *Dendrobium albo-sanguineum*, *D. densiflorum album*, *D. infundibulum*, *D. moniliforme*, *D. nobile*, *D. Parishii*, *D. pulchellum*, *Epidendrum vitellinum*, *Goodyera discolor*, *Lælia anceps*, *L. alba*, *Lycaste Skinneri*, *Odontoglossum Bluntii*, *Phaius albus*, *Phalænopsis amabilis*, *P. grandiflora*. Amongst hardy plants adapted for forcing, mention must be made of *Lily of the Valley*, *Astilbe* (*Hoteia*) *japonica*, *Dielytra spectabilis*, *Double White Narcissus*, *White and Red Hyacinths*, *White Lilacs*. *Hyacinths* are very valuable for table decorations if the bells are stripped off the spikes, and used either singly or in bunches of four or five.—W. C., in "Gardeners' Magazine."

THE FOOD OF PLANTS.*

(Concluded from p. 136.)

I HAVE now brought forward not all the arguments which might be adduced, but a sufficient number of them to satisfy you that the quantities of carbon accumulated in the crop or tree are not derived from carbonaceous matter existing in the soil; and seeing, in this way, that the solid substance of the earth does not suffice to furnish the carbon required, our attention is next directed to the water which falls upon the earth as a possible source of all this carbon. Now water—pure water, that is to say—is a substance which itself contains no carbon, and therefore cannot furnish any carbon to the plant. But certain natural waters are found to contain carbon in small quantity. For instance, the drainage water of peat bogs, and land-drainage water in general, contains a certain amount of carbonaceous organic matter derived from the land; but we have already seen that the land does not contain enough of this organic matter to furnish the carbon of vegetation directly, and cannot therefore furnish it indirectly through the intervention of water taking up organic matter from the land. But we find that rain water does contain carbon derived from another source. The rain, in falling through the air, acquires different impurities or additions from the air; and more especially it takes up a certain carbonaceous constituent of the air, on which I shall have directly to dwell more particularly. And I am not merely speaking of rain which has fallen in great cities like this, and which has become contaminated with carbonaceous soot and smoke of imperfectly burnt coal; but I am speaking of rain wherever it falls, whether on land or ocean, in town or country, at the end of a period of drought when the air is foul, as at the end of a period of wet, when it has been washed clean by continuous showers. Pure water, I have said, is free from carbon. But all water that has been left in contact with the air, and especially water that has been condensed from and fallen through it, contains, in small proportion, a particular definite compound of carbon, namely, carbonic acid, very different indeed in its nature from the indefinite compounds of carbon we have hitherto spoken of under the name of humus and vegetable organic matter. In this way our attention is necessarily directed to the air as a possible source of all the millions of tons of carbon that are accumulated in forest trees and annual crops, growing on extensive areas of land. And although at first sight it must strike us all as being improbable—scarcely, we should think, possible—that any such quantity of solid carbon could be got from the fresh, transparent, intangible, fleeting air, yet, when we consider that upon setting fire to a heap of wood, or of the charcoal produced from wood, and letting it go on burning, it

* Abstract of a lecture delivered by Professor Odling, F.R.S., in the Hulme Town Hall, Manchester, November 24, 1871

is mainly resolved into matters which are dispersed into the air, and are themselves aerial, we begin to perceive that the improbability is not in reality so great as at first it appears. When we burn, however large a quantity of wood, or of the charcoal produced from wood, there is nothing, you know, left behind but an insignificant quantity of ashes; there is no solid body formed; there is no liquid body formed; there is nothing but an aerial body formed, which is discharged into the air. Now this aerial body used actually to be called air—fixed air, to distinguish it from ordinary atmospheric air—but it is nowadays called carbonic acid gas. This gas is possessed of many curious properties; but is more especially characterised by two. The first of these is the property which it has of extinguishing flame. Another is that it combines with lime to produce carbonate of lime or chalk. Now lime is a substance which dissolves in water to form a clear transparent liquid; but chalk will not dissolve in water. When carbonic acid exists in a large proportion, it has the property of rendering lime-water milky and also, as I have said, of extinguishing flame; but when the proportion of carbonic acid is not sufficient to extinguish flame, we are able, nevertheless, to recognise its presence by the property it has of converting clear lime water into an opaque white mixture of chalk and water. Now I have stated that the aerial substance into which solid charcoal was converted, when it underwent the process of being burnt in air, was carbonic acid gas, which is a compound of carbon with the aerial or gaseous substance, oxygen; and that when carbon or charcoal burns in ordinary air, it unites with the oxygen of the air to form the aerial substance, carbonic acid gas, which is discharged into the air. But although the air does, beyond question, contain carbon in the form of carbonic acid, the proportion that it contains is exceedingly small, not more than four parts in ten thousand. A room twenty-five feet long, as much broad, and sixteen feet high, would hold 10,000 cubic feet of air, containing four cubic feet of carbonic acid gas. And these four cubic feet would weigh 2,465 grains, and contain 607 grains of charcoal—that is to say a quantity of charcoal about the size of an egg. And when we pass from the consideration of air in rooms, to that of the air pressing everywhere upon the surface of the earth, we shall get to results great almost beyond conception. It is well known that the weight of air overlying every square inch of the earth's surface is fifteen pounds. Now, fifteen pounds on the square inch is 2,160 lbs. on the square foot; so that every square foot of the earth's surface has overlying it 2,160 lbs. of air, and these 2,160 lbs. of air contain about $1\frac{1}{2}$ lb. of carbonic acid gas, equivalent to very nearly half a pound of carbon. I have shown that there are produced, in many cases, from an acre of land, some 2,000 lbs. of carbon in a single season. Now, reckoning from feet to acres, we find that not merely at the first instant of the growth of the crop, but that during every instant of the period of its growth—at the end no less than at the beginning—there is overlying the acre of land furnishing those 2,000 lbs. of carbon some 20,000 lbs. of carbon in the form of carbonic acid, existing, though in such small proportion, in the air. Calculating in this way, we find that the amount of carbon existing in the atmosphere, in the form of carbonic acid gas, is not only enormous in its absolute quantity, but that it is far in excess of the wants of vegetation, and far in excess, moreover, of the quantities of carbon contained in all living beings, both plants and animals, existing on the surface of the earth, and in inflammable carbonaceous minerals, such as coal, which exist buried beneath the surface. In this way, then, we come to the conclusion that by their contact with the air, plants are at any rate afforded the opportunity of getting that carbon, which constitutes so large a proportion of their structure. The question now is, do they avail themselves of the opportunity afforded them? do they actually absorb carbonic acid gas from the atmosphere, and extract the carbon of the gas which they absorb? The evidence on this point dates from the latter end of the last century; when it was ascertained by the older chemical philosophers, and more particularly Dr. Priestley, and by Saussure and Sennebier, that when growing plants are exposed, under the influence of sunlight, to air containing carbonic acid, they do as a matter of fact absorb some of this carbonic acid; and, that having absorbed it, they do not discharge it again into the air, but instead discharge only its one constituent oxygen; the

necessary inference being that its other constituent, carbon, is retained in their tissues. Of late years, the subject has been investigated with great care and elaboration by the French chemist Boussingault, who has shown not merely that plants have this property of absorbing carbonic acid from the air, and of discharging the constituent oxygen of the gas into the air and retaining the constituent carbon of the gas in their tissues, but that they do this with extreme rapidity. In the case of some oleander leaves, enclosed in a glass globe he found, by measuring the leaves and analyzing the air passing over them, that under exposure to sunlight there was an absorption of carbonic acid from the air at the rate of $56\frac{1}{2}$ cubic inches, or a fixation of carbon at the rate of $11\frac{1}{2}$ grains per hour per square yard of leaf surface exposed, showing the extreme rapidity with which the absorption of carbonic acid from the air and the retention of its carbon actually took place. Moreover, he made a great number of other experiments, which established not merely the general fact that plants can absorb carbonic acid gas from the air, and can discharge the oxygen and retain the carbon of the gas so absorbed; but, operating with seeds, and more particularly with peas and vetches, and growing them in artificial soils quite free from carbon, he found that the entire weight of the carbon ultimately accumulated in the grown plant was identical with the weight of carbon contained in the carbonic acid gas which the growing plant had absorbed from, and the oxygen of which alone it had discharged back into, the atmosphere. In this way, then, Boussingault established the important fact that plants acquire their carbon from the carbonic acid of the abundant ever-changing air in which they are grown.

We have thus considered the source from which the carbon of vegetation is obtained. But we have yet another point, and that is—what becomes of it? Now, a little consideration will show that just as the carbon of vegetation is produced from the aerial substance, carbonic acid gas, so the destiny, if I may so say, of the carbon of vegetation is to be reconverted into this same aerial substance. First of all, let us see what becomes of the most abundant of vegetable products, namely, wood. You know that a great deal of fresh wood is put to no intermediate use, but is at once chopped up for the fire; and when this wood is burned, its carbon combines with the oxygen of the air, and is so re-converted into carbonic acid. Again, a considerable quantity of wood is manufactured into charcoal, and this charcoal is then burned and so converted into carbonic acid. And with regard to the diverse applications of wood, we know that much of it is made into furniture, and that this furniture does not last for ever, but finds its way from the best rooms to the attics, and at last to the fire-place. Wood is also used for the building of ships and in the construction of houses; but in course of time the ships get broken up and the houses get pulled down, and the wood of both ships and houses becomes ultimately sold for firewood, and then the carbon of this wood gets burnt into the very carbonic acid from which it was long years before produced. In other cases the wood or woody matter, although it never undergoes a process of actual burning, nevertheless undergoes an equivalent process of oxidation. At the present season, or but very recently, we had large falls of autumn leaves, and those leaves are still accumulated in many places, and undergoing not burning but decay. Now the process of decay consists really in a slow combination of the carbon of the leaves with the oxygen of the air, whereby carbonic acid is produced. Indeed, woody matter of all kinds exposed to the weather, to the action that is of air and water, gradually undergoes decay or oxidation, and, if left to itself, crumbles away, and in course of time disappears altogether, being converted into the invisible aerial matter carbonic acid. When we pass from the consideration of wood to that of the hay and grain eaten by different classes of animals, and mark what becomes of all this food, we shall find that so much of it as is both eaten and made part of the blood and substance of the vegetable-feeding animal, undergoes one or other of two principal changes. A large portion of it gets oxidised in the body of the vegetable-feeder, with production of carbonic acid discharged principally from the lungs in the act of respiration. Another portion gets accumulated in his body, whereby it is fattened and rendered fit to become the food of the flesh-feeder. And when the flesh-feeding animal eats up

the bodies of the vegetable-feeders, their vegetable derived fat and lean that becomes assimilated in his body is found to suffer there a speedy oxidation. Therefore, in the case of food consumed in our bodies, as in the case of wood consumed on our fires, the carbon of vegetable produce is directly or indirectly converted back into the aerial carbonic acid from which it was originally formed. The conversion of carbon into carbonic acid, on the fire, is a burning process, attended with the evolution of heat. The conversion of carbonic acid into carbon and oxygen, in the tissues of a growing plant under the influence of the sun's rays, is an unburning process attended, not with an evolution of heat, but with an absorption of heat from the solar rays: and it follows that there is just as much disappearance of solar heat in the production of the charcoal, as there is evolution of heat in the ultimate combustion of the charcoal produced. So that, you see, the quantity of heat which the charcoal eventually gives out in burning on the fire, is the exact equivalent of the quantity of solar heat which disappeared in the act of growth of the wood, from which the charcoal furnishing our fire was obtained. From what has been said it will be seen, too, that plants derive their carbon from the air rather than from the soil in which they grow.

THE TWO PATHS.

THE NEW GARDENS AT ROCHESTER CASTLE.

A VERY wholesome feeling in favour of public parks and gardens has fairly set in, and, to say nothing of the metropolis, one after another of our great provincial towns has already provided itself with one or more such places of healthful recreation. The arboretum at Derby, planted some thirty years ago upon land presented to that town by the munificence of Mr. Strutt, the friend and patron of Loudon, who superintended the plantation, must already have become a well-timbered park, though still in the youth of its arboreal existence. Zoological or botanical gardens are already old-established institutions at Manchester, Liverpool, Birmingham, and other great centres of commercial activity. The noble ruins of Dudley Castle have long since been planted about with shrubberies, now well grown, and containing many finely developed trees. From the shady walks of those shrubberies, promenades emerge upon a plain of undulating green sward—untrimmed and untortured by the innovation of gravel walks, in the midst of which rises the magnificent ruin, just as it might have appeared twelve months after the rude marks of destruction dealt upon it by Cromwell had been freshly clothed by nature with a mantle of tender green, to hide the cruel devastation. When the authorities of the city of Rochester wisely determined, in the beginning of last year, to treat the enclosure surrounding the magnificent shell of the grand old Norman Keep as a public promenade, after the same good fashion as Dudley, for the benefit and recreation of the inhabitants of their ancient city, they certainly took the proper course in advertising for competitive designs for the best plans for laying out the area in question. Prizes of forty pounds each were offered to the authors of the two best designs; and twenty pounds to the third. These prizes offered for plans which only admitted of the most simple treatment ought to have been sufficient to secure the services of the most competent horticultural artists; but the result does not seem to prove that such was the case.

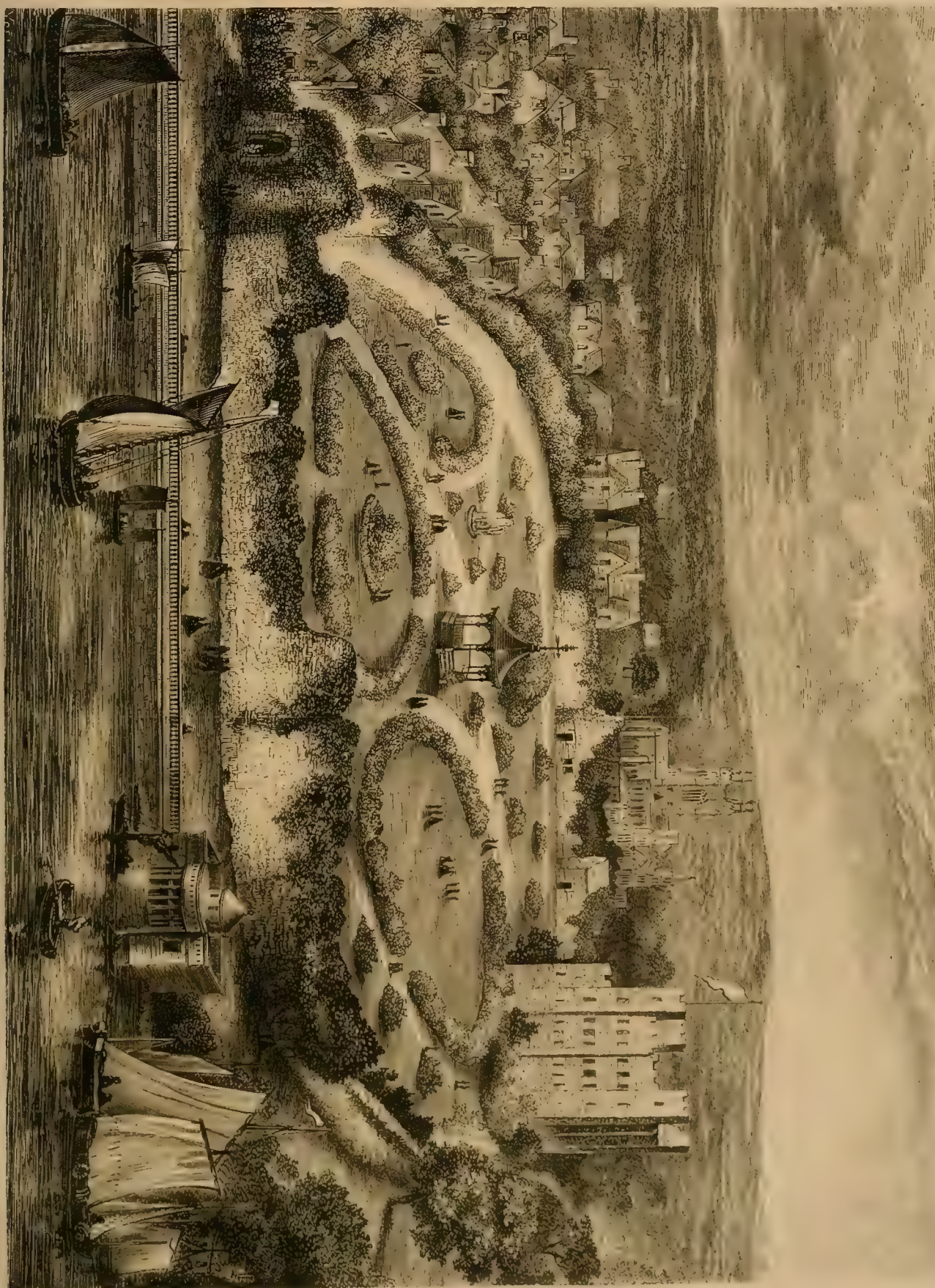
What number of designs were sent in I have no means of knowing; but I learn from the columns of the *Builder* that six were selected from the bulk, as the best; from which, three were nominated to prizes. The one selected for adoption was marked, "Norman," in the competition, and was the work of gentlemen, who, being architects and surveyors, do not seem to have possessed the requisite qualifications for the picturesque

laying out of gardens and the planting of them with suitable trees, selected with taste and care from the abundant arboreal stores now at command. That the qualifications of ordinary architects and surveyors fits them for this kind of work seems plainly open to doubt. But the plan engraved in the *Builder*, and which we reproduce in a manner well adapted to do the fullest justice to the design in question, sets all doubt upon the subject at rest; for anything more bald, uninvective, inappropriate, and tasteless could not be imagined. In no respect does the plan rise above such an one as might have been furnished for a suburban tea-garden by an intelligent labouring gardener; and thought suggests that it must have been meant for Rosherville, rather than for Rochester. It has indeed all the commonplace vulgarity suited to such a purpose. A Chinese pavilion for a brass band is placed in the middle, and meaningless walks, leading nowhere in particular, cut up the whole surface; utterly destroying the breadth and repose which ought to characterize such a site. Surely, nothing could have been devised by the utmost stretch of desecrative ingenuity more calculated to destroy every association connected with the history of the place, and utterly disgust every visitor of taste and feeling who may in future visit a spot hallowed by one of the most remarkable of the still existing monuments of the feudal story of Britain. One is tempted to inquire how many other designs were sent in—whether twenty, forty, or sixty, and whether they were openly exhibited, in order that the public and the press might have the opportunity of expressing their opinions before the final selection was made. It is the more probable that the drawings were never openly exhibited at all; or, not till some small official conclave had made its own private selection of the plan to be adopted; for it is almost impossible to conceive that, among a number of designs sent in, something infinitely better than the wretched plan adopted could not have been found.

Not to dwell upon the unpleasant subject of the proposed plan, nor to indulge in regrets for many better ones that may have been rejected, it may be well to consider briefly what ought to have been the manner of laying out and planting this plot of historic ground. It rises finely above the broad waters of the Medway, crowned at its highest point by the grand old castle and its round-arched window-openings, which are still in many places nearly perfect, even to their crisp sculpture; so characteristic of those arts of nearly eight hundred years ago, of which Rochester Castle is a noble remnant. That ancient fortalice, in its hoar antiquity, and with its venerable beard of grizzled lichen, still erect in its baronial grandeur, is scarcely second in interest to the noble pile at Warwick, against the vulgar restoration of which Mr. Ruskin has written such noble words, or even the stately remnants of Kenilworth, with all their associated romance. It is most certainly not second in interest to the grand ruin at Dudley; and in throwing freely open to the public the ancient turf-clothed slopes that surround it the greatest care should be taken not to disfigure and vulgarise the historic site by common-place gimcracks; and by such sadly prosaic treatment, of the true tea-garden school, as are exhibited in the accepted plan.

Those venerable slopes should be but very tenderly, very affectionately, and very sparingly, touched by art of any kind; and the art which is permitted to approach them should be of a very high class—the *ars celare artem*. That *soi-disant* art, of the glaring kind, which dashes itself insolently at the eye, like an offensive intruder, as it always is, should be kept entirely aloof, at any cost. With this view, the whole of the central space (disfigured in the plan by the trumpery band-stand) should be kept broadly and grandly open, and undisturbed, except by the planting of a few, very few, choice trees, destined to become large and striking objects, either singly or in groups of three or five. In every other respect the expanse of turf should remain unbroken; obtrusive gravel walks, with trimmed edges, would be utterly destructive of the calm repose which should pervade such a scene.

A single pathway, partially concealed with shrubs of various kinds, chiefly evergreens, might extend around the interior circuit of the enclosure for some two-thirds of the distance from the entrance, in the direction of the castle; but the occasional openings should be wide and clear, commanding, in some



THE WRONG PATH.—THE NEW "PRIZE" GARDEN AT ROCHESTER CASTLE.

places, uninterrupted views across the open green, and in others fine glimpses of the castle from different points of view. As to flower-beds and flower planting, in the ordinary sense, there should be none of it. All must be strictly a nature garden; and nature, left alone, does her garden work exceedingly well. Over the broken walls of our ruined abbeys and castles she has hung, with unerring grace, her glistening mantle of ivy; not cropping its fringes either with the aid of the mechanic's straightedge or gardener's peg-line. And then she leaves portions of the hoary masonry free from the ivy-woven scarf, in order that, at sunny angles, she may plant in the crumbling crevices seeds of the golden wallflower, to shed its perfume over the scene of venerable decay, and that she may suspend graceful tufts of the creeping antirrhinum from certain joints of the dislocated stonework; while along the ridge of the ancient parapets she plants its more ambitious congener, the greater snapdragon, whose bold spikes of pink or crimson flowers form a gorgeous crest-work to old ruined walls. Rochester, too, has long been celebrated for an exceptional and elegant addition to nature's ordinary wall furniture; those old battlements being known as one of the few spots in England where the wild carnation is found; and many an enthusiastic field botanist has made a devout pilgrimage to the ancient castle of the Medway to gather specimens, destined to be long cherished among the choicest treasures of his herbarium.

Those ancient flower-wreathed walls, and the window-gaps in the great square keep—those "loops of time," whose crumbling sills have been long since replaced by mingled masses of flowers and ferns—should be allowed to give the keynote to the floral treatment of the green space of the enclosure. Hollows, in suitable aspects, may be naturally carpeted with primroses and wood anemones; others with blue bells, mingling tints with purple squills; while towering foxgloves, purple, white, and grey, may contrast their hues with the yellow and orange of the wild linaria on bright and sunny banks. And then, huge clumps of the pale golden daffodil might be made to light up the deeper parts of shadowy dells, and many other delightful natural features might be developed by careful, and not obtrusive, art. In short, nature may be aided, in the setting forth of her fair display, in such a manner as to conceal the aid afforded. Thus, wallflower and antirrhinum seed may be freely sprinkled in the crevices and along the ridges of the walls, and nature may be safely left to rear such of her numerous progeny as she chooses, while rejecting others; just as, after the thick planting of primroses, blue bells, foxgloves, and other of the queens of our native flora in what appear to be the most suitable spots, nature may be left alone, to extend or diminish the colonies so planted according to her own good grace, ever unerringly guided by the suitability of the situation and the soil. So treated, the ground about Rochester Castle may be filled with attractions of an elevating character, that will be in sweet and reposeful accordance with the scene of noble ruin. But, cut up in the glaring fashion of the tea-garden horticulture exhibited by the published design, it will become a desecration to the spirit of the place, and a disgrace to the city authorities, who permit the perpetration of such a vulgar piece of atrocity.

H. N. H.

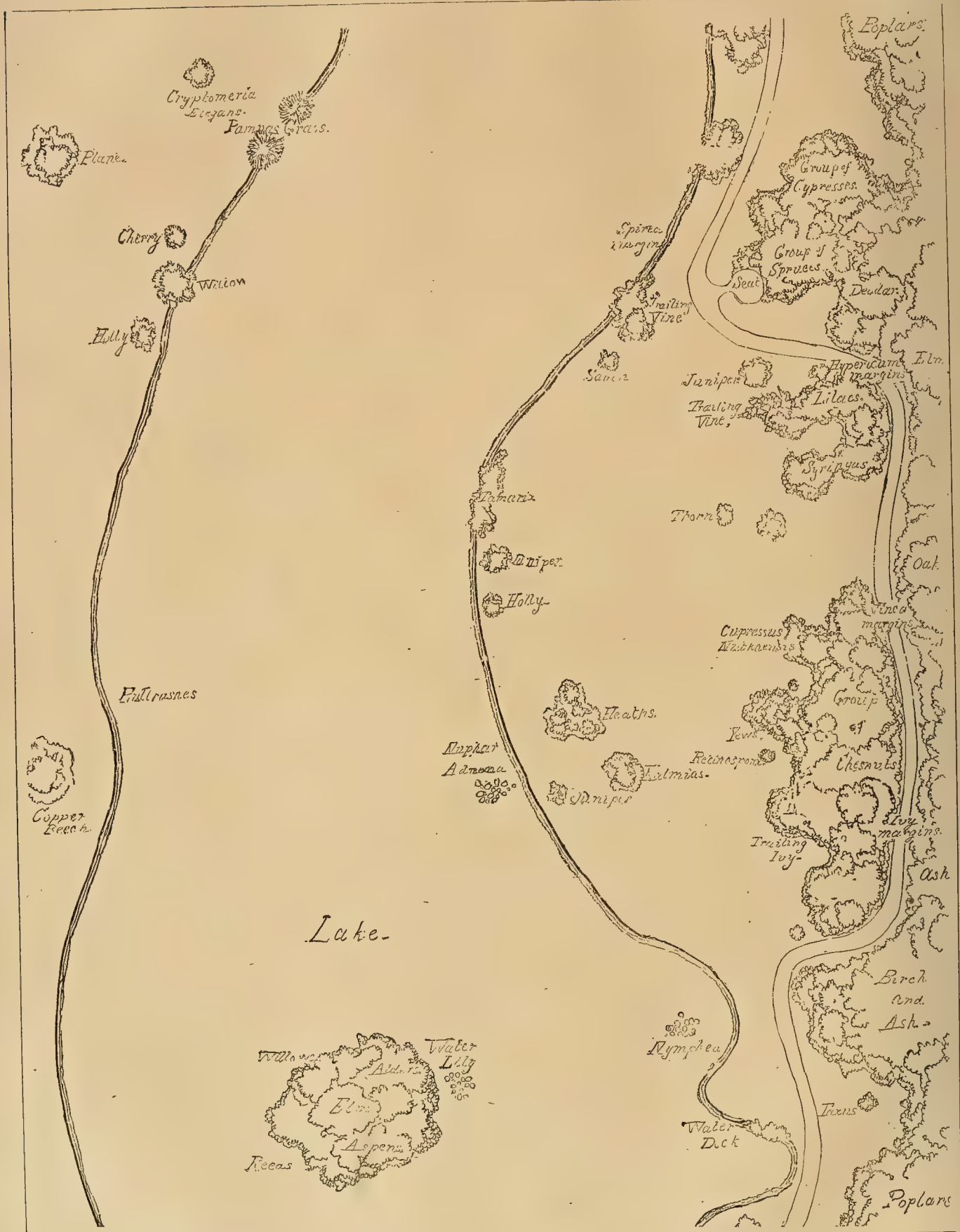
[If Rochester wants a Rosherville, there cannot be the slightest objection; but, in the name of good taste, do not let it be made within the precincts of the glorious old Castle. The illustration will enable the reader to judge of this piece of "prize" garden design. The chief vices of "landscape-gardening" are well shown in it. The scarcity of tastefully-designed gardens in private places need puzzle us no longer, when a beautiful piece of ground, in one of the most hallowed spots in England, is thus violated. As an example of the true course to be pursued in such a case, we may point out the quiet and beautiful garden surrounding the Abbey and Roman ruins at York.—CONDUCTOR.]

The Odour of Box.—So they walked over the crackling leaves in the garden, between the lines of box breathing its fragrance of eternity; for this is one of the odours which carry us out of time into the abysses of the unbeginning past; if we ever lived on another ball of stone than this, it must be that there was box growing on it.—*Elsie Venner.*

THE PLANTING AND LAKE MARGIN AT BERRY HILL.

WE this week engrave a plan of a portion of the pleasure-grounds at Berry Hill, to show the beautiful character of the planting carried out there by Mr. Marnock. The comparatively small portion represented enables us to show the planting much more clearly. Besides, this small portion of good work clearly shown and clearly understood will teach much more than a large plan, in which the eye is caught by walks, drives, and other details which, while they make a plan seem pleasing to some, are only fraught with danger to garden scenery. Here we are brought face to face with a graceful piece of water and a narrow slip of ground running between it and the public road, and we can study its treatment without having the eye of the tasteful offended or that of the injudicious beguiled by the geometrical twirlings which are unfortunately rarely absent from garden plans or gardens, but which have nothing to do with pure gardening. Our plan gives a clear idea of the planting, and also of the free and tasteful disposition of the margins of the water, but only a visit can give an idea of the charming effects of the scene from many points of view.

What are the merits of the planting, and the disposition of ground shown by the plan? 1st. The natural flow of the margins of the water. The true and natural way in which the banks slope into the water cannot be seen, but it helps to lend a great charm to the place. Two kinds of wretched water margins may be named in opposition to this: the railway bank-like margin, in which the ground rises stiffly and abruptly; and the French pseudo-natural style, in which the very edge, instead of being allowed to kiss the water, is plastered with a tarry compound, and made to look like a section from a newly-tarred ship's side, both in colour and curve. The kerb-stone style is nearly allied to this. The most violent example I know of it is in the public gardens at Boston, U.S. The line of cement and stones that guard the edge of the ornamental water in the Regent's Park for the past few years is quite as bad in its way, as may be seen from the suspension bridge near Hanover Gate. 2nd. The tufts of water plants, and isolated specimens and groups near the margin, are well selected and placed. An isolated specimen of the common *Tamarix* is quite lovely by the edge of the water. Dovaston's Yew, too, near the margin, and on one side slightly drooping over it, is very effective. Groups of stately water plants, like the *Lythrums*, *Epilobiums*, and taller rushes, and of floating ones like the water lilies, are most effectively placed in various positions. 3rd. The formal lines which margin most of our ornamental plantations are unseen. Hence the most perfect ease. The scene is as free from stiff formalism as some quiet little lawn by the side of a mountain lakelet. 4th. There is a rich variety in the planting. No hasty glance suffices to exhaust its interest; no eye, however learned in plants, may not find a new friend or a fresh lesson. We have only been enabled to write the name of the family in many cases on the plan. The "group" is often a whole family of distinct species of our handsomest trees or shrubs. In some cases the ground beneath the trees looks much too bare; but in the smaller groups on the grass there is nothing in wild plant-life more lovely than the way the beds and groups of the various kinds of savin and other dwarf conifers send their shoots fearlessly over the short grass, and the way the American and other vines throw their long shoots over the low grassy banks. The grouping of the various families, too, is noticeable, as superior to the general mixture and dotting plan. 5th, and lastly for the present, the breadth of sweet little lawn preserved is the most noticeable feature of all. On the small lawn, fringed by tufts of *Tamarix*, trailing vine, and with the groups of heath and *Kalmias*, the effect would have been totally destroyed by dotting specimens. Now, from every point on it the varied planting towards the road is seen to the greatest advantage. Not less charming are the peeps through it and across the water to the open sweep of rising pasture-land on the opposite side. Some might suppose it needless to point out the advantage of this last feature. Not so! In the great majority of gardens, when a pretty new conifer arrives it is usually planted in some open green spot, and if the garden ever bore any evidence of thoughtful design, by perseverance



THE RIGHT PATH.—PLAN, SHOWING A PORTION OF THE LAKE AND PLANTING AT BERRY HILL, TAPLOW.

in this direction it is soon obliterated. Mr. Marnock, who designed Berry Hill, tells me he frequently finds, after an absence of a few years, all his openings and bits of verdant foreground planted over with young conifers as regularly as a cabbage plot.

CONDUCTOR.

THE IN-DOOR GARDEN.

BLECHNUM BRASILIENSE.

(SYN., CORCOVADENSE.)

For mixing with such palms as *Latania*, *Phoenix*, *Chamaerops*, and others, this is a fine plant, with much majesty of port; while the undulating margin of the pinnæ add to its charms of a minor character. It is a plant of free growth, and sufficiently hardy to be grown in the open air in summer. Though not generally termed a tree fern, it is, nevertheless, a good dwarf one; excellent for decorating greenhouses, in which it relieves the monotony produced by masses of fuchsias, pelargoniums, and similar plants. Its spores vegetate freely, and if put on a damp wall, in any unsightly corner, they will grow into nice-sized plants. Those who wish to have tropical effects with little trouble should, by all means, have this fern, which is not only a plant of very great beauty, but one which will grow and appear dressy at all seasons of the year.

J. CROUCHER.

THE IN-DOOR GARDEN FOR JANUARY.

By THOMAS BAINES, SOUTHGATE.

Stove.—Calculate what the probable requirements for the next few months will be as regards cut flowers and blooming plants for general decoration, and provide accordingly. A blaze of bloom in the flower-garden in the dog-days would be but a poor recompense for the absence of the more simple—yet, nevertheless, more welcome—harbingers of spring; and if this holds good in out-door gardening, it is equally applicable to that carried on in-doors. Therefore, look well as to what it may be necessary to introduce to the cool end of the stove, forcing-pits, or whatever structure is available for bringing on such plants as are required for bloom later in the season. At no time of year are roses unacceptable, and at no season are they more valued than in early spring. To have them early, the best way is not to prune them in autumn; but, to place them in very gentle heat with all their summer growth on them; keep them as near the glass as possible. But be careful not to admit cold currents of air upon them, otherwise mildew is certain to attack them. Feed them well with liquid manure, but not in too strong a state. When flowering is over, give them a season of rest in a cold house or pit, and then prune them, surface dress with strong loam well enriched with rotten dung, and re-pot in similar material such as require that attention. When the frosts are over, plunge them out of doors for the summer, where they will make their growth, attending well to them with water. Plants so treated will last good for at least a score of years. I should recommend the stock employed for this purpose to consist of half Teas and of half hybrid perpetuals. Towards the end of the month, cut back, and pot a portion of the *Allamandas*, *Clerodendrons* and *Bougainvillea glabra*, the last being the only species of that handsome genus suitable for pot culture. If this plant is well managed, it is almost a continuous bloomer, and it is a universal favourite, its delicate mauve bracts harmonizing well with every form and colour of flower with which I have seen it associated; and if not grown in too hot a place, it will last, in a cut state, for a week at a time. A portion of the *Gloxinias* and *Achimenes* may also now be potted, and they should be placed in heat as soon as the operation is performed; for if left in the potting-shed in cold damp soil even for a few days, they are in danger of rotting. Re-pot the

different kinds of *Alocasias*, using half sphagnum well chopped and half fibrous peat, with a liberal admixture of sand, for the purpose. *Richardia* (*Calla*) *æthiopica* forces well, and if placed now in moderate heat, will soon throw up its great white, trumpet-shaped flowers. Spring-struck *Hydrangeas* will likewise succeed in a similar temperature with the *Richardia*, and at no season will they be found of greater service than in early spring. They are much more useful grown as small plants with single heads than in a larger state; they last long in bloom, and admit of being set about with impunity in places where many plants would suffer or die outright. *Eucharis amazonica* is another useful plant, and a general favourite. It will throw up its flowers at any time, after having been subjected to a slight check before being introduced to heat. This is a plant that may be grown to almost an unlimited size, or it may be divided, and kept in eight or ten-inch pots. These smaller-sized plants will be found the most useful for general purposes, and especially for winter and early spring blooming. Some of the older plants of *Fuchsia* should now be placed in heat. A light kind named Mrs. Marshall is one of the best for general decoration, blooming, as it does, early, in the greatest profusion. As soon as the plants have "broken," they should be shaken out, and re-potted in three-fifths good loam, one-fifth rotten dung, and one-fifth sharp sand, the whole made firm in the pots. But, in potting these and all other plants, do not fall into the common error of filling the pots too full, to the exclusion of room for sufficient water at one application to moisten the whole of the ball; for, if only the upper portion of the soil and roots get moistened, the result is almost sure to be disease, and sometimes even death.

Orchids.—The plants in the East-India house will now be at rest, and with their growth fully matured, are in the best possible condition for a thorough cleaning, with a view to remove all scale, thrips, &c., which, with the low temperature now maintained, will not increase fast, and, consequently are much easier to reduce to a minimum than when circumstances are more favourable to their development. Those who are not disposed to grow a collection of orchids, but who, nevertheless, value orchid flowers in the winter season, should not omit to grow those most valuable winter-blooming favourites, *Calanthe vestita*, *C. Veitchii*, *Dendrobium moniliforme*, *Zygopetalum crinitum*, *Lycaste Skinneri*, and *Cypripedium insigne*. These are comparatively cheap, of easy culture, and produce a profusion of flowers that last long, either on the plant, or when cut. See that all potting materials, such as sphagnum, fibrous peat, and clean crocks, are in readiness for that operation when necessary.



Blechnum brasiliense.

Dwarf tender Tree Fern: suitable for shady dells during the summer months.

If any of the *Cattleyas*, or other inmates of the Mexican house, show, by excessive shrivelling of their pseudo-bulbs, that they are getting too dry, apply water; but let it be done sparingly, otherwise it will excite growth, which is most undesirable at present. The roots of many of these plants are pushing actively at this season, when they are otherwise at rest. See, therefore, that these do not become a prey to cockroaches, woodlice, and other pests, that are particularly fond of them.

Conservatory.—Where *Pelargoniums* have not yet been placed in their blooming-pots, no time should be lost in doing so. For compost, use good loam, with a moderate admixture of thoroughly rotten dung, and sufficient sand. Do not use too large pots—eight-inch ones are sufficient for the largest plants—and pot them hard, otherwise they are disposed to produce more leaves than flowers; keep them as near the glass as possible in a night temperature of 45°, and water them sparingly for the next two months. The best time to pot *Lilies* is in the autumn, as soon as they die down; they dislike any mutilation of their roots, which are then less active than at any other season. If not already potted, however, that ought to be at once attended to. They thrive well in rich, fibrous loam, with a little leaf soil and some rotten dung added, with enough sharp sand to insure porosity. Great differences occur in regard to the time of blooming of *Lilium auratum*. If a dozen bulbs of it are started,

some may not flower for two months after the others, the consequence of which is a desirable succession. If plants of *L. lancifolium* are not required to flower until autumn, when they are most useful, they should be placed in as cool a temperature as possible, to insure the exclusion of frost, and all the kinds used for pot culture should receive just sufficient water to keep the mould in a healthy state, but not more until they appear above the soil, and then they should receive all the light and air possible to keep them short and compact. Now is a good time to divide and re-pot *Vallota purpurea*, which is a most useful autumn bloomer; but be careful in the operation not to mutilate the roots more than is necessary. It will be found to succeed in soil similar to that recommended for lilies. Remove all blooming plants from the conservatory as soon as their flowers become shabby or unsightly, and give prominence to such fine foliated plants as do not require a higher temperature than is maintained here. Many of the *Agaves*, *Yuccas*, *Dasyliirions*, &c., though not furnished with gay flowers, possess attractions for those who can appreciate the beauty of form quite equal to the most gorgeous blooming plants. All work that can be done at this season should be completed as soon as possible; for unless time is taken by the forelock, it is difficult to recover lost ground.

NOTES AND QUESTIONS ON THE IN-DOOR GARDEN.

Anthurium magnificum and Alocasia metallica.—Will A. magnificum thrive under the treatment which Mr. Baines recommends for A. Scherzerianum? I have also a plant of Alocasia, in a twenty-inch pot, measuring five feet in diameter. I do not wish to increase the size of the pot: how shall I proceed?—ED. WOOLLEM, Charlton.—[Mr. Baines, to whom your query has been submitted, says that *Anthurium magnificum* and *Alocasia metallica* will both succeed perfectly in the soil recommended for A. Scherzerianum. Both, he adds, require liberal pot room, and in re-potting only remove by hand any soil that may be getting sour. Give to both plenty of drainage, and supply them well with weak liquid manure during the time of active growth. They also require a somewhat higher temperature both while growing and at rest than *Anthurium Scherzerianum*—say a night temperature of 60°, with a rise of 5° in the daytime, when at rest; when growing, 70° at night, and from 80° to 85° by day.]

Bouvardia Davidsoni.—This variety of *Bouvardia*, which is of American origin, appears to be a sport from *B. Hogarthii*, which it resembles in every particular, except that the flowers are white instead of red, and, I think, a trifle shorter in the tube, which will be an advantage to them in a cut state. A few small plants which I had of it are covered with flower-buds; I therefore conclude it will be a free-flowering plant, and valuable for furnishing flowers for coat bouquets. *Bouvardias* of all kinds are extremely useful, as they flower all the year round, and are plants of easy culture.—W. HOWARD, Balham.

Acacia Riceana (humifusa).—In reference to the *Acacia* noticed at p. 73 as *A. humifusa*, allow me to remark that it was under that name here, or something like that name; but feeling dissatisfied about it, I sent a piece of it to Dr. Hooker, and he gave it the true name, *A. Riceana*—under which it is now known, and figured in the *Botanical Magazine* last year. It is, as you justly observed, a most elegant and admirable plant for a conservatory or elsewhere. What enhances its value so much is, that it is not only beautiful when in flower in April and May, but that it is graceful in appearance all the year round, and at this season more particularly, when plants of a graceful, persistent character are so much valued. I have used it with satisfaction in every conceivable way, from the decoration of an "ancestral portrait" to the adornment of the human head, and in "button-hole" bouquets. It will stand days without water, as you may prove by the piece I send you per post; so that it is needless to say how admirably suitable it is for the dinner-table, twined, as it may be, to any degree among candelabra and the like, without injury in the least. How such an elegant plant has been overlooked so long, I cannot imagine. It has been kindly distributed through me by the Marquis of Beaumont to many of our principal gardens, Kew included, where, no doubt, in years hence it will form a feature, as it is here at present. On the whole, *Acacias* have no beauty but when in flower. This, however, is a grand exception to the rule, the beauty of which cannot be known but by seeing it in its improved state as it now is in the garden here.—H. K., Floors.—[The singularly graceful shoot sent seems after its voyage in the cold and ten days' existence in London as fresh as when cut.]

Carbolic Acid Plant.—*Andromeda Leschenaultii* which grows in the Neilgherry Hills, has been found to yield carbolic acid. Mr. Broughton, the medical officer for that part of India reports that it is far superior in purity to the ordinary product of coal tar, being less deliquescent and free from any admixture of noxious comitants; as its cost is far above that of the mineral product, and as later can be chemically purified, the discovery has no economical commercial value; but it is nevertheless interesting in a botanical point of view.—*Daily Paper*.

CEMETERIES.

EVERY considerable town requires, or will require at no late day, not only fields for the disposal of its living swarms, but other fields (requiring exceptional care of their own) for the interment of its throng of dead. Indeed, the living can steal some chance moments of rural enjoyment, by bursting into fields and gardens of their neighbours, or by plunging into untamed wilds; but a man cannot steal a grave: there is no larceny possible to us of some charming spot upon a neighbour's hill-side where our bones may rest. . . .

In dealing with the question of a public cemetery adequate to the needs of a growing population—as in the question of a public park—our larger towns show a provoking delay, blinding themselves year after year to the necessities of the case, and deferring positive action, until the needed investment assumes gigantic proportions. There are scores of towns whose graveyards are absolutely brimming with the dead, who yet take no decisive measures for an increase of the privilege we all sigh for at last—of a quiet sleep under trees.

Among the requisites for a country cemetery are to be named, I think, first, a distance not exceeding forty minutes drive from town; next, a friable soil, and one not underlaid with rocks. An absolutely dry soil is also desirable, and a sheltered position: for in the last tender offices of respect to the dead, we are exposed to all seasons, and a harsh sweep of northerly winds adds dismally to the chill of a wintry burial. I think we love to catch, too, in such localities, the first warm beat of spring sunshine, and that we welcome the early violets on graves we know, as we welcome them nowhere else.

If with all these requirements can be associated picturesque variety of surface, secluded glens and pools, where, as in Mount Auburn, water flowers show their white regalia, it would be well; but there should be no sacrifice of the quiet seclusion which should belong to such a spot to compass the garish charms of over-nice and pretentious gardening.

Park gardening and decoration is one thing; that of cemeteries is quite another. Aims, treatment, effects, all should be different. Sombre masses of wood, heavy shadows, these should be present; above all things, there should be avoidance of those sudden surprises and graceful deceptions by which gardeners sometimes win their lesser honours. Great simplicity of design is also essential, not only as in keeping with the sepulchral offices of such ground, but being, to a certain extent, proof against the harm which an elaborate plan must suffer by injudicious planting in private inclosures.

From the fact last named—the giving over of individual lots to private caprices of planting or arrangement, no consummate or finished gardening can, of course, ever be looked for in our cemeteries. The general effect will be at best spotty, and lack coherence. The course of the principal drives or walks, the establishment of the capital masses of foliage, the ordering and adaptation of the encircling belt, the finish and appointments of the entrance-way—these are the objects which will demand taste and skill for their happy execution. To twirl a great labyrinth of serpentine paths through a forest, shaven clean of its under-brush—to throw rustic bridges over a flow of sluggish ditch-water, and to construct grottoes where they sit like mountebanks in the hollows of the hills, is not good gardening for cemeteries—if it be good anywhere. If there be great reach of irregular surface, there should be sunny glades to contrast with masses of solemn shade. Rustic or other littlenesses should not pique and arrest attention. The story of the place should be told in the largest letters of the gardener's vocabulary and the interpretation easy—quiet—seclusion—rest.

Something might be said of the character of the trees which should be planted in these fields of the dead. The willow is the traditional weeper, and in place; but such product of the gardener's art as a weeping ash is a terribly starched mourner, and should be banished as an impertinence. All curious and rare exotics, I should say, have no place there; unless, like the yew or the cypress, they bear some story of association which chimes evenly with the solemn shadows around. The darker evergreens generally are most fitting; and there is a variety of the Norway spruce, with long, pendulous arms, that is one of the stately and comeliest and friendliest of mourners it is possible to imagine. If the Mediterranean cypress would but

withstand the rigour of our season, its dark plumes, leading up on either side to the gateway of a tomb, would make a standing funereal hymn.

Near to Savannah, in Georgia, and upon one of the creeks making into the irregular shores thereabout, is a cemetery called, if I remember rightly, Buena Ventura. In old times, any visitor at the Pulaski used to find his way there, and was richly repaid for the visit. There was no proper "keeping" to the grounds. You passed in under a lumbering old gateway of unhewn timber; the paths were not carefully tended; there was much of rampant and almost indecorous undergrowth; the tombs were mossy, and the graves, many of them, sunken; but great live-oaks over-reached your path, and from their gnarled limbs hung swaying penants of the weird grey moss of the Southern swamp lands—festooned, tangled, streaming down—now fluttering in a light breeze, and again drooping, as if with the weight of woe to the very earth. There was something mysteriously solemn and grave-like in it. The gnarled oaks and the slowly swaying plumes of grey told the completest possible story of the place. Had there been no tombs there you would have said that it was the place of places where tombs should lie and the dead sleep. I have alluded to the scene only to show what and how much may be done by foliage and tree limbs, with their investing mosses, to give character to such a spot.

Neither the live oak nor the Spanish moss is available, indeed, in our Northern latitudes; but there are various degrees of fitness in the trees at command. The yew and the compact-headed Austrian pine, and the balsam fir always in their sables; even the much degraded Lombardy poplar, in full vigour, carries a ceremonious, self-possessed stiffness not unbefitting; while the glittering-leaved beech, and hornbeam, on the contrary, with their ceaseless, idle flutter, are the most unseemly of chatterboxes. The ash, again, without liveliness of colour has great dignity of carriage, and in its half mourning of autumn purple is one of the stateliest and fittest of attendants.

I know there is a philosophy which denies the propriety of seeking for, or multiplying any solemn symbols in connection with death, or the places where the dead lie; which believes in opening wide and laughing landscapes around graves, and in smothering all memory of the short-lived, funeral black under the gayest of colours. It seems to me, however, that so far as such a philosophy puts its meddlesome liveliness upon churchyards and tombs, it is only a gay hypocrisy. Death is always death; and the place where the dead lie always Golgotha. The real grief that goes thither with its bitterness, will be put down by no pelting of bright colours, and mock grief may be mended by what solemnity belongs to the scene.—*D. G. Mitchell.*

THE FRUIT GARDEN.

THE FINEST PEARS FOR WIRE TRELLISES.

INQUIRIES having reached us as to the best kinds of pears for furnishing neat wire trellises now justly becoming popular, we have much pleasure in publishing the following list. They have been selected specially for this purpose by an experienced fruit-grower well acquainted with each variety, and the conditions which suit it best. It is most desirable to exercise caution in selecting pears for this purpose, as if bad kinds, or those that do not ripen properly, are selected, the result will be anything but satisfactory.

Those marked with an asterisk are especially recommended. No fixed time can be assigned for ripening, as much depends upon seasons, localities, stocks, condition of the trees, &c., and some pears, such as the Marie Louise will ripen in succession for two or three months together. The following kinds, however, ripen, as a rule, during the months under which they are arranged:—

JULY, AUGUST, AND SEPTEMBER.

- * *Doyenne d'Été*.—Small; excellent; a great bearer; requires to be gathered before it is quite ripe.
- Peach or Poire Pêche*.—Medium size; greenish yellow; slight musky flavour; excellent.
- * *Williams' Bon Chrétien*.—One of the finest of pears; large and excellent; requires to be gathered before becoming yellow or the flavour is gone.
- * *Beurré de l'Assomption*.—An earlier, larger, and superior form of Williams' Bon Chrétien.

Souvenir du Congrès.—Another form of Williams' Bon Chrétien; very excellent.

Beurré Giffard.—Medium size; pyriform; excellent in quality; ripens early.

SEPTEMBER AND OCTOBER.

Beurré d'Amanlis.—Large; melting; of excellent quality and a great bearer.

Jersey Gratiot.—Large, russety, melting; an enormous cropper; and fine in quality.

* *Flemish Beauty*.—Large, russety, splendid quality, a great cropper, and sometimes very beautiful.

British Queen.—Above medium size; warmly russeted; fine melting flesh; excellent.

* *Beurré Superfin*.—Large, roundish, pale lemon-coloured, russet, fine, melting, buttery, hardy; a great bearer, and very excellent.

* *Louise Bonne of Jersey*.—One of the best pears in cultivation; a great cropper.

OCTOBER AND NOVEMBER.

* *Fondante d'Automne*.—Medium size; roundish; fine; rich; melting; great cropper; hardy.

* *Suffolk Thorn*.—Medium size, warmly russeted, fine, melting, rich, a great cropper, and hardy.

* *Madame Treve*.—Medium size; very rich; melting; juicy; excellent.

Comte de Lamey.—Medium size; roundish, rich, and sugary; great cropper; hardy.

Suckle.—Small, but very rich and excellent; a great cropper.

* *Thompson's*.—Medium size; rich, melting, and excellent.

* *Marie Louise*.—A well-known excellent pear, and one which cannot be too much cultivated.

* *Beurre Bosc*.—A very hardy and prolific sort, of excellent quality.

NOVEMBER AND DECEMBER.

* *Maréchal de la Cour*.—Large and most excellent; great cropper; hardy.

Beurré Clairgeau.—Large and very beautiful; moderate in quality; a great cropper; hardy.

* *Beurré Diel*.—Large, and in some situations most excellent in quality; a great cropper.

* *Glout Moreau*.—A large well-known pear of the highest quality.

Doyenné du Comice.—Large; probably the finest pear in cultivation; invariable good; moderate cropper.

DECEMBER AND JANUARY.

* *Winter Nellis*.—Medium size; melting, rich, and excellent; a moderate bearer.

Beurré Sterckmans.—Large, melting, rich, and vinous; a great cropper.

* *Ne plus Meuris*.—Medium size, good quality, very hardy, and a great cropper.

Zéphirin Grégoire.—Medium size, rich, sugary, and vinous.

* *Beurré Rance*.—Large, and in some situations excellent.

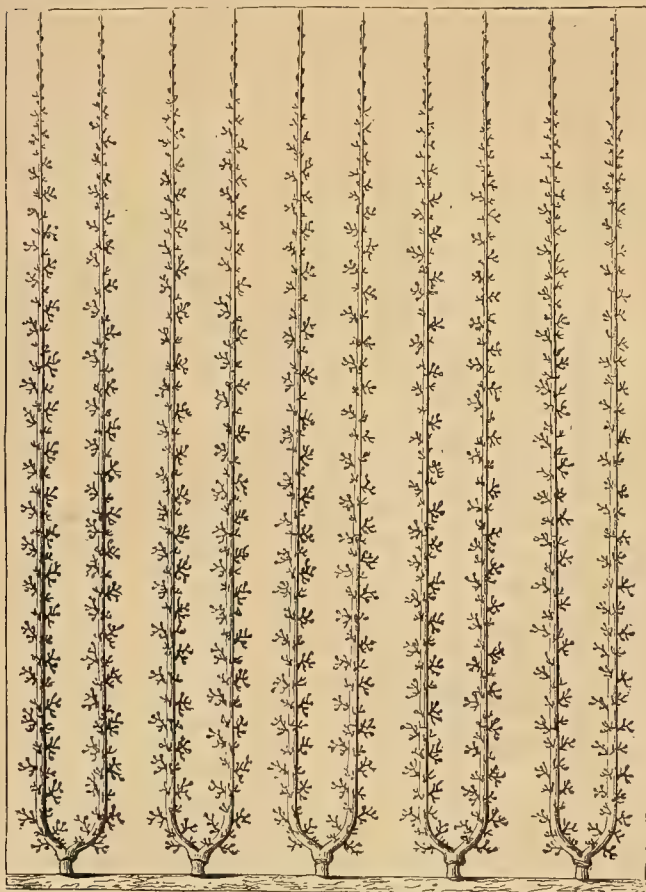
* *Josephine de Malines*.—Medium size; rich and excellent.

The Shiraz Apricot.—This does not differ much in appearance of tree from the better known varieties; it is indeed very much like the peach apricot, and like that it is very vigorous. It is, however, very different as regards its fruit, which is distinct from that of all the varieties of apricots known to our gardens. It is distinguished by its elongated form, and principally by its kernel, which is elliptical, pointed at the two ends, resembling that of certain plums. Another distinctive character is its flesh, which has nothing in common with that of any other kind. Instead of being dry, more or less clammy, with little sugar, and of a somewhat acrid flavour, like the flesh of apricots, it is soft, pulpy and honey-like. This apricot is without doubt the best of all; it is delicious; its flesh is so melting that it has not much consistence of texture, and therefore it softens quickly after being ripe. When better known, it cannot fail to be preferred to all other kinds for dessert. The fruit has nothing about it to flatter the eye, and owing to its want of consistence it is not likely to be a good variety for commercial purposes; but it is probable that it will make excellent preserves. It must not be confounded with another which was much spoken of some years ago, and which was said to have come from Smyrna, and to have sweet kernels, which after all was not surprising, as this character is common to many varieties of apricots. The leaves of this kind are smaller than those of the apricot of Shiraz, and its appearance generally resembles that of the kind called Musch Musch. We received the Shiraz apricot from M. Regel, of St. Petersburg. The

following is an enumeration of its principal characters; Tree vigorous, in port and aspect very near the common apricot, which its flowers also resemble; fruit longish, heart shaped, slightly narrowed at the base, then suddenly enlarging, and gradually narrowing to the apex, which finishes in an obtuse point; skin pale yellow, or white-yellowish, frequently splitting; flesh yellowish and tender, very melting, soon soft, and almost pulpy, sugary and honey-like; water abundant, lightly and agreeably perfumed; kernel quite elliptical, attenuated in a point at both ends, filling completely the cavity.—*E. A. Carrière (in Revue Horticole).*

THE UPRIGHT SYSTEM OF TRAINING FRUIT-TREES ON WALLS AND ESPALIERS.

THE value of this system is not sufficiently known with us, yet there is no country in which it is certain to be of such great use. Wall culture is necessary for the production of the finest fruit in many northern and temperate climes. We seem to have long recognised this fact, but not to a sufficient extent, and the progress with wall-fruit cultivation is very slow. Not in one garden out of ten is sufficient attention paid to it, while it is most rare to find the walls of gardens in



Upright Pear-trees in the U Form.

which considerable pains are taken with the fruit-trees covered as they ought to be. We will assume that the cultivator is sufficiently aware of the importance of walls in the production of the very finest fruit, and that he has selected the varieties really worthy of culture in this way. After these there is a third condition of success indispensable to perfect wall culture, the absence of which leaves half our wall-surface bare and robs us of quantities of the finest fruit. This is the true mode of covering walls quickly and well—the erect training. The wrong and the tedious, and therefore the profitless mode, is the large fan or horizontal tree, which takes a dozen years to form well even in good hands, and perhaps by the time it is

formed some new varieties will have come to light, and the judicious cultivator will be anxious to clear away the results of so many years' work.

There is no need to spend even one-third of this time in the covering of even the highest garden walls with forms of trees as fruitful, as agreeable to the eye, as any of the old large forms, and much more easily made. The simplest and best form for every kind of wall-fruit is the erect one, with from one to four or five branches ascending from the bottom to the top of the wall. In this way a good cultivator, by selecting healthy and vigorous plants to begin with, may furnish a wall ten feet high in two years from the time of planting.

To do so, he would not, of course, follow the common practice of cutting hard back the shoots; if he thought they would not break regularly, he would bend them down to induce them to do so. With good young trees, three years are the most that should be required by any gardener to cover the wall by this system. It must not be supposed that it is applicable only to the pear; it is equally so to every other kind of fruit-tree worthy of a place against a wall. In the case of the peach a still smaller form is, we are quite certain, desirable. A peach-tree with two branches like a capital U may seem awkward to persons only accustomed to the fan mode of training; but we have seen many walls perfectly covered by it on the Continent, and it is far better suited to our climate than a larger form. Trees trained in these particular forms are not required to begin with; we have simply to take, in the case of



Single Upright Pear (a good Form for very High Walls).

Peach-tree in the double U Form (Sketched after Spring Pruning).

the pear or the apple, a young nursery tree, with its five branches or so, and train four or five of them, as may be required, in a vertical manner against a wall, and at equal distances.

The general adoption of this system would soon fill our fruit-rooms and cover our half-naked walls. It would prove of the greatest possible advantage to gardeners generally, in enabling them to rapidly cover the many bare walls one sees; and if a desirable system for ordinary garden-walls, it is much more so for the walls of stables, houses, &c., which it takes years to furnish by the common plan. The only case where it is not so suitable as a spreading mode is on very low walls and trellises. These, however, should never be erected for fruit-growing purposes.

Examples of walls as well covered as those shown in our

woodcuts are not unfrequent in France and Belgium. When in the neighbourhood of Geneva in 1868, the late Mr. H. A. Watson, then gardener to Sir Robert Peel, showed us many examples of walls well covered with peach and other trees trained in this form, and we have lately seen a very good example of growing the apple thus with Mr. Sage, in the garden at Ashridge Park, who covered a portion of his walls in two years with choice desert apple-trees. In THE GARDEN for December 9th figures of upright forms admirably suited for tall wire trellises were given.

NOTES AND QUESTIONS ON THE FRUIT-GARDEN.

Make Your Trees Branch Low.—Train your pear trees so that they will branch at a distance of one or two feet from the ground. The advantages are easily enumerated.

1. They are easy to trim.
2. It is easy to gather the fruit.
3. Falling fruit is little injured.
4. All branches being sturdy will not be strained by over-bearing or over-weight of fruit.
5. The soil will be kept shaded and moist.
6. The trunk will be protected from the scorching sun.—*Horticulturist*.

Wiring Fruit Walls.—Mr. Fish merits the best thanks of young gardeners for his sympathetic observations under the head of "Pruning and Nailing in the Cold." He says truly that there is a great amount of tying and nailing to be got through in a certain time, but if gardeners would advise their employers to adopt the French system of wiring walls, they would save much labour and inconvenience. The antiquated system of decorating the limbs of fine young trees with rags ought now to be classed among things of the past. When the plan of wiring was brought into notice my employer had all the walls in the kitchen-garden fresh pointed with mortar, first unfastening the fruit-trees, many of which are large and old, and, after having the guiding-nails inserted, had the wire put behind the trees, drawn through the eyes, and made fast at each end of the wall. The *raidisseur* or tightener I placed about midway on each wire, instead of at each end. Two of our walls, with south aspects, are each eighty yards in length, and one *raidisseur* was found to be sufficient for wires that length. The result is admirable; the trees look better and bear better than under the old plan, and there is a great saving of labour. The wiring was done in 1869, so we have had time enough to prove its utility. Our crops of wall-fruit during these two last years have been good. Our walls required upwards of 3,000 yards of galvanised wire.—J. M. H., *Ledbury*.

THE FRUIT-GARDEN FOR JANUARY.

BY WILLIAM TILLERY, WELBECK.

Out-Door Fruit.—January being in general one of the severest of the winter months, the planting of hardy fruits during the next four weeks must be ruled by the state of the weather. If mild, this operation may still be performed; for even winter planting, if the roots are mulched, is better than driving it off till the spring. If pruning has been neglected in November and December, it should now be attended to. The nailing of wall-trees should likewise be vigorously carried on in mild, dry weather; for this work, if neglected in the autumn and winter months, often sadly interferes with pressing operations in the spring. Figs on walls, if not protected, should now be so, as severe frosts in January and February often injure them.

Orchard-House Fruit.—Having grown in pots or in the borders in an orchard-house many of the newer varieties of peaches, nectarines, apricots, plums, and cherries, last year, the following list of the sorts, and their time of ripening, may not be without interest:—Of peaches, the earliest kinds grown in pots here were the Early Beatrice, Louise, and Rivers, all three varieties ripening in July in succession. The Early Beatrice ripened on a wall in the open air on the 20th of July; but its flavour was watery, and not so good as the fruit grown on the pot trees. Hales' Early York is a delicious small peach, like the Early York; but it ripened earlier in August than that variety. Dagmar, another of River's seedling peaches, ripened about the middle of August, and is a high-coloured and good-flavoured kind. Malta, a small peach of the Noblesse section, was the juiciest and best flavoured of all the August sorts. Magdala, another new kind ripened in the end of August. It is creamy in colour, with a crimson cheek, and is well flavoured. Of the newer varieties of September peaches, the Alexandra Noblesse, Dr. Hogg, and Stump the World, were the best. Some were grown in pots, and some were planted out on the back wall. The latest sorts, ripening in October and

November, were Lord Palmerston and Princess of Wales, the latter a very large creamy-coloured sort, slightly tinged with rose next the sun, and a great acquisition amongst the latest varieties. Among nectarines, the earliest in ripening was Lord Napier, which was fit for table about the beginning of August, the same season as Hunt's Tawny. The Stanwick and Pine-Apple ripened about the end of August, and were two very high-flavoured varieties. The Victoria was the latest in ripening, and is a valuable sort for late keeping and flavour. Of plums, the newer kinds grown in pots were all of the gage section. Oullin's Golden Gage was an early sort, ripening in July. McLaughlin's Gage is an excellent American variety, which ripened early in August. Boddaert's Green Gage was a very good large plum, ripening in the middle of August. Transparent Gage was one of the very best flavoured of all the gages, and was ripe in the beginning of September. Among cherries, the earliest in ripening in May was the Guigne Tres Precocce, and about the same time the Belle d'Orleans. The Frogmore Early Bigarreau, and Early Lyons, were ripe about the end of May; and the Bedford Prolific about the middle of June. Of apricots, Precocce Doullins was a very early and good kind, ripening in July. Grosse Pêche is a variety as large as the Moorpark, but was earlier in ripening. St. Ambrose, a French sort, does well in pots, being better flavoured than when grown on the walls.

Early Vines.—Those started in December will now be breaking, and they should have air on all favourable opportunities; but the giving air to vines during severe frosts in January and February requires much attention, especially if the weather is windy. A temperature of 60° during the night, and a rise to 75° in the day, when the vines are in bloom, will keep all safe. Vines lately pruned will want the rough bark peeled off them, and they should be dressed with some strong composition, to keep mildew and insects in check. I have always found the following mixture very efficient for the purpose, namely, four ounces of soft soap, six ounces of sulphur to a gallon of water, and as much quicklime and clay as will bring the mixture to the consistency of thick paint. The water must be boiled, so as to melt the soap; the other ingredients should be stirred in, and the mixture used when cold. When it is used for peach or nectarine trees, more water and clay must be added to cool it; for I have known the young bark and flower-buds of these trees injured by it when it is put on too strong. Home-made brushes of bast matting, tied on short pieces of stick, are quite good enough for painting the mixture on the trees, and, to make safe, every crevice must be filled up; and when the first coat is dried, a second application must be made on places missed in the first dressing. If the vineries are heated by pipes with troughs in them, all the sulphur and lime of last year's dressing should be scraped or washed off, for fear of rusting the tender berries after the vines are out of bloom. When the vines are forced early, the outside side border should be protected by some slightly fermenting materials, such as litter, or tree-leaves; and if covered on the top with wooden shutters, the covering will not want renewing till taken off in the spring.

The earliest forced peaches will now be in bloom, and the night temperature may rise from 50° to 55°. Peach-trees swelling their buds in the second peach-house will require daily syringing, and the atmosphere of the house should be kept damp by sprinkling the floors and pipes.

Pine Apples.—For the general stock maintain a mean temperature of about 60° at night, allowing an advance of some five or more degrees during the day.

Cherries.—When cherries are forced early, the temperature must be kept low, never allowing it to rise above 50° until the fruit is set.

Strawberries.—A second batch will now want introducing to the shelves of a peach-house or pit at work. For early forcing, plants with good plump crowns ought to be selected; and I find those potted in rather small pots with good matted roots always set their fruit the best.

Cucumber House or Pit.—At this dull time, cucumber plants are frequently much infested by thrips, so that repeated fumigations must be resorted to, as well as syringings, to keep down red spider. A sowing of both cucumber and melon seed ought to be made early in the month, to raise plants to fill up vacancies. I find early melons do very well in boxes in a pine stove, selecting Scarlet Gem and Egyptian Green Flesh as the types of the high flavour of early sorts.

When French beans are forced in stoves or early vineries, they must not be placed too near other plants, for fear of introducing red spider. I find the best soil for growing them in is good strong or turfy loam; and the varieties most to be depended on for early are the Newington Wonder and Fulmer's Forcing for the spring supply.

THE FLOWER-GARDEN.

OPUNTIA RAFFINESQUIANA.

ALLOW me to add the testimony of my experience as to the complete hardiness of this *Opuntia* in this climate. I got a plant of it in the spring of 1869 from Messrs. Haage & Schmidt, of Erfurt, which has ever since that time been in an open border exposed to all weathers. Last winter was particularly severe; and this winter the thermometer, quite near the plant, has marked 21° below zero centigrade. It was often covered with a foot in depth of snow last winter, and it has been so once this year (1871) already.

This *Opuntia* is a very free bloomer, and its dwarf-branched habit makes it better suited for out-of-door vase or rockwork culture than for a border. All the *Nopalea* division of *Opuntia* are very rapid growers. Many of them have fine flowers, and bloom freely; but they shortly get very large and cumbersome. I practised at one time the following plan of keeping a large collection in a comparatively small space: I chose some large specimens of stout, erect kinds, such as *Tuna*, pseudo-*Tuna*, *coccinellifera*, &c., and grafted a branch (frond) of a different kind on almost every branch. This was very easily effected, by cutting the end of the branch to be grafted into a sharp wedge at its lower extremity, inserting it into a gash made on the branch of the stock, and running one of the *Tuna*'s sharp spines through both of these, to maintain the graft in its place.

To show what a large size some of the *Nopalea* will attain even in this cold climate with very little artificial heat, I may mention that, some years since, I saw in an old tumble-down conservatory some miles from here a plant of the *Tuna*, or pseudo-*Tuna*, that had been originally grown in a wooden case, but from which the bottom had long since rotted away, leaving the roots to ramble at pleasure in the earthen flooring. This plant had reached the roof, fully twenty feet high, and had already forced out several panes of glass. Its diameter fully equalled its height, and it formed a thick mass of fronds borne on a stout stalk, or rather, trunk, as thick as a man's leg. The rusty old stove, shaky sashes, and broken panes, fully bore testimony as to the plant getting but little artificial heat. I saw it in midsummer, when it was really a grand sight, covered with thousands of sulphur-coloured blossoms, as large almost as half-crown pieces.

Versailles.

FREDK. PALMER.

THE FOXGLOVE.

ONE of the most beautiful features about some of the French woods, especially in those connected with many of the old royal residences, is the masses of gorgeous-coloured foxgloves in all their natural beauty, associated with bracken and heather. One spot particularly calls for especial notice in the Versailles wood, through which the *Chemin de Fer de l'Ouest* passes to Rambouillet and on to Brost. This spot, I venture to say, is unequalled anywhere for such masses of this splendid, uncultivated flower. There may be places in this country where foxgloves look and thrive as well, and, no doubt, there are hundreds of places where they would grow and flower in perfection were a few hundred plants planted in favourable spots at first, since it would perpetuate itself easily. This was done at one or two private places; to my knowledge, and was brought about by the sight of those above mentioned. I could mention a few places in France where the proprietors introduced them with effect near the flower-gardens, in large masses, alongside the avenues that in all French chateaux run away right and left into the uncared-for woods. Foxgloves among masses of green, whether bracken or what not, have a grand and majestic look, such as is not easily forgotten when once seen; and I think, in places where we too often see such masses of nettles, with a very small amount of trouble we might see in their stead the beautiful foxgloves, as a rule, in perfection.

I purpose planting some hundreds next year about, here and there, among rhododendrons—newly planted rhododendrons, for where these thrive in the natural soil I have invariably seen the foxglove do well. Many hundreds of plants can be raised from a good packet of seed, and, nowadays, when we have such fine, spotted, improved strains, I think we may look forward to the time when all our woods, and shaded, frequented nooks, will be beautified with this fine wild flower. To those who have had no experience with this plant I would further remark—procure a packet of seed and sow

it in a pan, in a moist heat, in February. As soon as large enough to handle, prick out an inch apart or so in a frame or under a hand-light where there is a slight heat, and where no frost can enter. A month or so after they will be large enough to plant out into borders, to be lifted again in autumn to plant in permanent places anywhere and everywhere where suitable, to flower the following summer. They must be nearly two years old, and strong, ere they flower profusely. We had spikes of flower last year fully four feet long, from two-year-old plants. These were planted, however, in garden soil among large rhododendrons, and had a fine effect. They continued to throw up spikes all the summer, and being a moist year, they, moreover, being situated on an east aspect shaded by a high wall, they continued to flower till September.

I can't say they are as brilliant as the gladiolus, but one thing in their favour is, they can be grown among large evergreens in a dressed and formal way as well as in the shady woods. At the Chateau de Dampierre, the residence of the young Duc de Luynes—who was killed during the late war, under melancholy circumstances—about twenty miles from Versailles, I remember seeing, some years ago, on its being pointed out to me by M. Cide (the gardener there) an improved spotted form of foxglove. It was amongst a lot, growing wild; and he kindly gave me a pod or two of seed, from which I have grown the sort here and elsewhere. It is among foxgloves what the new spotted form of *gloxinia* that came out at the French Exhibition in 1867 is among *gloxinias*, and it varies in colour from pure white to dark pink and purple. The one I speak of as growing in the Versailles wood is a much darker variety, and shows at a distance, but is not spotted, as is the sort which I grow.—H. K., in "*Gardeners' Chronicle*."

CHRISTMAS HORTICULTURE IN VIENNA.

IN no part of Europe is there found so near an approach to the glory of the autumnal tints of the American forests as in the eastern provinces of Austria, especially in the neighbourhood of Vienna. A press correspondent writes as follows of the Austrian foliage in autumn, and of the foliage which succeeds it at Christmas, "about the glorious grandeur of the timber in the Prater, and the wonderful tints with which autumn decorated the giants and dwarfs of that forest." Indeed, they were beautiful at that date he had reason to know, but now, in the last days of the expiring year, we have an arboricultural phenomenon which puts them quite in the shade. "Within the last few hours a very large plantation of trees and a nursery-garden of shrubs have broken out not only into leaf, but into bloom. The colours of the leaves, fruit, and flowers bring to the mind the fruit and vegetable market at Lisbon. The crops are so great that, after Christmas, and indeed before the 6th of January, they must be very much thinned, or the trees will be useless till next year. This sort of fruit harvest is an annual institution in Vienna. The produce is garnered by young children, who are not paid any wages, but get their share of the gathering. With so much lemonade and cake each *per noctem*, they work 'short time,' and are home by ten. A great amount of women's labour is, however, lost at this harvest, as the mothers or aunts usually sit on benches while their young charges bear all the heat of the evening. It is evident that this class in Austria take great pride in their children, and in their's and their own costume. Many of the mothers would look well in a London ball-room, and the children be 'much admired' as bridesmaids at a grand wedding. Sometimes when the trees are stripped—and it is wonderful with what rapidity this horticultural operation is executed—the employers give a supper, consisting chiefly of sweet-stuff, to their youthful gang, who then go back to their lodging-houses—usually very clean and well-kept—in charge of their parents. The trees stripped are an improvement on the Christmas rose, which, according to authorities, produces 'beautiful white flowers about Christmas.' White flowers! *allez donc!* these produce red, green, yellow, black, blue, pink, fruit and flowers—and will be known to those great botanists and night horticulturists in England, Professors Gunter, Fortnum, Mason, Hedges, Butler, &c., as the arbor multifer or Christmas Tree."

The Viennese cultivators of Christmas trees exceed those of all other parts of Germany in taste and ingenuity. Not merely are whole groves of young firs made to put forth luxurious blossoms with an air of naturalness quite sufficient to deceive juvenile-botanists, who devoutly believe the inflorescence to be real—but artificial shrubs, such as camellias, paulownias; palms in full bearing of real cocoa-nuts, are so beautifully executed that botanists of a larger growth might be deceived without being ashamed, so perfect is the deception. Vienna is the Paris of Germany. It has specialties in matters of taste as distinctive as the celebrated *articles de Paris*, and which fully equal them in elegance; while in matters of real horticulture, the art is nowhere carried to greater perfection in the matter of

real flowers for the table, at all seasons of the year. At the Imperial Castle of Laxenburg there are vast gardens (under the immediate superintendence of Herr Rauch, a pupil of our ever-regretted John Claudius London), where table flowers are regularly produced for the Court, where they are deemed indispensable all the year round—the winter violets of the large new variety being produced there in the depth of winter with a luxuriance of bloom and richness of perfume which I have not met with elsewhere.—H. N. H.

NOTES AND QUESTIONS ON THE FLOWER-GARDEN.

Soil for a Rock Garden.—I am about to construct a rock-garden, and should be much obliged if you will inform me of the best kind of soil for it. There is plenty of peat not far distant, but the garden is on a sandy loam. E. L. H.—[For a great number of rock plants almost any kind of open soil will do; and in a free loam numbers of alpine plants delight. To have plenty of soil, and that so arranged that the roots may descend deeply into it, and find an abundant supply of moisture in it during the heats of summer, is of greater importance than the kind of soil. For some of the Gentians, for *Spigelia marylandica*, *Rhexia virginica*, and dwarf cruceous plants, some portions should have a silvery peat soil.]

Roses and Evergreen Climbers for a North Wall.—Will you or any of your readers kindly give me the name of a good, free-blooming red rose, to climb on a wall which has a northern aspect? Also the names of a few pretty flowering evergreen creepers, to plant on a wall with the same exposure?—L. Exeter.—[You cannot do better than plant *Amadis*, a fine Boursault rose, flowering purplish crimson, and the plant of vigorous habit. Also, if you have room enough, *Splendens*, *Lauré Davoust*, and *Ophiré*. It is not so easy to get "pretty flowering evergreen creepers" for a north wall, though you may get some excellent deciduous things for that purpose. If your soil is warm and light, the myrtle may do well against your wall, and the *Laurustinus* will be sure to do so, and though it is not a "creeper," yet it is quite as easily trained against a wall as any such. We have seen it grow very high and look beautiful against a house in winter. The camellia may also be grown against the house in the southern parts of England and Ireland, and we have seen beautiful blooms cut from such in February.]

Japan Creeper (*Ampelopsis tricuspidata*).—I have often garnished the dessert with the beautifully tinted foliage of the Gros Guillaume, Black Prince, and West's St. Peter's Vines; but none of these after they begin to change colour last long, and it is pleasant to have so goodly an acquisition as the *Ampelopsis tricuspidata*, than which for purposes of dessert garniture nothing can be more beautiful. Nor have we yet done with our new friend. I have often to cater leaves for ladies' maids who take an interest in adorning their ladies' hair for the evenings. The leaves of the old *Cissus discolor* and the red raceme of flower and leaves of *Euphorbia Jacquiniflora* used to be favourites; but now, with the extra ammunition afforded by this new *Ampelopsis*, I have no fear of being destitute as regards fine leaves for that purpose.—Wm. Miller, *Combe Abbey Gardens*.

Giant Sunflower.—This much-neglected plant not only forms a handsome contrast in the shrubbery, but its numerous seeds are much relished in the poultry yard, being particularly beneficial to the birds during the moulting season. The sunflowers I have grown this season measure from 38 inches to 43 inches in circumference, their heights ranging from 8 feet to 12 feet, the circumference of stem from 8 inches to 9 inches at the thickest part, and the seeds which I counted from one head amounted to 1,620. I sowed the seed from the middle of March to the middle of April; the plants should stand at least three feet apart. If flowers as large as the heads already mentioned are desired, the side shoots should be nipped off as soon as they make their appearance at the base of the leaves, leaving only the terminal bud to flower. The sunflower is a greedy feeder, and will consume large quantities of liquid manure, which should be liberally supplied after the plants have attained the height of about a foot. Watering with soft water overhead in dry weather will be found very beneficial. Wherever the sunflower is sown, a handful of soot should be scattered pretty thickly over the spot to repel the attacks of slugs, who are very apt to eat the young plant off as soon as it appears.—Thomas S. Jerrold.—[Mr. Jerrold has forwarded to us two heads of sunflower, the larger being 39 inches in circumference. As the seeds are greatly relished by pheasants, and possess high fattening properties, it might be advantageously sown in some situations; but it requires very rich soil, and is an impoverishing crop.—Ed. Fitch.]

Aquilegia formosa.—I observe that Mr. Ellacombe recommends this as one of the most desirable of the genus. I never myself yet had the good fortune to obtain it true. I am inclined to think it must be rare, even if it be at all in English gardens. But my chief motive now is to warn amateurs that the *Aquilegia formosa* of seedsmen's lists is a very different plant from the *A. formosa* of Fischer, referred to by Mr. Ellacombe, and is, in short, merely a double variety of the common Columbine sprouting into many shades. The true *A. formosa* is closely allied to *A. canadensis* and *A. truncata* (*A. californica* of gardens), but is described as having stamens and styles not protruding beyond the mouth of the flower. I observe, with regret, a disposition in some quarters to hybridize the species of this genus. There is so much tendency to vary in some of them, that I think the aim of the cultivator should be to obtain, and retain, each species as pure as possible; for I doubt if any hybrid will ever exceed in beauty or interest the original type, or that, if such could be produced, that they could easily be perpetuated.—W. THOMPSON, *Ipswich*.

THE FLOWER GARDEN FOR JANUARY.

BY G. WESTLAND, WITLEY COURT.

By means of neatness and order endeavour to render all ornamental grounds as enjoyable as possible. Walks and grass must be frequently rolled when there is no frost, and no greater improvement could be undertaken than to make grass verges and lawns perfectly level. I do not mean like a billiard-table or croquet-ground, but where the ground naturally slopes the fall should be uniform and regular. Where verges are irregular it is easy to turn back the turf and to make the ground quite level, and then re-turf, beating quite firmly with iron rammers; but do not give the edges the final trimming until such time as the grass has taken root, and all danger from hard frost is over. Smoothness, I need scarcely remark, is one of the main constituents of beauty; therefore a lawn which is not perfectly eye-sweet can never please. Turn up vacant flower-beds to the ameliorating influence of frost, and renew the soil in such as may require that being done; turn gravel walks, surface dressing them with a coating of fresh gravel, and lay box edgings. Frequently examine half-hardy plants protected during severe weather, and endeavour to render their covering efficient by giving additional protection when necessary; also protect bulbs during severe frost. Plant and re-arrange flowering deciduous shrubs, keeping in view ultimate effect; and so dispose of the stronger growing varieties as not to overgrow the more delicate kinds. Even hawthorns, beautiful and desirable though they are, frequently occupy the front rank of mixed shrubberies, when they would have been better placed further back, or set in groups; but all the stronger growing kinds are in better keeping as park ornaments. The best for dress grounds are the different varieties of *Cratogeomys oxyacantha*, as, for example, Paul's new double scarlet. This is a splendid variety that merits extensive cultivation. *C. o. multiplex*, the best double white, *C. o. punicea*, the finest single scarlet, and *C. o. rosea superba*, may be accepted as fair types of the kinds that will give most satisfaction. The double varieties just named are splendid subjects for pot culture. If not already done mulch all newly-planted trees with leaf-soil, dung, or spent tan; top-dress holbies, rhododendrons, and such plants as may require stimulating, with rotten manure and soil. Prune deciduous plants and climbers, and train such as may require it. Shake snow from evergreen trees and shrubs as soon as fallen, for if it is allowed to lodge heavily on the branches much damage may be done.

Tender roses must be efficiently protected, and mulch dwarf roses of every description. More particularly is this necessary with such varieties as are worked on the Manetti stock. In planting roses on this stock it is important to see that the place of union of the bud with the stock be underground. The great propensity of this Italian briar to produce suckers, together with its tenderness, is, in my opinion, an objection to its use. I give the preference to such roses as are grown on their own roots; these, when well established, give less trouble and produce the best results. The more delicate varieties should be budded on the briar stock, which is hardier in constitution than the Manetti. And I would advise the inexperienced to plant the most vigorous growers. Prune climbing and hardy pillar roses. By pruning I do not, however, mean the whole to be clipped over with the shears; on the contrary, use discernment in the execution of this operation. Strong growing roses, such as the Boursault, require well thinning out, shortening the young wood but little. Prune the moss rose by cutting out the old wood and shortening back the young, pegging down the shoots on the beds which afford the best means of growing this rose.

Austrian roses should have all weakly wood cut clean out and the head thinned, but do not shorten the shoots at all. Provence roses may now be pruned, but the pruning of roses in general had better be deferred for some time to come.

Pits and Frames.—In such as are heated give no more fire heat than is absolutely necessary to expel frost, and give air as early in the morning as the state of the atmosphere will admit. Towards the middle of the month the stock of bedding plants should be looked over; and soft wooded plants, of which there is a scarcity, should at once be placed in a growing temperature to produce cuttings for propagation. The heliotrope is well deserving of extended cultivation, and is very desirable in mixed arrangements. The finest varieties for bedding are *Etoile de Marseille*—a star, indeed!—*Surprise*, and *Jersey Beauty*, the last very dwarf, and one of the best for bedding.

As regards geraniums in boxes and stove pots, a portion of the variegated sorts may be placed in heat when cuttings are required, but I would warn the inexperienced not to be in undue haste, as the loss of a week or two is often more than regained by the superiority of the cuttings put in later. Water carefully but effectually, so as to thoroughly moisten the ball. Cold frames containing comparatively hardy plants, such as *Gazania*, *Centaurea*, *Echeveria*, and *Veronica*,

&c., must be attended to as regards covering when the weather is frosty; and to insure the glass being kept clean, mats should be employed next it, over which a sufficiency of fern or litter may be strewed to keep out frost; during the prevalence of severe frosts and snow there is no necessity to remove the covering, as it will stand for a month, if needs be, in perfect safety; but in such a case inure them afterwards to light by degrees, so that the transition is not too rapid. For those who have not the advantage of a propagating-pit, and who have to depend on heating material, now is a good time to get dung and leaves together, and thoroughly mixed, so as to become of an uniform moisture. Take advantage of wet weather to make labels and procure stakes of various sizes; trim and tie them into bundles. Wash flower-pots and store them away for potting, and see that soils are procured in sufficient quantities, and in proper condition for potting.

YUCCAS.

(Continued from p. 121.)

YUCCA ANGUSTIFOLIA.—A somewhat dwarf species, the whole when in flower not being more than two or three feet high. The leaves are thick, and rigid in texture, from fifteen inches to eighteen inches long, and about a quarter inch broad, of a pale sea-green colour, with numerous white filaments at the edges. The



Yucca filamentosa.

inflorescence is a simple raceme of white flowers slightly tinged with yellow. Till more plentiful, this had better be grown in warm borders, in well-drained sandy loam. N. America.



Yucca filamentosa variegata.

YUCCA CANALICULATA.—The leaves of this species are entire, i.e., neither toothed nor filamentous at the margin, and form a dense rosette on a stem which rises one or two feet above the ground. Each leaf is from twenty inches to twenty-four inches long, and two inches to two-and-a-quarter inches broad at the middle, very strong and rigid, and deeply concave on the face. The flowers are of a creamy white, in a large panicle four feet to five feet high. Fine for isolation or groups. Till more plentiful should be encouraged in favourable positions and on warm soils. Mexico.

YUCCA FILAMENTOSA.—A very common and well-known species, with a much-branched panicle, four feet to six feet high, and apple-green leaves, from fifteen inches to twenty inches long by one-and-a-half inch to two inches broad at the middle, fringed at the edges with grey filaments two or three inches long; the outer leaves spreading,

the central ones erect or slightly recurved. This species varies very much when raised from seed: one variety (concava) has short, strong, broad leaves, with the face more concave than in the type; another variety (maxima) has leaves nearly two feet long by two-and-a-half inches broad, with a panicle seven feet to eight feet in height. This species flowers with much vigour and beauty, and is well worth cultivating in every garden; not only in the flower-garden or pleasure-ground, but also on the rough rockwork, or any spot requiring a distinct type of hardy vegetation: and so is its fine though delicate variegated variety. All the varieties thrive best and flower most abundantly in peaty or fine sandy soil. N. America.

(To be continued.)

DOUBLE FLOWERS.

It will doubtless appear strange to some to be told that, botanically speaking, nearly all double flowers are imperfect, and that, so far from a double rose, for example, being more perfect than a single one, precisely the reverse is the case. But a little consideration will demonstrate the truth of this. A perfect flower may be defined as one which contains in itself all the requisites for the perpetuation of itself; it must therefore have at least one stamen and one pistil.

Before passing on to the consideration of the means by which double flowers are produced, and to the evidence of their imperfection, it is desirable that we should clearly understand what a double flower is. A great many of our most popular garden plants, of those which we most commonly term "double"—asters, chrysanthemums, zinnias, marigolds, daisies, dahlias—have, in reality, no claim to that title.

We all of us know the common wild rose, with its calyx, corolla of five pink leaves, and numerous yellow stamens. If we contrast this with any of the double-flowered forms which are so justly esteemed as ornaments of our gardens, we shall be struck, not only with the presence of a great number of petals in the garden plant, but also with the corresponding absence of stamens. Here and there we may find a few stamens still remaining in the centre of the flower; but the blossoms in which they are found thus to remain are regarded as imperfect by the gardener, and are the exception rather than the rule. It is evident, therefore, that this development of the petals is coexistent with the diminution or disappearance of the stamens; and, as we have shown that it is on the presence of these stamens that the fertilisation of the flower depends, it necessarily follows that their diminution or disappearance must be accompanied by a relative diminution in the fertility of the flower. This transmutation of stamens into petals is the commonest method by which double flowers are produced.

Although it is only in cultivation that we find perfectly double flowers, there are many plants which, in a wild state, exhibit a tendency to become double. It is chiefly in such as have a great number of stamens that we notice this tendency; in the creeping buttercup, for instance, we usually find the normal number of petals increased, and perfectly double flowers of this, and of other species, are not very rare. The yellow bachelor's button of our gardens is but a form of the meadow buttercup in which all the stamens are converted into petals; and, as in consequence of this conversion the plant can never produce seeds, it is only by roots that this form can be propagated. Some plants, although but few, are normally semi-double, such as the camellia and white water lily; but in these species, although there are many rows of petals, the essential organs are not interfered with to any appreciable extent.

The majority of the double flowers which occur naturally, as well as most of those which are popularly cultivated, are composed of numerous separate petals (polypetalous), as anemones, carnations, roses, stocks, wallflowers, geraniums; and, among monocotyledons, hyacinths and tulips. In most of these cases—especially in such blossoms as have numerous stamens—the additional petals are chiefly derived from converted stamens, and this conversion is considered, as in the rose, essential to the horticultural perfection of the flower. Various other circumstances, however, in certain cases bring about the same result.

In monopetalous flowers—that is, those which have the corolla all in one piece, and not divided into petals—such as the primrose, we not unfrequently find the calyx assume a petaloid texture and appearance. This is often the case with double cowslips and polyanthus, which have thus two corollas, the stamens and pistil remaining unaltered. When the corolla is triple instead of double, we find the stamens converted into a corolla. Sometimes only one stamen is thus metamorphosed, and we then have a single petal protruding from the centre of the flower. Often, too, the mere increase in number of certain parts is the cause of doubling. In some cultivated double campanulas we find the monopetalous corolla split up into its component petals, and so becoming polypetalous.

It is interesting to notice the various artificial means which may be taken to produce double flowers. Suppose, for example, that out

of a thousand single stocks, one or two should be found with an extra petal—with five petals instead of four. By preserving the seed produced from one or two—by carefully raising, and again selecting only such plants as evinced the desired peculiarity—we might in time obtain specimens so perfectly double that in the attainment of our object we should have forgotten that we had at the same time effectually prevented the perpetuation of our treasures. This plan, however, of raising double flowers is far too uncertain, as well as too lengthy in detail, to be practically carried out. A French writer, M. Chaté, gives some interesting statements of the way in which double stocks are produced. "The gardeners of Erfurt," he says, "have for a long time, to a certain extent, monopolised the sale of seeds of these plants. To obtain these seeds the Erfurt gardeners cultivate the flowers in pots, and place them on shelves in large greenhouses, giving them only sufficient water to prevent them from dying. So cultivated the plants become weakened, the pods shortened, and the seeds less numerous and better ripened; and these seeds give from sixty to seventy per cent. of double flowers." M. Chaté's own method, however, is even more successful than this; he obtains eighty per cent. of double flowers, and that by very simple means. "At the time of flowering," he says, "I nip off some of the flowering branches, and leave only ten or twelve pods on the secondary branches, taking care to remove all the small weak branches which shoot at this time. I leave none but the principal and the secondary branches to bear the pods. All the sap is employed in nourishing the seeds thus borne." The result, as stated, is eighty per cent. of double flowers.

The passion for double flowers, now so general among us, seems to be an accompaniment of civilisation. Mr. Noel Humphreys thus speaks of their cultivation among the Chinese:—"The Chinese, having remained comparatively undisturbed for several thousands of years in the enjoyment of an advanced kind of oriental civilisation, in which a love of flowers has ever been a distinguished feature, succeeded in producing several kinds of double-flowering plants many centuries before such double-flowering varieties were known in Europe. Of these the double-flowering peach, plum, and cherry are now well known. They were, indeed, pictorially known to us centuries ago by their representations in Japan ware and porcelain; but then our botanists only thought such representations imbecile vagaries of the Chinese pencil, and gave that ingenious people—those Celestials of the 'Flowery' Empire—no credit for having positively produced by horticultural perseverance the flowers whose portraits they delighted to paint on their matchless China ware." Among ourselves, the rage for double flowers, which has resulted in the production of ugly double fuchsias and uglier double geraniums, appears to be developing. As an evidence of this, we may note that so common a plant as the double stock is mentioned neither by Turner nor Gerard; but as, in 1629, both Johnson and Parkinson describe it, we may suppose that this improvement took place between the reigns of Elizabeth and Charles I. Double roses and pinks are of earlier mention; but many of our modern double favourites are of quite recent date.

In connection with this part of the subject it is worthy of remark that, in a natural state, double flowers are chiefly produced in the northern hemisphere, where the influence of cultivation is more extensively felt. Their distribution has been carefully traced by Dr. Seemann, who says that in Polynesia and the whole of Australasia not a single species with double flowers has turned up, although there are a few in South Africa and South America, the stamens of which are converted into petals. Since this statement appeared, however,

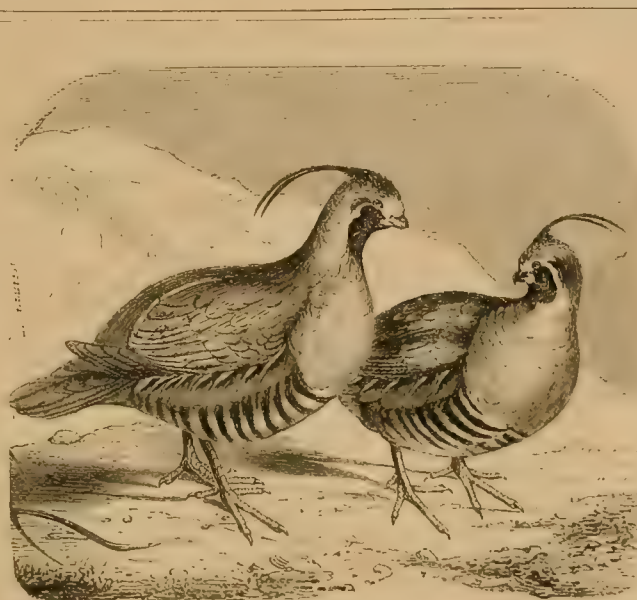
one exception—that of *Epacris impressa*—has been recorded for Australia. It is impossible to say whether the absence of double flowers from Polynesia and Australasia is owing to the non-existence of cultivators in those parts, or whether they really never occur. In Europe double flowers of various tribes are not unfrequently found wild. The fact that civilised man has always taken a peculiar fancy to them has caused their transfer to gardens and greenhouses whenever they are found. Hence the countries longest or most highly civilised have supplied the majority of double flowers—the camellia, most perfect of all, coming from China and Japan.

It is a curious fact that double flowers and variegated leaves rarely exist on the same plant; and those who regard the production of double flowers as an evidence of strength see in this a confirmation of their theory, variegated leaves being in many cases indicative of weakness. It has been asserted that they are never coexistent, but there are exceptions to the rule.—James Britten, F.L.S., in "Field."

BIRDS FOR THE GARDEN.

The Californian Quail.—Here and there on the rough dusty roads, in busy little groups, or escaping under the young pines and evergreens, this pretty bird is often seen in the lower parts of the

sierras of California. And happy is the hungry pedestrian who finds a dish of the fat and delicate bodies of Californian quail in the little hotel at the end of his day's journey, as I did at Grass Valley. The flavour is delicious, but the bird is so pretty with its long crests that one regretted to see the settlers' boys shooting them for their dinners, as they do the fat squirrels. For a country dating from 1849 (those who went there in that year are known as "old forty-niners") there are many interesting gardens in and near San Francisco, particularly in the suburb of Oakland, on this side of San Francisco Bay. In visiting an unusually pretty one there, belonging to Mr. Moss, I was astonished to see my friends of foot-hills and highland valleys literally swarming under the acacias and other evergreen shrubs



Californian Quail.

of the garden. Mrs. Moss obtained some, and they had multiplied so fast that there were multitudes of them in the garden, in which they did not seem frightened in the least degree. I never saw a game bird, or indeed any bird, look so much at home in a garden before. Efforts more or less successful have been made to naturalise this as a game bird in England. Its beauty, harmlessness, and the fact that it is so much at home in a garden seem to point out the garden or pleasure-ground as the most desirable home for it. The bird is of a pleasing lead-colour, with an olive-brown gloss on the back and wings; the throat black, with a white line running backward from the eye; the crest black, and about an inch and a half long. Why should we not naturalise beautiful birds such as these in our pleasure-gardens?

W. R.

Dionæa muscipula.—Mr. Bain, late of the College Gardens, Dublin, a most successful grower of this plant, used to propagate it according to Mr. Balle, the able secretary of the Royal Horticultural Society of Ireland, as follows:—When repotting the plants, about the beginning of the year, he took up the plant, divested it of every particle of soil, and with very sharp scissors cut off the crown, which, when potted, formed a strong and perfect plant. He then took the remaining or basal portion of the axis, on the surface of which were the scales formed by the bases of the old leaves. This he cut into small transverse or other sections, so as to have a scale to each morsel. These he distributed evenly, as you would seeds, over the surface of a small pot, which he put standing in water, and placed uncovered on a shelf immediately under the glass, in an airy and perfectly cool house.

THE ARBORETUM.

TREES FOR TOWNS.

PLANTING requires to be done carefully everywhere. The *Arbutus* makes a glistening and beautiful bush for Ireland and the warm and genial parts of England and Scotland; but on the cold clay about London it is not worth planting. *Araucaria imbricata* is truly a noble tree in many parts of the country, notably at Dropmore, and at Woodstock in Ireland; and it is likely to make equally noble objects in many places where it has been more recently planted. But all that did not justify the "planter" who placed those noble specimens of it in front of Tattersall's, at Knightsbridge, there to perish of smut drapery and vile accumulation of London smoke and dirt. Planting trees in and near a large city requires as much judgment as anything I know of connected with arboriculture. It does not appear to be understood even by some landscape-gardeners; for I could enumerate several instances of extensive plantings in and round London within the past few years which have perished, from their total incapacity to withstand smut and the other "evil humours" of our London atmosphere.

At one time the vegetation of our gardens and shrubberies consisted to a great extent of trees that lose their leaves in winter. Then came the laurel, the Portugal laurel, the elegant tapering cypresses, and a host of evergreens from various parts of the world, and fashion wisely went in their favour immediately. This has been carried into London plantings, and with great detriment to vegetable beauty therein. Had half the attention and money that have been devoted to the putting evergreens to die therein been directed to the planting of ornamental, free-flowering, deciduous trees in the London squares and parks, we should by this time have an array of floral beauty in and about London in the early summer months which would put to shame the best of our summer *portieres*. Deciduous flowering and ornamental trees should be the *sine qua non* of the London planter. When the fires are all alight in town, and smut darkens the very air, the leaves of the evergreens are fully developed, and reaping the disadvantages of it all. As a rule, they soon succumb; and what can be more miserable than a scrubby or a dying "evergreen"? The box, holly, *Aucuba* do, it is true, where the soil is free and light; but even these often fail, and look miserable to the last degree. But the deciduous tree is asleep when the deadly vapours are vomited so abundantly from our chimneys. All its life is wrapped up within it safe under a warm skin and a layer of mucilage, ready to burst forth into bloom and life of fresh young leaf when the fires begin to go out and the air of London to approach purity. Then it starts into flower and leaf; to go to rest again as soon as people return to town and the fires begin to work with vigour. Deciduous trees do as well in and near London as they do in the country; whereas, in most cases, it is mere waste of money to plant evergreens or conifers.

The double cherry may be seen in flower even in London, fresh and beautiful as if in the open country. The charming pink, scarlet, and other hawthorns, do as well in and near town as in their own native woods; while, with the exception of the Japanese privet, there is scarcely an evergreen of which the same may be said. Now, as a rule, in the London squares and parks sufficient advantage is not taken of this fact; though Victoria Park, Battersea, and Kensington Gardens, contain fine examples of the kind of trees I allude to. If, instead of the miserable massing of starved privet and half-dying laurels, that never even acquire a respectable degree of greenness, and never yield a flower worth looking at, we had belts of those beautiful deciduous trees and shrubs to be enumerated presently, which burst into vivid green in spring and in early summer are covered with fragrant flowers of great beauty, how much we should gain thereby! The evergreen is planted for the sake of its refreshing colour in winter, but if our atmospheric conditions utterly prevent the attainment of this condition, why persist in throwing away money on such useless planting. Besides, our people do not—nor is it very desirable that they should—frequent our town parks, &c., during the depths of our cold, wet, and sunless winter. Therefore, the absence of vegetable beauty at that season is of slight

importance, although for my own part I prefer the winter aspects of deciduous trees to that of evergreens. Those noble old plane trees, marbled all over their stems, where the great patches of bark fall off, and betraying a mixture of picturesqueness and graceful symmetry which I know not where to find equalled among trees—the delicate grace of the Babylonian Willow, with its long swaying shoots stripped of their summer covering—the bright gleam of the yellow osier when the sun *does* shine on it through the almost ever-dark though shifting cloud canopy—these are things to be enjoyed even now in our London parks and squares; and this sort of beauty might be increased tenfold in and near London by the planting of the kinds of trees advocated. And, finally, a strong reason for planting such should be the beauty they afford when pushing into leaf in spring. There is no more beautiful, no more magical sight than the bursting into leaf of deciduous trees in northern and temperate climes. The beauty of evergreens does not equal it, because they lack that delightful changefulness. Change, perpetual change, is in some sort essential to our life and work; and, from an æsthetic point of view, the trees—bare but picturesque and perhaps noble or graceful in winter; "thrusting out their little hands into the ray" in spring; the most beautiful of all natural objects in summer, when a mass of fluttering leaflets green as an emerald; and full of mellowing and changeful beauty in autumn, when the leaves of not a few American trees that would do well near London assume tints of the most pleasing character—are far better for us than the evergreens, which we cannot grow in perfect health.

Of the trees best suited, then, for London planting, and which are likely to withstand the evil influences of its atmosphere, the following are the most prominent, and those which the writer has observed to flourish well under the influence of smoke, &c., and which, therefore, should be planted more extensively than other trees in planting our commons.

The great advantage of many of the things I recommend is, that they flower freely and beautifully. What can be more attractive than masses of the snowy *Mespilus* (*Amelanchier Botryapium*) in April, or than the tiny rose-flowered almond trees, which grow well in the very heart of London with no attention after planting? Nothing more encouraging than to see these opening on a fine spring morning. They are not half sufficiently planted in our parks, and some of them indeed do not contain a specimen, the Regent's Park to wit, except we include a few young plants lately put in the new avenue gardens. But we want bold, natural-looking groups of these things instead of the ever-repeated limes, elms, &c. They are quite as cheap, and do even better than some of those common ones which, however desirable and indispensable, should not be the only trees to be observed in our recreation grounds, when we may buy some of the handsomest and noblest ornaments of the woods of America and Europe for a few pence a piece. The bird-cherry is also a free-flowering subject, especially suited for London. Then there is the weeping, double-blossomed cherry, which is certainly when in flower the most beautiful of all flowering trees, and yet it is very rarely planted, though nothing can do better than it does on the stiffest, coldest soil in the northern and north-western parts of London, simply because the leaves are off and the plant is at rest when the atmosphere is at its worst, and the leaves and flowers have time to come out and become fully matured and developed before the "blacks" of approaching winter come on.

Of course, everybody will recognise the value of the various kinds of horse-chestnut; and the plane is the noblest of all London trees. There are not a few of great merit which are yet too costly to be used for this purpose, and some few which are of such low stature and slow growth, that their planting would not be desirable, and, therefore, I omit them. The common lilac does so well, and flowers so freely, that the planting of its finer and variously-coloured varieties is very desirable. I allude to such as the Siberian, the white (*virginalis*), and, of course, the Persian, for the dwarfer clumps. But space forbids individual comment upon each of the plants suitable for this work, and, therefore, I will give a concise list of the best deciduous kinds, and follow that with the names of a few of the best evergreens:—These are the Snowdrop-tree of which there is a good example at Sion

House; *Gymnocladus canadensis* (the Kentucky coffee-tree), a handsome tree; *Koelreuteria paniculata*, a handsome, graceful tree, with spikes of yellow flowers; the "Mock oranges" (various species of *Philadelphus*), which are covered with white flowers—fragrant, too; *Prunus sinensis flore pleno* and *triloba*, very beautiful shrubs peculiarly adapted for the margins of dwarfish groups in parts—not so well for common planting. *Sophora japonica* is a noble tree, with very graceful foliage, exceedingly well adapted for the poor sandy soils that occur rather extensively in some of our commons, in consequence of drought not affecting it. It can bear any amount of drought and heat likely to occur in this country without suffering in the least, and this surely is a great point! Not a few of the greater willows are very fine, and grow freely in London; and so does the *Ailantus*, or Tree of Heaven, as it is called. It has great pinnate leaves, which, when looked down upon from the windows, appear like, and indeed are as graceful as, the fronds of large ferns.

The *Robinia*, or common acacia (Cobbett's Locust-tree), though a failure as regards the virtues which its advocate accorded it, is admirable for planting near, or rather in, cities, where it grows and flowers freely and beautifully. The common birch is not sufficiently used, although the most bewitchingly graceful of all indigenous trees. The weeping variety of the mountain-elm, or, in other words, the large-leaved weeping mountain-elm, forms a truly picturesque tree in winter, and affords dense shade during the summer months; the purple-leaved and *virginialis* also thrive freely amid the smoke of large towns. The Lombardy poplar is as valuable for its pointed habit, so to speak, as for its exceeding willingness to grow amid our smoke. It is surprising it is not used to better ends in our park planting. The *Abele* poplar, too, is invaluable, and particularly its comparatively new white variety. But least of all must be forgotten the many noble American and European thorns, so full of flowers in spring and so full of bright fruit in autumn, freely attracting song-birds, the presence and the melody of which we should cultivate as far as possible.

Of the conifers, I doubt if any are worth recommending for London planting except the Scotch and Austrian pines, and these only pretty well out of London. The deciduous cypress (*Taxodium distichum*) might, however, be tried near the margins of the ornamental waters in our parks. The evergreens which do best are the aucubas, hollies (in great variety), box, yew, Japan privet (which flowers freely and sweetly, and is altogether an admirable thing for London; it may be grown in a back-yard!), and the hardier kinds of evergreen oak. Very few more, indeed, are worth planting. Bringing fresh, brightly-leaved evergreens and conifers to London, and there planting them, is generally as successful a practice as planting them in the salt sea would be. They either die, or become so miserable-looking, that it soon becomes imperative to dig them up and throw them away.—V. E. K.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Larch for Poor Lands.—My object in writing now is to give you particulars of a sale of larch just held on my father's property near Llanwrtyd Wells, in the Aeron Valley, in Breconshire. The trees are growing on sideland mountain land, barely worth five shillings an acre, and are two to three miles distant from a railway station, and nearly forty miles from any colliery. No. 1.—625 larch, growing on 3½ acres, realised £305. No. 2.—1,200 larch, growing on 5½ acres, realised £595. No. 3.—351 larch, growing on 2½ acres, realised £350. Thus 11½ acres of larch produced £1,250, or over £108 per acre. The trees had been planted by my grandfather, and were from forty to sixty years' growth. Had the plantation been situated either nearer the South Wales coal district or the midland counties, and, consequently, had the advantage of lower railway rates, a considerably higher price would have been obtained. The timber was very fine indeed: No. 3 averaged over 20 feet a tree, and several sticks contained nearly 60 feet of timber. The chief lots were purchased by a Manchester firm, and are to be sent to Stockport at a railway charge of over £1 per ton measurement. Great profit can be made by planting almost worthless land with larch. —*John Lloyd, jun., in "Field."*

Abies Menziesii.—In the arboretum at Bioton is a magnificent, perfectly-grown pyramidal plant of this conifer, measuring seventy feet in height, with a last year's leader, from two to three feet in length, at its summit. It is branched so densely, even down to the green sward, that it is impossible to get a sight of its bole without pulling aside its branches or creeping underneath. Its bole or trunk is nearly nine feet in circumference, the spread of its branches is upwards of forty feet in diameter. It grows freely, its thick foliage being of a lovely silver-colour underneath, and above rich vivid blue green, and very distinct from that of every other conifer with which I am acquainted. Cones began to show themselves in April; they are of a delicate pale green, changing when nearly full grown to a rusty blue or greyish colour; when ripe they become a rusty brown. The seed ripens the end of September and beginning of October, and the cones soon open their scales on windy sunny days, and allow it to fly away and get distributed a long way off. The male catkins are pendulous, and very abundant in March and April, so plentiful indeed that I have seen on a windy, drying, sunny day the pollen wafting about in the atmosphere like a cloud of dust. By the time the cones, which are at first on the upper sides of the branches, are full grown the little branches on which they are produced have themselves generally made their growth; therefore the weight of the cones renders them pendulous, and a very splendid sight it is to behold so beautiful a shaped tree with silver-white, blueish shining green leaves and brown cones waving in the breeze; it is in short a sight when once seen not easily forgotten. Even at a long distance this tree shows to great advantage.—JAMES BARNES.

A Gigantic Tree.—In travelling from La Victoria, a small town in the province of Aragua, towards Puerto-Cabello, in Venezuela, the road leads, in part, along the northern shore of the Lake of Valencia, situated in a longitudinal valley nearly 1,500 feet above the level of the sea. This valley is of unsurpassed fertility, and Humboldt calls it one of the most charming realms he has ever seen in all his travels. In the middle of the road above mentioned, three miles west of Turmero, stands the famous Zamang, an enormous tree, belonging to the sub-order *Casalpinee*. It is not so much on account of the height or the dimensions of the trunk for which this tree is celebrated; but it is the size, and especially the horizontal diameter of its head, that attracts attention. Its head is somewhat of the shape of an opened umbrella, and covers very nearly an acre of ground. In 1857 I measured the head in its greatest diameter from E.S.E. to W.N.W. most carefully, and found it to be 206 feet 11 inches. Fifty years preceding it was found by Humboldt to measure in its greatest diameter 192 feet, French measure, which is equal to about 204 feet 6 inches English. Hence we see that this extraordinary tree has, within fifty-seven years, increased the horizontal diameter of its head only by 2½ feet, from which we may infer that it is of a good old age. The natives assert, moreover, that as far back as the discovery of the country by the Spaniards, three centuries and a half ago, the Zamang was, even at that early day, reputed for its enormous size. At the time I saw it, it was but thinly covered with leaves, and seemed to lack vigour of growth. The natives hold it in high veneration, and it was against the law to break even the smallest twig. Besides their own enormous weight, the branches sustain the additional weight of an astonishing mass of succulent heavy epiphytes and parasites, such as Bromeliads, Orchids, Cacti, Mistletoes, and fleshy Piperaceæ.—A. F.

UNDER THE VIOLETS.

Her hands are cold: her face is white;

No more her pulses come and go;

Her eyes are shut to life and light;—

Fold the white vesture, snow on snow,

And lay her where the violets blow.

And grey old trees of hugest limb

Shall wheel their circling shadows round

To make the scorching sunlight dim

That drinks the greenness from the ground,

And drop their dead leaves on her mound.

At last the rootlets of the trees

Shall find the prison where she lies,

And bear the buried dust they seize

In leaves and blossoms to the skies.

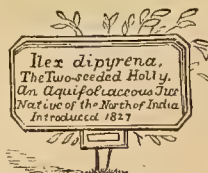
So may the soul that warmed it rise!

—*Oliver Wendell Holmes.*

TREE, SHRUB, AND PLANT LABELS.

EVER since man first regaled himself upon fruits and green meat he has had some kind of plant nomenclature. But "the herb yielding seed and the fruit tree yielding fruit after his kind" were of comparatively easy division and remembrance; contrasted with our present host of plants, natives of every clime, and diversified so as to be almost beyond the comprehension of any but those who study botany in all its bearings. Although this science deals with the vegetation of the globe, and horticulture, strictly speaking, deals only with that useful or ornamental for our gardens, the stores of the latter have for many years become so rich and varied that a good system of naming plants has long been one of the chief wants of the gardening community. It is desirable even where the cultivator or proprietor may know every plant himself; and how much more so in the case of the great majority who have the ordinary degree of knowledge in this respect! It is desirable, too, from the aid it affords in helping young people to an initiatory knowledge and love for natural history. It is always satisfying to the mind to know the name of a thing, and if its native country be indicated and a hint given of its associations or uses, if it have any, a still better move will be made towards fixing it in the reader's mind; and when once a little knowledge is gained in this way it is always pleasant and usually comparatively easy to add to it. Anything which facilitates the acquirement of a knowledge of beautiful and interesting natural objects is valuable. A distinguished botanist once told us that he was first led to the study of the subject by the considerable amount of information and facts about plants placed so simply before the reader in some of London's books on plant nomenclature. But books on botany, horticulture, or any other such subject are not usually referred to till they are wanted. On the velvety turf of lawn or garden is the most suitable place to make first impressions in this way, and, as nearly every pleasure-ground and garden has some permanent and interesting objects, it is most desirable that they should be named in the simplest and most useful way. For many years past the discovery of a really useful label has been a great object with our leading horticulturists. Yet it is very rarely that you see the plants well named, even in our best public gardens; and to find them so in a private garden is very rare indeed. Therefore it may not be unacceptable if we describe the best, neatest, and simplest system of labelling all kinds of plants—from the tiny greenhouse fern or rockwork alpine to the young towering Wellingtonia or rare old specimen of some old tree with a history.

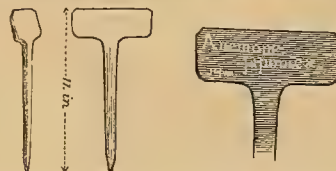
It is a pleasing custom with many people nowadays to plant young trees, and of course they generally select something permanent and noble in character; thoroughly hardy it ought to be above all things, though subjects that perish during a severe winter are frequently selected. When they do well, these form grateful souvenirs or memorials of the planters; and really, considering how often our artists fail when they set about what Artemus Ward calls "sculpting" a memorial, a man of any taste would rather be commemorated by the least dignified of our trees than by many of the so-called successes, let alone the admitted failures, of the studio. Her Majesty, the late Prince Consort, and the other members of the royal family, have planted many trees in various parts of the country, as well as in their own grounds at Windsor, Osborne, and other places, and it is a desirable custom which many others practise more or less. In all such cases a good special and permanent label is desirable. It should be one to insert in the ground, neat and in every way presentable. Now, unquestionably the best for this purpose are those used in the Zoological Gardens in the Regent's Park, in a few cases at Kew, and in all cases, we believe in the royal pleasure-grounds. Round the mausoleum of the Prince Consort at Frogmore, for instance, the various members of the royal family have each planted a tapering and suitable young green pine, a family of trees in which the late Prince was much interested. These are named with the labels we refer to, the name printed, and then bedded firmly under glass in an iron frame, the whole closely cemented, and very neat. Not a desirable label by any means, observe, for a general collection, because expensive and permanent, but the best, so far as we know, for young trees of special interest. Now most people seek a permanent label for their plants; but we think it a bad plan, and for this reason: The contents of a garden are usually in a state of change; we are continually adding to and taking from them. New plants are introduced, and surpass the older kinds or new varieties, and then you "ring out the old" by throwing them away. A severe winter comes and kills a number of handsome pines or shrubs, which you determine not to plant again. Fashion changes the garden vegetation,



Large and very unsuitable label used in Kensington Gardens and Hyde Park. (From a sketch in Kensington Gardens, 1870.)

too, and then what becomes of the permanent labels that are cast and burnt into the face of hardware and cemented into cast-iron? They are generally useless, of course, and thrown aside with old iron, &c.

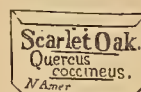
The label which can be used again is the best, and therefore we prefer a cast-iron label of what is usually called T shape, or, in other words, a slip of cast-iron with an oblong head slightly thrown back. These are cast very cheaply in the north, and will last for centuries. Of course you will have to paint and write the names of the trees on them when they come to hand; but that can be readily done by any handy painter, who will probably be glad of such a job in winter. In a large garden or a public garden where much naming is required, the right way is to train a boy or youth who is likely to remain in the place to do it; and we have done that in a few weeks by placing a



Cast-iron labels: the simplest, neatest, and best form for shrubs, herbaceous plants, and all cases in which the label has to be fixed in the ground.

copy of the desired kind of letters before him. We have found it of great advantage to give the face of the label a coat of copal varnish when the letters are dry, and we usually use white letters on a black ground, giving three coats of black over one of red-lead. These are the best labels for the usual shrub and choice young tree vegetation of a pleasure-ground or flower-garden. They will require repainting probably every half dozen years or so, and should you from any cause cease to cultivate the plants to which they belong, they may be newly painted and re-used at pleasure. One can get more than one hundred of them for the price of two or three of the permanent labels recommended for choice specimens. We suspect that with three coats of white lead, and the letters done in black, they would last longer than with the black ground.

Next we come to the wants of old trees, or any trees of respectable elevation and bole, or body, so to speak. When a rare tree attains size and dignity, like many of those at Sion House and in hundreds of fine old English parks and pleasure-grounds, it is still more desirable to label it than a young specimen, however choice. With such big trees it is always a mistake to use a ground label, which, indeed, we only recommend for the younger and choicer subjects, because another kind could not be affixed to the tree in a satisfactory way. The cheapest, best, and simplest of all labels for large specimens are made of pieces of tin about four and a half inches long by



The simplest, neatest, and best label for trees.



Position for tree label.

three and a half deep. About half an inch of the upper edge should be bent down at a right angle so as to form a little coping for the label, two holes made just beneath the little angle, through which you pass a strongish copper wire, that is firmly nailed to the tree. Place it so that it may be easily read, and at about five and a half or six feet from the ground. This label will last for a long time, and is in every way satisfactory. All labels inserted in the grass in pleasure-grounds are liable to be pulled up by mowers, or some person or other, and in this way frequently get lost, whereas the labels on the bole are removed from all such mishaps, and are more satisfactory than any other kind whatever.

(To be continued.)

Weeds in Louisiana.—A Louisiana railway engineer was acquitted of neglect in running over a man, because "the weeds on the track grew so high as to obscure the person."

Gaultheria Shallon for Pheasant Coverts.—I wish to ask a question or two about Gaultheria Shallon, and its adaptability as food and covert for pheasants. Will it thrive as well or better than the Berberis under trees? Will it bear berries when well shaded, and does it grow high enough for covert?—A. L.

THE PROPAGATOR.

THE ART OF GRAFTING.

(Continued from p. 122.)

SEASON FOR GRAFTING.—On principle, grafting should be performed while the sap is in motion. When it is done in spring or in autumn, the time should be chosen when the sap has begun to flow, or before it has ceased to do so. In summer it is best to avoid the period of its greatest activity. In all kinds of grafting, the condition of the sap should be nearly similar in both scion and stock: when it is not so, it is much better to have the scion in a less advanced stage than the stock. The season of grafting in the open air is from the month of March till September, that is, generally speaking; in warm countries, vegetation commences a month sooner. Certain plants also preserve the flow of the sap up to October and November, which permits a delay in grafting them until that time. The time most suitable for the different methods of grafting will be indicated further on when we come to describe each method. The tradition which ascribes greater vigour to grafts made at the time of new moon, and greater productiveness to those made at the end of the last quarter, we consider simply ridiculous. A calm atmosphere, and warm rather than rainy or cold, is both agreeable to the operator and conducive to the success of the operation. Heat, within certain limits, stimulates the nutritious fluid, while cold, on the contrary, chills and benumbs it. During the frosts of winter, grafting cannot be carried on except in the shelter of the propagating-house, where artificial heat and the other arrangements of the horticulturist will bring on vegetation to the desired extent at all seasons. Grafting under glass, either in houses or frames or under the cloche, is constantly practised from January to March, and from July to September.

IMPLEMENTS AND APPLIANCES FOR GRAFTING.—Simple, handy tools, with well-steel blades, and kept in good condition, are preferable to complicated implements with several blades or bristling with salient or cutting points, which may wound both the tree and the operator. The tool with a fixed blade is more firm in the handle, but one with a closing blade is more easily carried in the pocket, the apron, the tool-case, or the basket.

THE SECATEUR.—This is an implement formed with two arms of steel or iron, one of which terminates in a cutting blade, the other in a blunt bevelled crescent, against which the branch



The Secateur.

to be cut rests. The handles being wide and roughened on the back are, in consequence, easier to hold and less fatiguing to the hands. The secateur is used for the following purposes:

1. For cutting off the heads of stocks which are too thick for the pruning-knife, and not thick enough to require the saw, in those modes of grafting which demand a preliminary shortening of the stocks.
2. For cutting off scions from the parent-tree.
3. After grafting, for cutting, above the scion, any stocks that have not been previously shortened, with the object of stimulating the development of the graft.
4. For cutting off the heels of grafts made on the branches of the stock after a year's growth.
5. For severing from the parent tree scions grafted by approach.
6. For pruning spine-bearing plants and trees.

In general, the wounds occasioned by the secateur require to be dressed with the pruning-knife. "*L'Art de Gaffer*," by Charles Ballet. (To be continued.)

THE KITCHEN-GARDEN FOR JANUARY.

BY JAMES BARNES, LATE OF BILTON.

If frosty weather should happen to set in, take care to have all salad and other kinds of vegetables required for use protected, and a store of such as are daily wanted should be put into cellars so as to be readily comestible. Maintain everywhere neatness and order; trench all vacant ground, turning it up in as rough a state as possible, so as to permit frost to pulverize and sweeten it, and to clear it of the larvæ of insects, which dislike exposure to hard frost. In trenching, open a thoroughly good trench and break up the ground well at the bottom of it with strong forks, allowing it to remain rough and loose. Turn into the trench all surface vegetation and rubbish, and over that lay the mould from the next trench, again well breaking up the bottom; and so proceed till all has been turned over. By well moving the soil and getting down deeper and deeper every year, any depth of soil may be secured, and thus not only will crops be supplied with abundant food, but also, in dry seasons, with moisture. I was always an advocate for thorough drainage, deep culture, and surface stirring, and it is wonderful what luxuriant crops I have thus been enabled to obtain from land at first by no means good. Whatever vegetable refuse may be lying about, or collected at the rubbish heap, keep close together covered with earth and salted—salt being a good deodoriser. If there is one thing more than another a gardener should feel an antipathy to it is a weed; not only do weeds impair the appearance of a garden, but their production costs a considerable amount of money, inasmuch as they rob the soil of that which should go to support profitable crops. Deep trenching is a good way of keeping them in check, and there is no doubt that by deep culture the amount of most kinds of crops might be greatly increased. Surface stirrings should also be constantly carried out on all suitable occasions. Where required look out for a new stock of bean and pea sticks, and get them prepared so as to be ready for use when wanted. Seed lists, too, should be made out, in order to give the seedsmen time to get the goods put up in proper order before the busy season has arrived, and when you have the seeds home place them with the list methodically into thoroughly clean drawers or cupboards. See also that they are placed securely from the ravages of mice, and in a dry situation to prevent mildew or dampness. Of course, all kinds of vegetables, salads, &c., now in season, will be securely protected, and easily comestible daily, as required for use. Asparagus, seakale, rhubarb, and chicory roots should be all protected, in readiness to take up in succession at any time; no matter what the weather may be, these must be had for table, and if other vegetation is frozen in and covered with snow, there will be more inquiry for such articles. Cucumbers should now be sown pretty freely in succession, and those bearing fruit must not be checked for lack of heat, which should be 70° to 72° by night, and more by day, the increase being regulated by the light and sunshine we get. Sow early melons, which should consist of early, short-jointed, not over free vine and foliage-producing kinds. About the middle of the month will do. Sow in an intermediate house or frame in pans or boxes just free from frost, a pinch of some early variety of cabbage, cauliflower, or celery, to grow on in frames, to succeed the out-door stock when exhausted. For celery, like parsley and onions, there is an everyday demand. Carrots and radishes sow in succession, both on a slight bottom heat and on an open dry border if free from frost: look sharp after damping, shrinking, canker, mildew, and slugs. All young stocks of vegetables, salads, &c., dredge with wood ashes for mildew, and dry dust to prevent canker, &c. Keep everything clear of decayed leaves; surface-stir soil on fine days among growing crops; air freely to maintain strength and sturdiness, and cover and protect enough to prevent injury from severe frost. Mushrooms will be in request, and a valuable article they are to have in abundance at this season; kindly moderate warmth and gentle humidity should be maintained; about from 55° to 60° will be a secure warmth for keeping beds in full production of useful mushrooms; never allow a draught; if you do, a check will follow. It is a good plan to work the material for succession beds always in the mushroom-house during the dead of winter, a practice which produces by gentle fermentation just the natural, gentle ammonia-charged humidity in which the mushroom luxuriates.

Hard Soil in Gardens. There is one point in the practice of farmers that seems to me in advance of that of horticulturists—that is, the degree of artificial compression given to the earth for various crops. Agriculturists seem to expend as much labour in crushing or rolling the ground down as in breaking or raising it up, and this not merely to provide a smooth surface but a compact tilth. This is considered essential for most crops on the farm; the roots bite the earth better, and the stems grow more sturdy and erect. The importance of a hard seed bed for onions is generally recognised in gardens, but beyond this a good many cultivators go little or no further. I have long observed that broccoli,

cauliflowers, cabbages, grow better if the ground has been trodden or rolled firm previous to planting. Firm planting is also helpful to a good start. Especially has this been seen to be the case with autumn cabbages planted towards the end of September to stand the winter. Last summer I had a striking instance of the value of a hard root-run for savoy, Brussels sprouts, and broccoli of various sorts. It happened in this way: The greater portion of our strawberry-crop was cut off by the May frosts. Still, a few blooms escaped here and there. I was consequently unwilling to trench them down till the juicy fruit from such was secured. So towards the end of June a row of winter stuff was planted with an iron-shod dibber between each row of strawberries. Our ground is a strong loam, so the plants were put in with difficulty. They started freely, and have grown stronger than any planted at the same time in ground prepared in the usual manner.—D. T. F.

FLORISTS' FLOWERS.

BY R. DEAN, EALING.

AURICULAS.—Attention should still be directed to the removal of dead leaves, and to giving the plants plenty of air whenever the weather is favourable. We should, however, guard against heavy rains, strong drying winds, and severe frost. Water sparingly, but do not allow the plants to flag. During a mild January, root-growth will often become active towards the end of the month, and then extra water should be given.—Carnations and Picotees can scarcely be grown too hardy, provided they were early potted and are well rooted; but they will, nevertheless, require to be protected from cold icy winds, from rain, and from severe frost. Little or no water should be given, except in very dry weather, and then only in the morning, and at a time when there is no danger from frost. Avoid as much as possible wetting the foliage. Remove at once any decaying leaves, and see that the plants are kept thoroughly clean, and that they have full exposure at all times during favourable weather. If not already done, the soil required for the plants to bloom in should be at once prepared. If already mixed, it should be kept dry, and occasionally turned. It should consist of three parts good strong loam and one well-rotted manure; and it is a rule with Carnation-growers to prepare, in autumn, a sufficient quantity to last through the year. This should be well mixed together, laid in a heap where it can be fully exposed and frequently turned. As the surface becomes frozen in severe weather, the crust should be removed, so that as much of the soil as possible may be subjected to the influence of frost. The heap must be covered in wet weather. The loam should be carefully cleared of wire-worms; and, before using, a little coarse sand should be added to it.—Re-pot any Calceolarias or Cinerarias that may be getting root-bound, into larger pots, and keep them gently growing; place them near the glass, and give air on all favourable occasions, fumigating when necessary.—From Dahlias remove any mould or decay that may be found on the stems or tubers.—Hollyhocks, strong and healthy, should have abundance of air during fair weather. Keep them free from excessive moisture and from decayed foliage. Late-struck cuttings will be found to winter best in a greenhouse or pit, near the glass, where they can have the advantage of a little fire-heat in damp or frosty weather.—Pansies in beds may have a little light material, such as hay or fern, laid among them during severe weather; after frost, the plants should be gently pressed into the soil, from which they may have got to some extent uprooted; and the surface of the beds should be kept stirred when the weather is dry. From Pansies in pots, wintered in cold frames, remove the lights during favourable weather, but the plants should be protected from cold winds, rain, and frost. Dust with sulphur the foliage of any that may become affected with mildew, and remove decaying leaves.—Pinks in beds should be protected with fern, or small branches of Spruce Fir, on the north and north-east sides. In suitable weather clear away all dead leaves from them, and place a little fresh soil around their stems, at the same time pressing the plants firmly down to prevent their being uplifted by frost.—Verbenas in pits or greenhouses should be looked over, and have all decaying leaves and harbingerers of damp removed. If green-fly appears on any of the plants, they should be fumigated; every insect should, if possible, be destroyed.

The Manchineel of South America.—This plant, which is euphorbiaceous, is reported by the natives to be so deleterious as to give off poisonous effects to those who rest under its shadow. This has been denied on good authority, and was recently put to the test by the well-known botanist, H. Karstens. He gathered some of the juice of the tree in the district of La Guayra, and was presently seized with a burning feeling all over his body, followed by swelling, especially of the face and eyes. Next day he could not open his eyes, and their irritation was so great that he had to pass some days in a dark room. On the third day the swelling began to abate, and the cuticle to desquamate, after which he gradually recovered. These effects are similar to those produced by other Euphorbia; but the manchineel (*Hippomane manzanilla*) seems to differ from most in being capable of affecting individuals at some distance. Probably the immediate cause of the irritation is the dried juice, pulverised, and carried by the air.

Æthionema grandiflorum.—Among the various pretty tribes of rock crucifers, there is no family more valuable than the Æthionemas. They are remarkable for peculiar neatness of habit and delicacy of bloom, produced in dense masses when the plants are well grown. We have had long in cultivation some attractive species, and the above-named one is a very charming addition to the number. It is of larger and more sturdy habit than the excellent Æ. saxatile, less spreading and prostrate in habit, less glaucous in tone, and with much larger flowers, purplish rose, in elongated spikes. It is a valuable plant for the rock-garden, thriving freely in sandy loam, and being exceedingly well suited for edges and slightly-elevated rocky banks. As a border plant it will also thrive where the soil is free and well drained. Being somewhat impatient of transplantation, it is desirable to allow some plants to ripen seed on sunny edges or borders. Seedlings in pots will, of course, transplant easily. It deserves a place in every collection of alpine and herbaceous plants.

Park Baths.—The important question of bathing in our public parks seems at present to be attracting some attention. Amongst the statistical facts of the past year, says the *Telegraph*, we are told that during its course no fewer than 433,000 persons bathed in the Serpentine. The statement is interesting from more than one point of view. Give the Londoner the bare chance of a plunge into cold water, or, still better, of a swim, and you will find no reluctance on his part to avail himself of it. The desire is as wide-spread as the means of gratifying it are, unfortunately, limited. Why should this be? As matters are conducted—or rather neglected—at present, the result is perfectly disgraceful to a city like London. Strongly as we desire that fresh clean water should be within the reach of every inhabitant of the town, we are not the less scandalized at such a sight as may be seen in Hyde Park every summer evening. It is not a right thing that hundreds of young men, in a state of nudity, should be seen running about the grass in view of the promenaders. Going up the Thames, above Richmond, it is impossible to take a party of ladies for an ordinary pleasure row without feeling every five minutes that it would have been a wiser course to leave them at home. The moral is, not that any real obstacle should be placed between the people and the fresh water, but that proper spots should be assigned for bathers, and that these spots should be carefully closed in from public view.

Dear Seed.—Some seed of *Primula japonica* was sold at Stevens's the other day, and realised the following prices:—

	ounce white flowered	£ s. d.
	" purple crimson	12 15 0
	" white, with rosy centre	15 15 0
5-16th	" scarlet	10 4 0
5-16th	" lilac, crimson centre	9 5 0
3-16th	" clear rose colour	6 2 0
3-16th	" mixed colours	15 15 6
	Total	£85 11 6

1-16th of an ounce was said to contain about 8,000 seeds. The whole amount was 1-16th over 2½ ounces.—W. E. GUMBLETON, *Junior Carlton Club*.

COVENT GARDEN MARKET.—JANUARY 6.

Prices of Fruit:—Apples, per half sieve, 2s. to 5s.—Cobs, per 100 lbs., 60s. to 65s.—Filberts, per lb., 8d. to 10d.—Grapes, per lb., 2s. 6d. to 6s.—Lemons, per 100, 7s. to 10s.—Melons, each, 2s. to 5s.—Oranges, per 100, 6s. to 10s.—Pears, per dozen, 3s. to 6s.—Pine-apples, per lb., 4s. to 8s.—Pomegranates, each, 4d. to 8d.

Prices of Vegetables:—Artichokes, green, each, 6d. to 8d.—Asparagus, per 100, 8s. to 10s.—Beet, per dozen, 1s. to 2s.—Broccoli, purple, per bundle, 10d. to 1s. 3d.—Brussels Sprouts, per half sieve, 2s. to 3s.—Cabbages, per dozen, 10d. to 1s. 3d.—Casciums, per 100, 1s. 6d. to 2s.—Carrots, per bunch, 5d. to 7d.—Cauliflowers, per dozen, 2s. to 6s.—Celery, per bundle, 1s. to 2s.—Chilies, per 100, 1s. 6d. to 2s.—Cucumbers, each, 1s. to 2s.—French Beans, new, per 100, 3s. to 4s.—Herbs, per bunch, 2d. to 4d.—Horse Radish, per bunch, 3s. to 5s.—Leeks, per bunch, 2d. to 4d.—Lettuces, per score, 1s. 6d. to 2s.—Mushrooms, per pottle, 1s. to 2s. 6d.—Onions, per bunch, 4d. to 9d.—Parsley, per bunch, 2d. to 4d.—Radishes, per bunch, 2d.—Rhubarb, per bundle, 1s. 6d. to 2s.—Salsafy, per bundle, 9d. to 1s. 3d.—Scorzonera, per bundle, 9d. to 1s. 3d.—Seakale, per punnet, 1s. 6d. to 2s. 6d.—Shallots, per lb., 8d.—Spinach, per bushel, 3s. to 4s.—Tomatoes, per sieve, 3d. to 6d.—Turnips, per bunch, 3d. to 6d.

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"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE FLOWER-GARDEN.

ROSES AND ROSE CULTURE.

BY S. REYNOLDS HOLE.

FOR another month, should the present open weather continue, rose trees may be advantageously planted. The best position is that in which they can enjoy the morning sun until the meridian, and in which, while they have abundance of air, they are protected by evergreen hedges, or other "breaks" and screens surrounding them at some little distance, from the full force of stormy winds. The best soil is a rich mellow loam, into which a walking-stick disappears to the handle, or a strong clay, with a slight element of lime, well dug, and drained, and dunged. If the purchaser wishes to grow the rose in its highest perfection, he must buy briars when he buys his rose trees, and bud the one from the other in the succeeding summer; because, as a rule, the first rose produced, if it escape frost and the buds around it are removed, will be the most beautiful. In some soils, and in some seasons, many of our best roses attain their full glory on the Manetti stock; but our indigenous Dog-rose is the most reliable parent of heroes. When the object is to grow roses for home enjoyment rather than for public competition, I recommend rose trees upon their own roots, or "worked" so low upon the Manetti or briar that the scion may be planted below the soil, and thus form additional roots of its own. I will add a most select list of rose trees which possess the three chief elements of excellence, (1) vigorous growth, (2) beautiful and (3) plentiful flowers.

Gloire de Dijon will supply more good roses in a season than any other variety, for it is first in spring and last in winter to produce its abundant flowers, exquisite in colour, form, and fragrance. It deserves a high wall, with a southern aspect, and there, upon its own roots, once fairly established, there seems to be no limit to its luxuriance and longevity.

As to *Maréchal Niel* there is no disagreement as to the glowing beauty of its golden flowers, but there has been much discussion as to its culture and constitution. The most successful method of treating this variety, without which no rose-garden is complete, is to bud it or graft it so low on the briar that it may be planted below the surface, and to give it a wall looking east or south. It is not frost-proof, but if the roots are well protected by manure placed upon the ground above them, three inches deep and a foot each way from the stem, applied in November dry and hard, no winter can kill the tree. However much an extraordinary frost may injure the upper growth, a grand reinforcement from below will come up in the following summer. And both these rose-trees will grow admirably upon arches of wood or iron.

I dare not include in a list, which I intend to be very strictly limited to roses both robust and *recherché*, the lovely *Climbing Devoniensis*. Budded on the Celine Bourbon (hybrid Bourbon) stock, it makes upon a wall a marvellous growth, and gladdens sight and smell from May to December with its large, tea-scented blooms, but it has not strength to resist a cruel frost; and he who grows it must be prepared to mourn if an exceptional fridity, as in 1860 and 1870, should chill the life-blood within. And yet I cannot refrain from saying, before I pass on to hardier roses,—

"'Tis better to have loved and lost,
Than never to have loved at all."

There is only one summer rose, by which is meant a rose blooming but once, which I must insist upon in a very choice

collection, and that is *Blairii* 2. There is no rose tree more generally useful. If its luxuriant shoots are only reduced one fourth of their length in pruning (the weakly wood being altogether excised), it produces its blushing beauties in abundance, amid foliage large and glossy.

From the Bourbons also I elect but one—*Souvenir de la Malmaison*. Grown upon its own roots, and well mulched through the winter, it gives us, early in summer and late in autumn, the flowers so exquisite in the eve of their full development. How well I remember the first healthy little plants which I bought at Berkhamstead a quarter of a century ago, some of which are in my garden now. Well might Mr. Lane say, as he looked fondly upon them, that "they were worth a crown apiece," for, long outliving the good rosarian who reared them, they have helped to win me many a golden prize.

Of Teas and Noisettes I have none to name, except the two first on my list, for these only are reliable as garden roses. Of the delicate loveliness of such flowers as *Devoniensis*, *Souvenir d'un Ami*, and *Madame Bravy*, no one is more cognizant than I, but, because they are delicate, I may not include them among varieties which are to be handsome and hardy also.

And so we come to those hybrid perpetuals, which combine both these good qualities—and combine them *always*. There are scores of glorious roses in this division, which generally attain their full excellence, such as *Charles Lefebvre*. There are many others, which, when the season suits them, are not to be surpassed in beauty (such as *Duc de Rohan*, *Marie Beaumann*, and fifty others), but which disappear altogether from our rose shows when drought or damp or vernal frost has been unkindly for them; and these I have omitted, wishing to provide for the young amateur such roses as cannot disappoint, and knowing well that, once successful, he must include them hereafter in his collection—hereafter, when the happiness of growing roses will far exceed those failures and disappointments which, had they met him at his outset, might for ever have destroyed his hopes.

Alfred Colomb is one of the few perfect roses which is *toujours gai*. In colour, a rich carmine, with a crimson glow on it; in style, large, globular, symmetrical.

Baroness Rothschild—one of the most beautiful, and, so far as I have tested it, one of the most reliable of our light-coloured roses, for though short in limb, she is strong and sturdy in constitution. It seems ungraceful to describe a lady thus, but in writing and speaking of roses, one meets with strange antitheses. Of this very rose, and only the other day, a rosarian said to me, "Ah, yes— isn't she lovely!" and then added, with a tender pensiveness, "I do believe that I've given the Baroness more than double her share of—pig-manure!"

(To be continued.)

THE PAMPAS GRASS.

(*GYNERIUM ARGENTEUM*.)

WHEN I say that this is one of the most valuable and most generally useful of hardy flowering plants, I state what few will venture to gainsay, except, perhaps, those who have only seen it growing on thin, poor, dry soils, stunted and starved; or in exposed situations, where it may sometimes be seen with its foliage blown about and disfigured, and its fine feathery plumes broken and unsightly. Although not over fastidious about soil, to grow it successfully it requires a deep rich one, rather damp than dry. It also likes a sheltered situation, but not one much shaded, and it always prefers a cool to a warm subsoil. Where, therefore, these conditions do not naturally exist, means should be employed to secure them artificially. Even under favourable circumstances the vigour of the plant will be greatly increased by trenching and opening up the soil some five or six feet from the point at which each specimen is to be permanently placed.

Whether employed to ornament the villa-garden, or for planting in or around flower-gardens of greater pretensions, few hardy autumn and early winter flowering plants are handsomer than this; and when well placed on lawns or in shrubbery borders, it is likewise highly effective, lighting up and relieving heavy masses of sombre foliage, after almost

everything else in the way of flowering plants has passed away. By the sides of drives, too, or walks, either singly or in masses, so as to come suddenly and unexpectedly into view, the effect is grand in the extreme.

At Castle Kennedy it has been extensively used for some years past as a decorative plant, and nowhere so successfully as in the American ground, which is about two acres in extent, surrounding a circular piece of water, which covers upwards of an acre. The American ground was formed about twenty-five years ago, and is so arranged, as to have *Rhododendrons*, *Azaleas*, *Kalmias*, *Ledums*, *Andromedas*, &c., planted in groups by themselves. The water which occupies the centre of the ground is surrounded by a grass terrace and broad grass walk. The dwarfier growing of the shrubs stand nearest the basin, and the taller ones further back, supported behind by fine old evergreen oaks, conifers, &c. Owing to the amount of flowering shrubs, there is almost a superabundance of bloom during the height of the season; but after the end of July there is a blank—a felt want which few plants are calculated so well to supply as the Pampas Grass. Here, in well-drained ground, consisting principally of peaty soil three or four feet deep, sharpened by a liberal admixture of sandy gravel, we have considerable numbers of this stately grass, many of which now form large round masses, measuring from ten to twelve feet in diameter, and from six to seven feet in height, each plant throwing up annually from sixty to a hundred flower-stems from eight to twelve feet in height. It should be mentioned, however, that there is a considerable number of varieties of Pampas Grass in cultivation, some flowering as early as the close of September, others following in succession during the autumn and early winter, while many are still in flower (3rd January), although now somewhat bleached and broken by winter storms. The flower-stems of the earlier varieties have larger and more spreading heads, and are generally a shade browner in colour than the later varieties. The latter also differ much amongst themselves, but they have generally a white and silvery appearance, the heads being compact, and less liable to be broken in stormy weather than those of the early sorts. The sites here for the Pampas Grass, amongst the American plants, were well selected for effect; and during the autumn, when in full flower, in connection with the fine foliage of the *rhododendrons* and *kalmias*, the warm fading tint of the *azaleas*, &c., the whole, backed up and supported by the masses of fine old evergreen oaks and conifers, and reflected by the water on calm days as in a mirror, an effect is produced not easily to be forgotten.

To those who have not had much experience in planting the Pampas Grass, and who contemplate so doing, I would say, never plant in the autumn. Although a comparatively hardy plant when of some size and well established, small plants are easily injured by severe frosts, particularly soon after being transplanted. The latter end of April or the beginning of May is perhaps the safest time to transplant, something, as a matter of course, depending on the locality. Strong plants should only be used; if weak ones have been provided, grow them on in the nursery or reserve ground for a year or two before planting them out in their permanent places.

In situations where game abounds, and where, as is frequently the case, it is desired to introduce the Pampas Grass, if young plants are put out, hares eat them greedily while the leaves are young, and eventually destroy them. By dividing old plants, and keeping large pieces together, they may be safely planted in such situations, being then hare and rabbit proof, as the hard old leaves are too much for them. Plants grown in a nursery or reserve garden for a few years will answer the same purpose, always keeping in mind that, if you want to grow the Pampas Grass quickly, feed it well.

Castle Kennedy, Stranraer.

ARCHIBALD FOWLER.

HARDY PLANTS AND TREES.

EAST AND WEST VERSUS NORTH AND SOUTH.

In classifying plants and trees as hardy or tender, writers, I would submit, err somewhat in dividing the climate of these islands into north and south. North and south of the Trent or Tweed such and such plants are hardy or tender. In

your number for December 30th, for instance, one of your correspondents states that fig-trees in the north will barely subsist against walls; whereas, in the south they grow as standards. A more intelligent and practical division of the climate (with an exception for some trees and plants which require more sun than an average northern summer can boast) would be into zones of east and west. The west coast, being exposed to the full influence of the warm currents from the Atlantic, enjoys a temperature in winter many degrees higher than the less-favoured east; and even when the thermometer registers an exceptionally low temperature, plants survive without injury which would infallibly perish in a much higher temperature on the east coast. This is, probably, owing to the fact that the soil is warmed by the constant afflux of the Gulf Stream for many ages. For instance, here (I write from the south-west of Scotland) we never think of affording protection to myrtles, lemon-verbena, *laurustinus*, and other delicate things, either standard or against walls. *Fuchsias* stand out without any covering—the common red sorts grow into huge masses ten or twelve feet high, a gorgeous sight in August. True, these exotics are sometimes killed to the ground. For instance, in the ever-memorable Crimean winter, 1854-55, we had a lemon-verbena, the stem of which measured nine inches in circumference, killed to the ground; but it sprung up, and has again covered the wall which it adorns fourteen feet high.

Last winter was a pretty severe one—we had three weeks good “curling”; yet, in my garden several dozens of yellow *calceolarias* survived without any care. I have seen a scarlet “Foxhunter” verbena survive; but that was in a bed outside a greenhouse. I write these few notes in the hope of encouraging gardeners and amateurs all along the west coasts to try experiments with some of the many lovely tender things, which may not be so tender after all. Try them first in a good soil against a sunny wall, and if they succeed, experiment more and more boldly with single plants and standards.

Permit me to add a few words about rabbit-proof plants. There are many things which, if afforded protection when first planted, will soon make such robust growth, that they will defy the attacks of these creatures. *Mahonia*, for instance, and *Cotoneaster*, Pampas Grass, and the different *Berberries*—of these I speak from experience; and here 22,500 rabbits were killed in eight months. When small and tender, they fall an easy prey; but, if wired round at first, do not seem to suffer. Nothing, I am convinced, is more vulnerable or, indeed, attractive to rabbits than hollies. They will bark trees fifty years old, or five hundred if they could find them.

HERBERT MAXWELL.

The Airlour, Portwilliam, Wigtownshire.

Indigofera floribunda.—Although the *Indigoferas* constitute a very pretty genus, we rarely see them in good condition in this country: in glass-houses they get but little attention, out of doors they are too tender as a rule, though one, *I. Dosua*, makes a very pretty bush, and *I. floribunda* makes a first-class wall plant. Everybody interested in covering walls with ornamental plants should employ it. It is graceful in habit, the foliage being of a slightly glaucous hue; the shoots droop downwards—an excellent point in a wall plant—and bear abundance of light rosy flowers. A specimen of it flowers every year against the end of one of the glass-houses in the Royal Exotic Nursery, Chelsea. It is one of the most perfect wall plants I have ever seen. Walls eight or ten feet high may be quickly covered with it.—S.

Old Friends.—The plants that come up every year in the same place, like the Stars-of-Bethlehem, of all the lesser objects, give me the liveliest home-feeling. Close to our ancient gambrel-roofed house is the dwelling of pleasant old Neighbour Walrus. I remember the sweet honeysuckle that I saw in flower against the wall of his house a few months ago, as long as I remember the sky and stars. That clump of peonies, butting their purple heads through the soil every spring in just the same circle, and by-and-by unpacking their hard balls of buds in flowers big enough to make a double handful of leaves, has come up in just that place, Neighbour Walrus tells me, for more years than I have passed on this planet. It is a rare privilege in our nomadic state to find the home of one's childhood and its immediate neighbourhood thus unchanged. Many born poets, I am afraid, flower poorly in song, or not at all, because they have been too often transplanted.—*Oliver Wendell Holmes.*

YUCCAS.

(Continued from page 152.)

YUCCA FLACCIDA.—A stemless species, somewhat resembling *Y. filamentosa*, but smaller, with a downy branching panicle three feet to four feet high. Foliage in close rosettes of leaves, one-and-a-half feet to two feet long, by about one-and-half inches broad at the middle, often fringed with filaments on the edges: the young ones nearly erect, the old ones abruptly reflexed at the middle, almost appearing as if broken. This gives such an irregular aspect to the tufts, that it at once distinguishes this kind from any of the varieties of *Y. filamentosa*. It also flowers more regularly and abundantly than its relative, and is exceedingly well suited for groups of the finer hardy plants, for borders, or for being planted in large isolated tufts. N. America.

YUCCA GLAUDESCENS.—A very free-flowering kind, with a panicle three feet to four feet high, the branches of which are short and very downy. Leaves sea-green, about eighteen inches long, with a few filaments on the margins. The flowers are of a greenish-yellow colour, and when in bud are tinged with pink, which tends to give the whole inflorescence a peculiarly pleasing tone. A very useful and ornamental sort—fine for groups, borders, isolation, or placing among low shrubs. N. America.

YUCCA GLORIOSA.—A species of large and imposing proportion, with a distinct habit and somewhat rigid aspect. Flower-stem over seven feet high, much-branched, and bearing an immense pyramidal panicle, of large, almost pure white flowers. Leaves numerous, stiff, and pointed. One of the noblest plants in our gardens, and suitable for use in almost any position. It varies very much when grown from seed—a good recommendation, as the greater variety of fine form we have the better. The chief varieties in cultivation are *Y. g. longifolia*, *plicata*, *maculata*, *glaucescens*, and *minor*. The soil for this plant should be a rich deep loam. N. America.

YUCCA RUPICOLA.—A species somewhat resembling *Y. aloifolia*, with a stem from four feet to seven feet high, and pale-green leaves eighteen inches to twenty inches long, by one inch broad at the middle, almost erect and frequently twisted, the horny margin being broader and the teeth more distinct than in *Y. aloifolia*. This is not much in cultivation as yet, and will probably be difficult to obtain for some time to come. N. America.

YUCCA TRECULEANA.—This species is one of the most remarkable of the noble genus to which it belongs, from its habit, and especially from the dimensions to which its foliage attains. Like many plants of its family, young specimens differ considerably from those which have reached maturity. Thus, while the former have their leaves bent, generally inflected, the full-grown plants exhibit them erect, rigid, very long, and very straight. The stem of this plant is stout, about ten inches in diameter, furnished on all sides with leaves about four feet long, straight, thick, deeply channeled, acuminate for a considerable length, and ending in a stiff, very sharp point, very finely toothed on the edges, which are of a brownish red and scarious. The flower-stalk is very stout, about four feet long, much branched; the branches erect, from one foot to one foot eight inches long, bearing throughout their entire length flowers with long and narrow petals of a yellowish white, shining, and, as it were, glazed. It is a hardy and very vigorous plant. It is not rare to see on the Continent specimens of more than six and a half feet in diameter. Fine for banks and knolls, placed singly, or for the boldest groups. It comes from Texas.

(To be continued.)

THE PROPAGATOR.

MODE OF TRANSMITTING SEEDS AND CUTTINGS.

THE introduction of certain seeds in a fit state for germination has long been wished by cultivators. I have repeatedly tried to get collectors to send home seeds in strong earthen jars, or bottles firmly packed in soil and closely corked, the soil to be taken six or eight inches under the surface, so as to contain the natural moisture only; however, few, I am sorry to say, seem inclined to give this method a fair trial, being rather disposed to send by the old system, viz., in dry paper. As far back as 1831 I introduced in this way acorns of many varieties of American oaks in excellent condition for growing, while portions of the same seeds, brought home in paper and also in canvas bags, did not succeed. Some acorns were also brought home in a box between layers of sphagnum moss, having the superfluous moisture previously wrung out of it. By this method of packing the acorns all succeeded well. Dr. Little, of Singapore, a gentleman distinguished for his horticultural skill, has been very successful in introducing into this country many rare plants, such as *Gutta percha* (*Isanandra Gutta*), and many rare and valuable orchids. He seldom

misses an opportunity of sending home seeds peculiar to his district, but it too frequently happens that they are completely dried up before reaching this country. During his visit to Edinburgh, in the year 1870, I told him of the disappointments so often experienced with many of his seeds, and recommended him to try the stone-bottle system. About the middle of November last I had the pleasure of receiving a stone jar from him, filled with palm seeds, firmly packed in soil, all quite fresh and capable of germination. In districts where sphagnum moss abounds, I would recommend it in preference to soil, as it retains the moisture for a much longer time, and is not liable to mould or decay. In sphagnum the radicles of the seed are often slightly protruding when they reach their destination, while the soil, with its natural moisture, keeps the seeds much in the same condition as when sent away. With pulpy or berried seeds, the above methods are by no means satisfactory. I have found from experience that all pulpy seeds succeed best when rubbed out in dry white sand. After being spread out in the sun or wind for a day or two to dry, collect the mass and pack firmly in stone jars, and when they reach their destination, take out the contents of the jars, and cover with soil according to the size of the seeds. By this method, I have frequently sent to Australia, Canada, and other distant parts of the world, the seeds of strawberries, gooseberries, raspberries, brambles, currants, blackberries, laurels, elderberries, thorns, hollies, yews, &c. Any portion of the pulp remaining seems less liable to decay when mixed with dry white sand than with soil or sphagnum. For a long series of years it has been customary to send home seeds packed in charcoal, and I regret to see it still recommended. Such a practice, however, ought to be entirely abolished, as it tends to destroy the vitality of the seed. Unless in the case of seeds with very fleshy cotyledons, few others packed in this way ever grow. It is not necessary that seeds should always be sent home in comparatively dry soil in earthenware bottles. About eighteen years ago, I had some seeds of the Akee fruit (*Blighia sapida*) sent from the West Indies. They had been put into a large old blacking bottle (after being thoroughly cleaned inside), in a mixture of soil and water, firmly closed with a clean bung-cork, and thickly sealed over. When they reached me, I broke the bottle, and found every seed in a growing state. Each was put in a pot and set in a dark place for a time, light being admitted gradually; they soon lost their pale hue, and are now fine thriving trees. This simple method is also worthy of imitation with many hard tropical seeds. Wide-mouthed glass bottles are also extremely useful to botanical collectors and amateur horticultural travellers. During my annual autumn peregrinations both in this country and abroad, I have kept cuttings of rare stove and greenhouse plants in clean old pickle bottles, in excellent preservation for a fortnight, with a little moss and water, and have always found them to succeed well after reaching home. Alpine plants are easily conveyed from their native habitats by the glass bottle system.—J. McNab, in "Proceedings of the Botanical Society of Edinburgh."

HOW TO RAPIDLY INCREASE NEW AND RARE VARIETATED PELARGONIUMS.

MANY of the kinds in which the leaf colour is most highly developed are slow of growth, and cannot be readily increased, while single little plants of new kinds, bought perhaps at the rate of ten shillings a leaf, naturally take a long time to yield a stock. Doubtless many of our readers have such plants, and they will probably find the following way of propagating them useful. Generally, variegated pelargoniums are propagated by cuttings, and these strike truly enough; but, as the "plant" of a new kind is simply a rooted cutting, it is obvious that much progress cannot be quickly made in that way. They may be struck as readily from leaves as from cuttings. The way is to cut off the leaf as with a portion of the stem—a mere little heel attached to the base of the leaf. We have recently seen cuttings of the most precious kinds of variegated pelargoniums inserted with a "heel" no bigger round than a pea, and in a week they have been well rooted, and sending up vigorous little stems from the eye that was dormant at the base of the leaf when it was cut off. The leaf is only put in just far enough to well cover the bases so that the eye when it starts may not have much earth to push its way through. Insert in light sandy soil, surfaced with silver sand; a watering consolidates all, and there is little more to be done till the young plants are ready to be potted. They may be struck most rapidly in a general hot-bed or warm moist stove, and may be put in pans, boxes, or small pots. One point requires a little attention: it is

the keeping of the leaves in an erect and natural position. Having so very little support below, the slightest touch might cause them to fall; and if they happened to flag in a dry atmosphere, the leaves would fall down one over another, and perhaps not rise again—accidents which would of course interfere with the success of the operation. By bending one end of a bit of copper wire, so as to form three parts of a ring, and then bending this part back a little, a perfect support is formed for a leaf. It merely requires to be inserted immediately behind the leaf, the crook being so placed under the leaf that the central parts of the blade will rest upon it. This simple contrivance keeps the leaf in as erect a position as if it were supported by a stout stem. It need scarcely be remarked that this mode is only recommended, and only necessary, for the rare and very valuable kinds. In the case of established sorts, and of those of which we can get a stock, all we require to do is to insert the cuttings in the open garden border in the summer and early autumn months. W.

Rose Cuttings.—I do not strike these, as some do, in pure sand. On the contrary, I take my cuttings and put them into pots or frames in the stiffest turfy loam I can get, which I ram hard and fast round the cuttings. The loam thus treated will retain as much moisture as is required during most weathers. If pots are used, the plan is to let the mould be right up to their brim, and to tilt them a little if there is any danger of too much water getting at them. Beyond this they require no attention, unless it be to set them in some nice half-shady yet airy position favourable to root formation. July, August, and September cuttings will root the same season; October cuttings should either be in a frame or in pots, so that they may be removed there. Water of course, if drought prevails, thoroughly but seldom, as the loam so well maintains the necessary degree of moisture.—A. D.

A Prolific Sweet Pea.—You may perhaps consider it worth while to record in your pages the following facts, showing the marvellous fertility of the sweet pea under favourable circumstances. A single seed of it, self-sown, came up in my garden early last spring, and I have just gathered from it four hundred and sixteen pods, containing two thousand two hundred and forty peas! The plant came up in a single stem, then branched out into four principal trunks (if I may call them so), and these developed into a perfect bush, eight feet in height, and having the appearance of a large cluster of sweet peas from a handful of seed. In addition to the seed gathered, many dozens of the flowers were plucked for bouquets. I may observe that the sweet pea seed which was sown this year by me was unusually small and unproductive in results.—F. L. S.

[This fact well illustrates what we have often pointed out—the great superiority of many annual plants when sown in the autumn. Few persons who have not seen the difference would believe it, and numbers who sow their annuals every year in April have but a small idea of the value of these as ornamental plants. Whence this difference in the strength and profusion of bloom between annuals sown in spring and in autumn? It comes from the spring-sown kinds being called upon for their bloom and seed before they have had time to extract sufficient nutriment out of the earth for a strong bloom. It is the nature of the greater number of annual plants to vegetate in autumn, and to grow slowly, and gather strength through the long winter and spring, so that by the sunny flowering time they are deeply rooted and strong in leaf and shoot, and with vastly more flowering power, if we may so say, than the plants of the same kind sown in spring. It is needful to bear in mind, however, that we must confine our autumn sowings of annuals to those that are not too tender for our winter; but of the hardy sorts there are a good many fine ones seldom treated right.—Ed. Field.]

GARDEN DESIGN.

LAYING OUT OF GROUNDS.

Is it an art or a trade that I propose for discussion? I think it is an art. The backwoodsman would not agree with me; there are many plethoric citizens who would not agree. Go, roads, and paths laid where you want them, and plenty of trees—is there anything more than this in the laying out of grounds? Is there any *finesse*, any special aptitude requisite, or anything that approaches the domain of art in managing the matter, as such matter should be managed? I think there is; and that it is an art as yet, in this country, almost in its infancy; and yet an art instinctively appreciated by cultivated persons wherever it declares itself, whether upon a small or a large area.

We have admirable engineers who can lay down an approach road, or other, with easy grades, and great grace—so far as the curves count for grace; and we have gardeners who shall lay down your flower-beds and grounds for shrubbery according to the newest rules, and with great independent beauties in themselves; but it is quite possible that both these classes of workers

may fill their designs admirably, and yet steer clear of the great principles of the art I purpose to discuss. It is an art which takes within its purview good engineering and good architectural work, and good gardening, and good farming, if you please; but which looks to their perfect accordance—which dominates, in a sense, the individual arts named, and accomplishes out of the labours of each a congruous and captivating whole.

Good farming, good gardening, good engineering, and good architecture may stand side by side upon a given estate, and yet, for want of due conception of what the landscape really demands for its completed charm, the effect may be incongruous and unsatisfying. Over and over again a wealthy proprietor seeks to supply the somewhat that is lacking by inordinative and cumulative expenditure; he may thus make outsiders wonder and gape; he may also secure a great assemblage of individual beauties; but the charming oneness of effect which shall make his place an example of taste and a perpetual delight is somehow wanting.

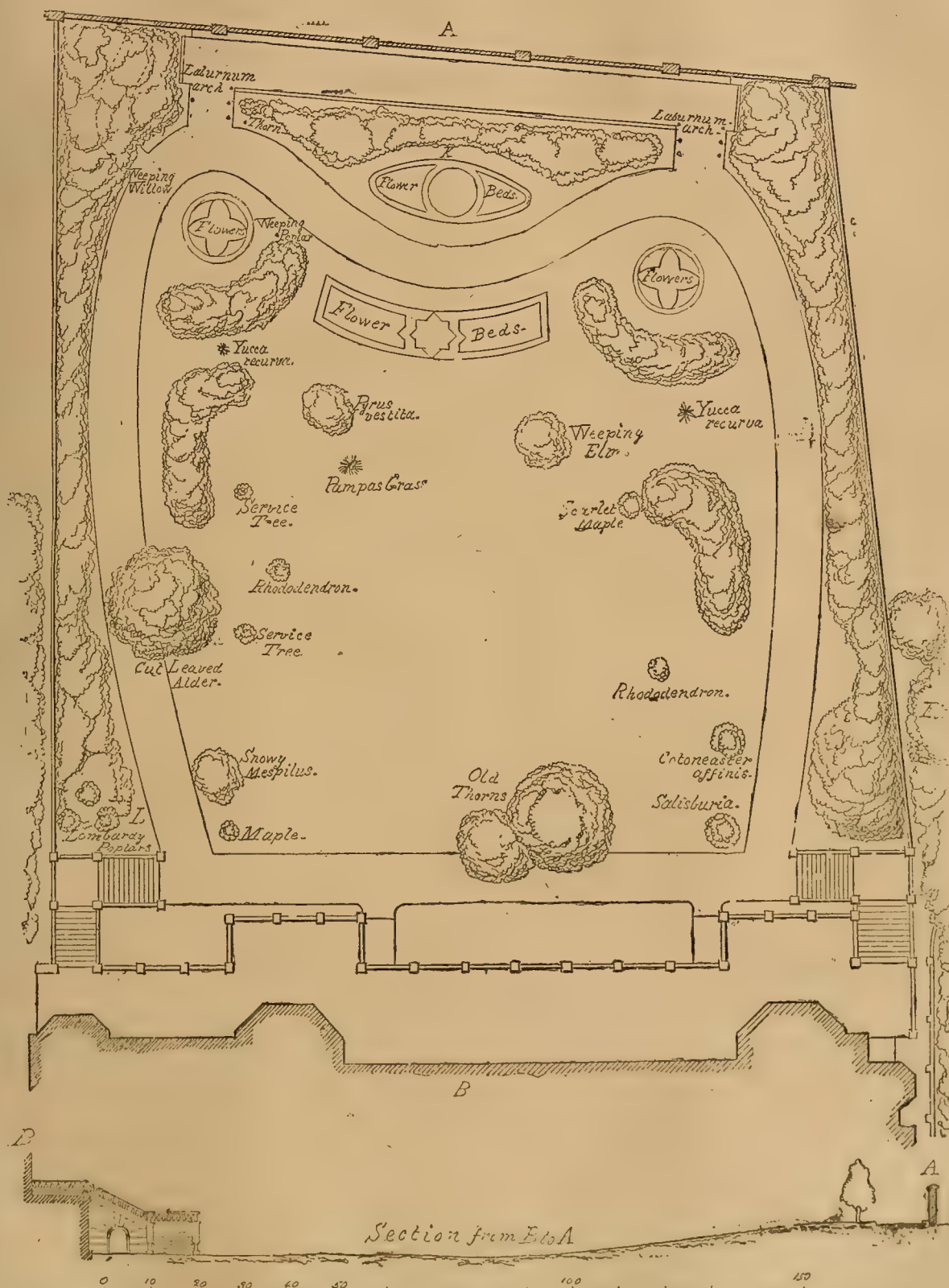
The true art of landscape gardening lies in such disposition of roadways, plantations, walks, and buildings as shall most effectively develop all the natural beauties of the land under treatment, without conflicting (or rather in harmony) with the uses to which such lands may be devoted. Thus, in a private estate, home interests and conveniences must be kept steadily in view, and these must never be sacrificed for the production of a picturesque effect, however striking in itself. Again, in a public park the same law obtains, and any good design for such must show great amplitude of roadway, and broad, open spaces for the disport of the multitude. Upon farm-lands, which I hold to be not without the domain of landscape treatment, there must be due regard to the offices of rural economy, and the decorative features may be safely brought out in the shape of gateways, belts of protecting shrubbery, or scattered coppices upon the pasture-lands. Upon ground entirely level, the range of possible treatment is, of course, very much limited; but the true artist in landscape effects can do something even with this; no architect worthy of the name despairs if he is confined to four walls of even height; in his own art, if he loves it, he finds decorative resources.—D. G. Mitchell.

THE GARDEN AT MONTAGUE HOUSE.

WITHIN a stone's throw of the Houses of Parliament is one of the most tastefully-designed little gardens we know of—that of the Duke of Buccleuch, at Montague House. If well-laid out gardens are rare in the sweet, open country, where hill and dale and brook for ever teach their lessons, we need scarcely say they are still more so in our forests of slate and brick. Gloomy, pasty, shaded by miserable, badly-grown trees, and flowerless, from the privet and other weedy shrubs that occupy the ground, London gardens have rarely been distinguished for loveliness of any kind. Sometimes, indeed, a giant plane or some other hardy tree pushes up unobserved and gets its head into the light of day, and after a generation or so of fleeting human creatures has passed away, people look up and see an object as noble as any to be seen in the fairest forests. But then we have to thank the tree and not the garden for this.

The annexed plan sufficiently describes the garden to which we wish now to direct attention. As may be seen by looking at the section running from the terrace of the house to the small one overlooking the Thames Embankment at A, the ground rises slightly towards the river, and on the slight elevation are placed the few flower-beds used. The effect of these from the house is very good. The little lawn, as may be observed, has been kept nice and open, and in the small clumps between it and the walk are many of the most interesting and ornamental species and varieties of deciduous trees and shrubs. Among the older trees which have been carefully preserved, is a remarkable and beautiful specimen of the cut-leaved alder.

The portion of the garden which lies in front of the mansion was likewise laid out at the same time as that shown in our plan, and is also thoroughly well done. An innovation on what is commonly seen in such places is the isolation on the turf of herbaceous plants of fine habit; among these we were glad to see our somewhat scarce and fastidious friend *Bambusa Metake*



PLAN OF THE GARDENS AT MONTAGUE HOUSE, WHITEHALL

growing quite healthfully. This part of the garden is cut off from the street by a wall of young ivy, which is trained up both sides of a strong double galvanized wire trellis. It is the Irish Ivy, the best kind for the purpose.

Hedges, Walls, and Groups.—Hedges have this advantage over walls—they sift the rough wind into soft breezes rather than form eddies. When air in rapid motion hits a solid barrier, a large portion of it often leaps over it; its direction is changed; its force, at times, hardly broken; but when the same air hits a hedge, so much of it is sifted through or entangled in its innumerable meshes, that no eddy is formed. Hence the superiority of living to dead shelters. There is, however, this drawback to the hedge: it lives at the same table as the plants sheltered, and, unless placed well back, it not only stands between them and the rough wind, but likewise between them and their nourishing food. Another objection to hedges is their stiffness and formality amid the flowing grace of a beauteous landscape. They are as objectionable as dead straight walls. This evil may partly be remedied by choosing a line of curved beauty for the hedge. But a line of one breadth throughout, and forming a connected whole, is almost sure to be formal in appearance. A simple mode of breaking up this formality is to vary the thickness of the line; in others instead of a hedge, merely employ masses of shrubs, now swelling out boldly like the crest of a long wave, and again receding into a single file or so of shrubs or trees. A gracefully varied series of small groups is certainly the most artistic shelter.—F.

INSECTS, BIRDS, ETC.

THE COCKCHAFER.

(MELOLONTHA VULGARIS.)

EVERYBODY is acquainted with the cockchafer, therefore we need not describe it; but we have thought it advisable to give figures of it in its various stages. It will be seen from these that eggs of it laid this year do not reach the perfect stage until four years hence—that is in ordinary years; but in a series of very warm seasons or in warm climates it is said to reach maturity in three years; this is, however, exceptional or abnormal. Hence, according as there are few or many in any one year, the produce of that year, developed four years later, will be correspondingly scarce or abundant; but people naturally pay more attention to the years in which they are numerous than those in which they are few, and regard it as an insect returning in numbers every fourth year; so much so that in Germany the fourth year, in which it appears as a scourge, is known by the name of the “flying year”; and, indeed, the flying years and leap years are coincident in Saxony and some other places. It is on the Rhine, the Weser, in Switzerland, and further to the south, that they appear as a triennial plague.

The eggs are large, dirty-white, rather longer than thick, but otherwise almost globular, and are deposited near each other a few inches below the surface of the ground, which is generally selected of a loose, rich, vegetable earth. The larvæ change their skins several times and grow slowly. They feed upon the roots of any plants growing in their vicinity. In winter, or during a very dry season, they grub very deep down (as much as a yard or a yard and a half), and during the former fall into a state of torpidity; indeed, a severe winter is often prognosticated from the depth of their winter abode. There are differences of opinion as to the period of their life at which the grubs do most damage; some thinking that they are specially injurious during the first two years, when they have most to grow; others (with whom we agree) holding that their worst epoch is when they are perfect, or during the third year (the year before the “flying year”), because they are then older, larger, and require more nourishment. As, however, every year quantities of cockchafers become perfectly developed, larvæ of every size are always to be found in the earth. Preparatory to their change from the grub into the beetle, the full-grown ones go further down in the ground, and work themselves a hole, the earth round which becomes compacted into a kind of case or cell, and in it become chrysalids. This happens in July or August, but may be sometimes earlier and sometimes later. In September, October, and the following months, the

beetle may be found almost ready to appear next summer. If undisturbed, they will lie quietly in their cradles, awaiting the early spring, when they will work their way up, and on a fine warm May evening make their appearance through a circular hole in the ground. In the “flying year” one may see in Germany the ground in patches bored so as literally to resemble a sieve. This was very marked in 1864, in the neighbourhood of Halle, when they came in fearful multitudes.

It is not only in its larval state that this insect does mischief; in the perfect state it is also very injurious. The great swarms of 1864 just spoken of, in a week's time left the largest oaks standing leafless. The chafers come out about the beginning or middle of May on the Continent; here a few days later. When newly come out of the earth, they cluster themselves, upon fine warm evenings, on the tops of trees, and begin the work of devouring them. The oak is the favourite food of the perfect insect, and the trees are robbed of their leaves before the underwood; then come the horse-chestnuts, maples, plum trees, poplars, willows, &c. An observer, speaking of the ravages of the perfect insect in France, says, “The ground was almost covered in some parts with the dead bodies of cockchafers; and along one part of the railroad near Rouen, I noticed a wood nearly a mile long quite stripped of leaves by this pest. It is no exaggeration to state that many great towering Lombardy poplars, oaks, and birches were stripped as bare as if it had been a December instead of a fine June morning.” Only very few deciduous trees escape them; but the lime and acacia are said to be eschewed, or only eaten last. After all the trees in the place are despoiled, they then pass to herbaceous plants.

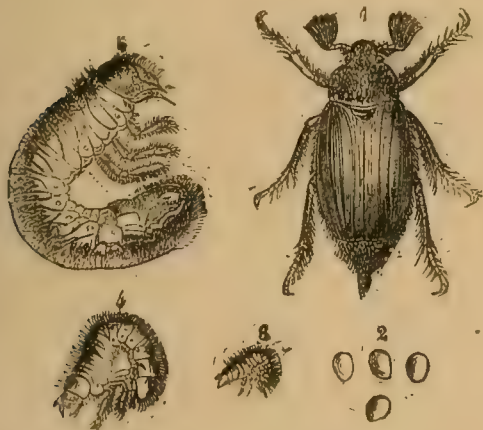
Very soon after the first appearance of the chafers they pair. M. Taschenberg found at the most only thirty developed eggs in the ovary, and this about eight days after the pairing of the insects had taken place, so that the statements of greater numbers being deposited are probably incorrect. From four to six weeks later, consequently some time in July, the grubs creep out of the egg. They keep much together during the first year, and usually cast their skins for the first time after their winter sleep.

In this country they never reach such vast numbers as they do on the Continent; and in Scotland they are sufficiently scarce to make any entomologist who is particular about his localities prize them as rarities.

As regards their destruction: the introduction of starlings into infested districts has been attended with much success. Mr. Booth, the well-known nurseryman of Hamburg, says:—“About ten years ago we suffered terribly from cockchafers; whole plantations of rhododendrons and conifers being completely destroyed by them. Against such devastation all artificial remedies were more or less powerless. We then adopted the starling plan. We caused 100 breeding cages to be made of the very simplest construction, and in the spring they were all occupied. In what colossal quantities the starlings devour these insects, you will find recorded in “Lang's Natural History.” As soon as the cockchafer comes, or is coming, out of the earth the starling is there; it picks the chafer clean out, tapping about on the ground with its beak until it finds it. Beside almost every hole from which a cockchafer has escaped, one might find the wings and whatever is uneatable, proof enough that the chafer's enjoyment of life had not been of long duration. We increased the number of cages, and have now from 175 to 200. We have since then had plenty of cockchafer years, but have not again experienced such injury from them; and in working the ground to a greater depth for them, the number of grubs found is comparatively few.”

The remedies which have been proposed and tried, with more or less success, are numberless. They almost all, however, bear upon the dislodging of the insect from a particular spot, rather than upon a more general mode of dealing with them. Perhaps the most efficacious is the collecting of the insects and their grubs. The collecting, however, must be continuous and not intermittent, and must be persisted in, not only in “flying years,” but as long as any are to be seen; and to have a fair chance of success it must be followed, not only by one, but by all neighbouring landholders at the same time. In order to obtain such simultaneous action, it has been proposed in Germany that an obligatory law should be passed compelling

united action, In the last flying year (1868) in Saxony, the authorities took this matter up as warmly as could be done, where no law relative to it existed, and they were seconded in the most earnest manner. In the beginning of the year Dr. Stadelmann, Secretary of the Central Agricultural Society of the province of Saxony, had distributed pamphlets in which he demonstrated by figures the immeasurable injury to the economy of mankind which grubs and cockchafers committed, and earnestly begged people to assist in the collection of the same, and, at the same time, sent to all the principal sugar manufactories, landed proprietors, magistrates of towns, &c., a printed form in which the details of collecting, purchasing, the method of destroying, and the uses to which the dead insects might be put, were all shown. Everyone seconded his wishes, and the lists show the enormous figures of 27,709 cwt. of insects destroyed by vapour, hot water, or whatever other remedy was most convenient to hand. Mixed with lime, they were used as manure. The report adds that allowance may be made for a much larger quantity destroyed, but not carefully recorded. A supplement to the above, from some official persons in the province, gives an additional number of 300 cwt., raising the number to 30,000 cwt. By repeated counting we know that a pound of cockchafers contains 530 insects; so that the above figures represent the destruction of an average of 1,590 millions of cockchafers. Allowing that the half of these, consequently 795 millions, were females, whilst in general females predominate in all insect species, and that each



1. Perfect Insect. 2. Eggs. 3. Grub in its First Year. 4. Grub in its Second Year. 5. Grub in its Third Year.

of these had deposited only ten eggs, certainly too low a figure when the favourable weather, &c., are taken into consideration, this universal war prevented the birth of 7,950 millions of grubs. If such a combined and active warfare were continued for another cycle or two of flying years, the cockchafer would become as rare as it has been common for thirty years and more. With regard to the above enormous prevalence of cockchafers in Saxony, it ought to be explained that it may in some measure be due to the extensive cultivation of beetroot, the nutritious and juicy roots of which are greatly liked by the grub.

To proceed with the directions for collecting. For the perfect insect it ought to take place either very early in the morning or on a very rough day, when the chafers are hanging loosely to the trees with drawn-up legs, and when a slight shake or blow with a club or stick will bring them easily to the ground. On warm, sunny days they are very lively from six o'clock in the morning, and on shaking the trees they fly away or rise from the ground in a manner which increases the difficulty and seriously lengthens the task of gathering them and putting them in sacks. Sacking spread out under the trees greatly assists in the speedy collecting, saving time, and saving the trouble of much stooping. The grubs, again, are collected in working the ground. Here the depth at which the insects are lying at the time must be kept in mind, in order that the plough may bring them to light; and when gathered together,

although the impression is correct that they cannot stand the sun they should under no circumstances of weather be deposited in heaps, even upon a firmly trodden path, as the undermost can easily bore their way through the ground again, and a part of the trouble taken will be thrown away. Spread flat upon firm ground with a hot sun shining upon them, they will soon be dead; if there is no sun, they had better be put in some wooden tub, or in a watering-pan.

We may mention another remedy which an experienced French gardener states that he has constantly employed with good results, and which under some circumstances may be worthy of trial. In June, where it is possible, he sows in the garden, particularly infested by cockchafers and where a large brood may be expected, rows of salad, which it is well known the grubs are fond of and by which they are enticed. In August these places are hoed in a hot sun, thus turning up the young grubs gathered round the salad, and, if left exposed, the sun soon kills them. This simple work is repeated several times on a very hot day, and, according to the assertion of our informant, during the four years which followed the "flying year" he had suffered nothing from the grubs.

Another remedy, based upon the baiting system, and of the same nature as we have already described in speaking of the mole-cricket, is described in the *Merseburger Official Journal*. It seems that it was tried in the "flying year" 1864, in a nursery belonging to the royal forestry at Bischofsrode, comprising one and a half acres of land, and surrounded by high trees, especially by oaks, completely ravished by cockchafers. Just before the flying time, seventeen different spots were artificially prepared as breeding places in the following manner:—Alongside the paths, and near the fences, from three to four square feet of ground were covered with fresh manure from five to six inches high, without mixture of straw or any other material; upon this was laid two or three inches of fresh earth, nicely smoothed down and raked. These spots were carefully watched during the flying season, but, owing to the absence of any bored holes, were left undisturbed until the middle of July, when it was discovered that in those spots exposed to the sun the manure was a living mass of grubs a quarter of an inch in length, whilst in those places more in the shade the numbers of eggs was inconceivable. These heaps were brought together, and collectively burnt outside the nursery. In regard to this, M. Taschenburg, to whom we are indebted for much of the information here given, justly observes that this method may be very well adapted for forestry, but will not do equally well for gardens or fields. As the cockchafer only lays its eggs upon a free open spot, it is very natural that all such places as were offered by this nursery surrounded by trees should be selected by the female chafers to deposit their eggs; but in an open field or well-cared-for garden, where every place is alike favourable, they would hardly have allowed themselves to be so entrapped.

As might be expected where the evil is so common and wide-spread as on the Continent, there has been no lack of quack remedies in the form of manures, powders, and lotions. To mention these might amuse but could not instruct our readers, therefore we abstain from recording them. A. M.

Rabbit-Proof Plants.—(See p. 136).—Mr. Simpson's experience has reduced the list of rabbit-proof plants to one, namely, the Rhododendron; and Mr. Ingram states (p. 88) that even Rhododendrons do not always escape. The truth appears to be, as stated by Mr. Ingram, that barking trees by rabbits in some places is an acquired propensity. Freshly planted trees and shrubs are certainly more attacked than older plants of the same kinds. Therefore, all fresh planted trees ought to be protected by wire netting, or some guard of the kind, for three or four years after planting; and the rabbits should be kept down as much as possible. When I recommended the Pampas grass as a desirable plant for planting in wildernesses and for home covers, my mind recurred to some grand old plants of it, which I had seen in Norfolk, to which no ordinary rabbits would do any harm. Most likely they had been protected when first planted, as it was the custom to mat this grass up when first introduced. It is, however, pretty hardy, and a grand subject for planting sparingly, either singly or in groups, on the banks of rivers, lakes, &c.; but it loves a good soil; therefore some pains ought to be taken with it at first.—E. HOBDAK, Ramsey Abbey.

THE IN-DOOR GARDEN.

FORCING LILACS.

Few hardy shrubs are more useful or easier to force than the different varieties of lilac. The Persian kinds are generally either grown in pots, or potted up for that purpose, and they form splendid objects for room, staircase, or conservatory decoration, when grown to a single stem like a standard rose, with a crown of any desired size drooping with its weight of floral beauty and sweetness. But if you want flowers for cutting in abundance, hie off into the woods or shrubberies, which ought to be full of charming lilacs. Examine the bushy plants, and count up the terminal buds, sound and plump, from a score to a hundred of them there may be all on one bush. Each of these is a bunch of bloom in embryo. You want it in flower by the end of January. Very well. Up with the plant with a good ball, and transfer it to a hot bed—warm leaves are a capital medium—of a temperature of from 60° to 70°. Plunge the ball overhead in these leaves, and keep it moderately moist. The heat must not exceed 70°—65° being a better temperature. The roots wonder greatly what has happened, and being somewhat impatient of so much warmth, send out scouts to report. Scarcely has this been done, when the buds burst their winter covering, and come forth to hail the spring in a genial mood, in a balmy air of from 55° to 65°.

Under such conditions, a glorious harvest of lilac blooms may be gathered every month or six weeks. I know of no plant that will yield so much blossom with so little trouble in so short a time as the lilac; and it is a universal favourite, and seems to bring more real spring with it than almost any other forced plant. When done with, remove the plants to some cool place under cover till the severe frosts are over; then plant them out from whence they came, and in about three years they may come in again to be forced. Or, better still perhaps, cut the big plants back, pull them to pieces, making of each separate bough a plant, and away to the wood or shrubbery, or rich reserve ground, with the little lilacs to grow into blooming plants once more; then begin again, and gather the lilacs from December to July.

D. T. F.

TORENIA ASIATICA.

This is one of the most graceful flowering plants ever introduced to our stoves. Trailing plants are usually attractive, from their freedom of habit, and consequent tendency to grace the interiors of the structures in which they are placed. When we get a free and spreading subject, and, as in this case, a profusion of beautiful bloom, it becomes worthy of more attention than is usually deserved by a tender plant. The *Torenia* is especially valuable as a basket plant; it is no less useful when allowed to fall in a rich spray of blooming shoots over the edge of the pots, so that, when placed on brackets or elevated shelves, the shoots may fall down far below the pot and so hide it. The culture of the *Torenia* is simple; its chief requirements are a free, rich, and light soil; the temperature of a stove or intermediate house. The soil may be equal parts of peat and light turfy loam, with a mixture of sand sufficient to keep the whole porous, and a small portion of well-decomposed manure. A temperature of 55° to 60° will be sufficiently high during the autumn and mid-winter months; it may be increased with advantage ten degrees, when the sun begins to warm up the houses in early spring. But perhaps the chief point, though a simple one, is the procuring of a regular supply of young plants, as by the aid of these the cool stove, conservatory, or greenhouse may be embellished with graceful free-flowering plants of *Torenia* during more than half the year. Short-jointed cuttings strike very readily in early spring; they should be inserted in peaty soil with plenty of sand, and plunged in a bottom heat of about 80°; in a month or so they will be struck, and should then be placed in five-inch pots. After this, with cleanliness, in a moist warm temperature they will go on as freely as could be desired. Some keep them growing nicely the first year, so that by the approach of winter they are well furnished plants in ten-inch pots, and then early in the following year shift them into twelve-inch or fifteen-inch pots, in which they begin to flower in early spring, forming fine large specimens, and continuing in perfection for months. Plants struck in the summer instead of in the spring, and kept at rest through the winter and until March in five-inch pots, are the best to succeed those that are brought in very early; they should be placed in their blooming pots or baskets about the end of July or beginning of August, and with a temperature of

about 65° will go on blooming through the autumn, and far into the winter months. As young plants grow and flower most freely, it is best to throw away the old ones, and strike a few pots of cuttings every year. The two-yearly course is not necessary in all cases, excepting where particularly large and fine specimens are desired. If cuttings are struck in very early spring, and four or five put in each ten-inch pot, and these on the upper shelf of an early vinery, or any other position near the glass in a warm house, kept clean and freely supplied with moisture, they will soon make fine plants, as they would if placed in baskets under like conditions. The shoots of plants grown on the top-shelf of a lean-to vinery, fall freely towards the light, and are, without any training, peculiarly suited for placing on brackets, &c. The plant may be readily trained over trellises, but is not so desirable in this form. A more natural and pleasing way is over a flat, spreading wire frame, or scrambling through a few twigs, or through the top of a young larch thickly set with branchlets; but the best way is, without any training at all, to allow the branches to fall loosely over the edge of the pots or baskets.

J. B.

Euphorbia Jacquiniflora a Grand Climber.—We have at the present time an example of this beautiful plant in full bloom, trained on the back wall of a plant-stove. It covers an area of 160 feet, and bears more flowers of finer quality than I ever grew before on twenty plants in pots. Some of the wreaths are quite three feet in length, and the stems on which they are borne are as thick as a man's thumb. As it is not desirable to have the whole of the blooms so large, where cut flowers are an object, we adopt the pinching system. This is done when the shoots are about half grown; every other shoot is topped, causing it to throw out a number of smaller shoots, which flower freely, and are much more convenient for cutting purposes; besides, the plants look much more handsome than when bearing all the bloom at the top. I observe, also, that the pinched shoots retain their foliage much better at the base of the plant than when they are allowed to run at will.—*G. J. G., in "Gardener."*

Tea-Scented Noisette Roses for the Camellia House.—In Maréchal Niel, Rêve d'Or, and Céline Forestier we seem to have acquired what may be called "Evergreen Tea-scented Noisette Roses." Rose-growers will understand the value of this foliage-retaining property on recollecting how the merits of Lamarque, Solfaterre, and Triomphe de Rennes are detracted from by reason of the branches of these kinds becoming bare and leafless at certain seasons. Let us, then, use these grand yellow evergreen roses for shading our frost-excluding yet temperate camellia houses. Let them run up the pillars, and, when reaching the glass, spread the branches out about a foot beneath the roof. Anyone who has seen the fine golden ovals ("roc's eggs all yolk," I think Mr. Hole once called them) hanging down from some branches, rambling just under the glass of the fine conservatory at The Poles, near Ware, could hardly doubt that the rose was there at home. Close to the glass, intercepting the sunlight from the shade-loving plants below, these roses seem to enjoy themselves thoroughly. The moist atmosphere required for the Camellias is just what the leaves like, and just what red spider, all roses' indoor enemy, does not like. Care must be taken to supply them at the root with all-important nourishment in the shape of solid and constant supplies of mild, cooling liquid manure, this to induce every year strong, vigorous second growth. It is from these vigorous shoots that the fine flowers are produced, and the problem to solve is how to get annually this fresh supply of flowering wood. In the rose house here we have produced strong breaks by bending down shoots after flowering, and nicking the bark just above a good eye; but in a closer, more moist and congenial atmosphere strong root action should, with summer pruning, produce plenty of flowering wood. In pruning, thin the old wood well out, leaving at almost full length thin, long, or sappy, succulent branches. In April and May a cloud of yellow clusters should hang from the roof, a fresh abundant wood growth succeeding the flowers, to be ripened off with the camellias.—*Geo. Paul, Cheshunt, in "Field."*

Near Relations.—Relations are very apt to hate each other just because they are too much alike. It is so frightful to be in an atmosphere of family idiosyncrasies; to see all the hereditary uncomeliness or infirmity of body, all the defects of speech, all the failings of temper, intensified by concentration, so that every fault of our own finds itself multiplied by reflections, like our images in a saloon lined with mirrors! Nature knows what she is about. The centrifugal principle which grows out of the antipathy of like to like is only the repetition in character of the arrangement we see expressed materially in certain seed-capsules, which burst and throw the seed to all points of the compass. A house is a large pod with a human germ or two in each of its cells or chambers; it opens by dehiscence of the front-door by-and-by, and projects one of its germs to Kansas, another to San Francisco, another to Chicago, and so on; and this that Smith may not be Smithed to death and Brown may not be Browned into a mad-house, but mix in with the world again and struggle back to average humanity.—*Oliver Wendell Holmes.*

THE CULTURE OF PITCHER PLANTS.

Among the wonders of the vegetable world these are not the least wonderful. When we speak of pitcher plants we do not mean the *Sarracenias*, which produce trumpet-like or cornucopia-formed leaves, nor the *Cypripediums*, which have pitcher-like flowers; but veritable pitcher plants, which produce perfect leaves, and then from the end of each, hanging by a long slender cord, a pitcher—some large enough to hold nearly a pint of water, and others scarcely larger than a child's finger. The use and economy of these pitchers it is difficult to define, and how the water gets into them is a puzzle to all. The mouth of each pitcher, it will be seen, is covered with a lid, in many cases fringed with hair-like appendages, through which it would be difficult for either rain or dew to pass. The pitchers again are not suspended by the mouth, but by the base, and therefore it is impossible that the water can run from the leaf to the pitcher, as is supposed by some. The true explanation appears to be that the plant has the power of secreting water so long as it is surrounded by an atmosphere the state of which is favourable to its growth, but in an arid atmosphere pitchers cease to be formed; and if the pitchers that are formed are regularly day by day deprived of their water they soon become unhealthy and perish.

Travellers in the tropical countries of which these plants are natives are glad to plunge into the swamps to slake their thirst with the water which they find in these pitchers; and it is said that some birds and small animals also resort to the pitcher plant for a supply. So far as we have tasted it, the water is perfectly pure and sweet, and must be welcome to the wayworn traveller under a torrid sun. For the opportunity of figuring this superb specimen of *Nepenthes Rafflesiana* we are indebted to Mr. Speed, the superintendent of the Duke of Devonshire's noble gardens at Chatsworth. There, in the Amherstia house, which is necessarily maintained in a moist tropical temperature, the pitcher plants are grown perhaps better than in any other place in England, many of the plants forming a dense thicket of branches 5 to 15 feet high. We are also indebted to Mr. Speed for the following account of his method of cultivation. He says: One cannot help regretting that this singular and very interesting tribe of plants is not more generally found in select collections; but I suppose it arises from some fancied difficulty in their cultivation, and the idea that they require a high temperature, whereas any person who has the convenience for growing pines or orchids may also grow pitcher plants.

The *Nepenthes*, like many more rare and valuable plants, have been killed with kindness, most people imagining that they must be screened from every ray of sunshine, and also from direct light. Keep a plant in a close, moist atmosphere, with regular shading from every gleam of sunshine, and you may get luxuriant growth, but no pitchers; inure it regularly to full light from this time forward, shading only for a short time in the hottest part of the day, and then with a very slight shade, and almost every leaf the plant makes will produce a pitcher. This, I think, is strong proof of the necessity for direct light to these plants. Last year I tried an experiment with some plants of *N. phyllanthophora*, which was rather shy in bearing pitchers in the Amherstia house, where it was much shaded; but in a large roomy house, with no shading, it grew and produced pitchers very freely—so much so, that it was by far the best plant I had of that variety. The plant of *N. Rafflesiana*, engraved, was grown in the house devoted to *Vandas*, and was kept close to the glass.

To cultivate the pitcher plants successfully, certain rules are necessary, and the first and main one is that they must never know the want of water; then the temperature must be sufficient, and the atmosphere during the growing season must be moist. If once a plant is allowed to flag for want of water, it will take a long time to resuscitate it. The pitcher plants will grow either in pots or hanging baskets, or they may be planted out in beds or boxes specially prepared for them. Here we grow them in different ways, but I think the larger-pitched kinds, such as *N. Rafflesiana*, *Hookeriana*, and some of the hybrid varieties which have recently been introduced, are most effective when grown in hanging baskets or handsome vases. Of course, with suspended baskets the greatest watchfulness is required in watering. For choice I prefer pots, but these should be of an ornamental character, or otherwise they should be placed in vases when the pitchers are in perfection.

Given a healthy young plant in a four or six inch pot in spring, I take some rough fibrous peat and break it into pieces about the size of eggs; then sufficient sphagnum (which has been previously scalded), some clean broken crocks and silver sand added to make a light generous mixture. The pots are best drained by placing an inverted small pot over the hole at the bottom and then filling in around it with broken potsherds, so that the pot shall be about one-third full, covering the whole securely with sphagnum; then fill in your compost, which it is scarcely necessary to remark should be made warm before using; place the plant in the centre and press the compost closely, but not firmly, around it. The collar of the plant at the time of potting should be two inches below the rim of the pot, so as to admit of top dressings, which are of great importance in the growth of the plants. The best compost for this purpose is cow manure rubbed quite fine, and some half-decomposed leaf mould. Give a dressing a quarter of an inch thick when the plants seem to require assistance, and then cover over with live sphagnum, which imparts a nice finish to the plant.

This is a capital time to commence the cultivation of *Nepenthes*, for, started away in the early spring, and thoroughly inured to light and air, they will by July and August be richly fur-

nished with finely-coloured pitchers. Water must be given regularly in sufficient quantity, of course taking care that it is of the right temperature. Cold water would be fatal at once. Should the sphagnum top-dressing become shabby, replace it with fresh, and add the top-dressing as frequently as the plants seem to require it. The plants once established, the syringe may be used freely night and morning; water copiously at the roots, and in bright weather it will be found a capital practice to sprinkle the paths, borders, and other spaces frequently throughout the day—in fact, maintain a moist but not a close atmosphere.

Plants that have been much shaded must not be exposed to bright light suddenly, but they must be inured to it gradually, until at last a piece of thin Nottingham net, to break the fiercest rays of the sun, will be sufficient shading for them at any season. I commenced this treatment twelve months ago, and I have been rewarded with double the number of pitchers ever seen upon plants of the same size before. *N. Hookeriana* having given me fifty well-developed pitchers, and *N. Rafflesiana* thirty, while of the smaller kinds I have had pitchers in thousands. I leave these facts to speak for themselves. I have said nothing as yet of temperature; but a minimum of 65° by night, rising to 85° or 90° by day with the sun heat, will be the right thing.



A Pitcher Plant grown at Chatsworth in 1870
(from a photograph).

If the plants can stand over a tank of warm water or evaporating troughs, so as to get a gentle, moist bottom heat, it will be very suitable for them; indeed, a friend informs me that one of the best plants he ever saw had thrown its roots into the evaporating trough of a hot-water pipe, where the temperature must frequently have been as high as 90°, and yet the root luxuriated, being several feet long, and a complete wig of fibres.—*Field*.

THE LILY OF THE VALLEY IN POTS.

ALPHONSE KARR says the flowers of the lily of the valley are like pearls in shape and lustre, but like pearls perfumed. Considering that it is a plant wild in abundance in some parts of this country, those who pay a high price for it every year for forcing may well liken it to such precious gems for an additional reason. And the plants, too, are often thrown away as useless after having been forced. We have to describe a plan of culture much better and cheaper than that in common use, and certain to produce finer plants of lily of the valley than are often seen even at spring flower shows.

To begin with, it would be as well to secure "imported plants," as by doing so we insure a bloom during the current spring, and commence at the same time to accustom the plants to the treatment which must be annually pursued. However, it is by no means necessary to buy imported plants, as those potted up from the plantation in the open ground will do; but they must get a year's residence in pots before flowering well. The forcing of this lily is so very simple that we need not describe it here. In a warm vinery, in a melon or cucumber frame, on a shelf in a forcing-house, or in any like position, it comes into bloom with facility, provided always that the plants are furnished with flower buds. It is the want of these that we have to guard against. Given plants well furnished with prominent roundish buds, bringing them into bloom in a heated structure is a thing that anybody can perform; but no skill will suffice to make presentable plants without these well-filled "crowns." Now the secret of getting these desirable buds consists in allowing the plants to make a perfect and healthy growth after flowering. By causing them to do that, we secure finer plants than are imported for the especial purpose of forcing. Judging from the plants seen at shows, and in many gardens, they are not kept from year to year. The finest plants we have ever seen are now in bloom, and have been regularly forced during the past five years. Once out of flower, instead of being thrown aside in some out-of-the-way place in the open air, they are placed in a comfortable frame or on the shelves of a cool-house near the glass—anywhere, in fact, where they may have perfect protection, and can continue their growth without the slightest check. Should anyone think that, from being hardy, they may be placed in the open air with impunity before the frosts and all danger are gone, and act upon it, a decided mistake will be committed. No matter how hardy a plant may be, once excited in a high temperature, in winter or spring, they must be retained therein till genial weather arrives, or they will be destroyed or much injured. It is just like what occurs with the hyacinth, and also with other forced flowers. Generally they are exposed to cold, and neglected or badly treated, and therefore flower very poorly and weakly the year afterwards, so much so that people usually throw them away altogether as useless; whereas, if placed in cold frames, and permitted to make their growth and die down un mutilated, they would prove quite as good as at first. In the case of the lily of the valley a much better result is gained by this management than from the expensive and specially-prepared crowns. If brought into bloom very early, say soon after Christmas, the plants should be allowed to grow away in any place that may be spared for three months. Those that are in bloom now, or going out of it, should be kept in such a position as that before-named for about two months to come, when they may be placed in the open air, plunged in coal ashes in some sunny spot, and there allowed to ripen and gradually die down to rest. Once that stage has arrived, it matters little where they are; but the most convenient plan will be to leave them plunged in the coal ashes, and, as batches are wanted from time to time to introduce to the forcing house, take them up, clean the pots, refresh their surfaces, and place them in the desired position. The chief point once settled, there remains the potting and little else. Should the plants

when in flower be closely packed in rather small pots, as is usually the case, it will be better to place them in pots a size larger, not mutilating the roots more than may be necessary for efficient potting. And when these plants in their turn fill the larger pots so that re-potting seems again desirable, each specimen may be cut in two and the stock increased. It is not desirable to grow them in pots more than eight inches across or thereabouts, unless in special cases, where a wide pan or pot is desired. Another advantage of this mode of culture is, that the plants grown after it are furnished with abundance of healthy large leaves expanding with or before the flowers. The plants usually seen are but sparsely furnished with leaves while the flowers are out. Thus, if any one thing be clear it is that buying lily of the valley roots from Continental gardens is unnecessary. If, beginning with roots potted from the open garden, we should select the plumpest and most likely crowns, try and get a few flowers from them during their first spring in pots, and in any case treat them so as to secure a perfect bloom the following season. Every second year would suffice for the re-potting or dividing of the plants. J. B.

Succulents for Cool Greenhouse.—I shall be glad if you will name such succulent plants as I may grow in a cool greenhouse?—ALPHA.—[Mr. Croucher, who is very well acquainted with these plants, obliges us with the following list, viz. :—

<i>Aloe picta</i>	<i>Echinopsis oxygona</i>	<i>Kleinia tomentosa</i>
" <i>variegata</i>	" <i>Zuccariniana</i>	<i>Mammillaria stellaris</i>
" <i>serrulata</i>	" <i>tubiflora</i>	" <i>decipiens</i>
" <i>prolifera</i>	" <i>Schellhasii</i>	" <i>discolor</i>
<i>Agave</i> , any of them	<i>Echinocactus californicus</i>	" <i>denia</i>
<i>Anacampseros arachno-</i>	" <i>Scopa</i>	" <i>Parkinsonii</i>
<i>ides</i>	<i>Echinocereus pectinatus</i>	" <i>auriceps</i>
<i>A. rotundifolia</i>	" <i>Labouretii</i>	" <i>spinosissima</i>
<i>Cereus strigosus</i>	" <i>texensis</i>	" <i>gracilis</i>
" <i>cinerascens</i>	" <i>viridiflorus</i>	<i>Opuntia humilis</i>
" <i>repens</i>	<i>Gasteria Bowleana</i>	" <i>missouriensis</i>
" <i>Bockii</i>	" <i>maculata</i>	" <i>Clavarioides</i>
<i>Cotyledon coruscans</i>	" <i>verrucosa</i>	" <i>cristata</i>
" <i>pulverulenta</i>	" <i>glabra</i>	" <i>vulgaris</i>
<i>C. a-scula lactea</i>	" <i>undata</i>	" <i>microdasys</i>
" <i>cordata</i>	" <i>albicans</i>	" <i>cylindrica</i>
" <i>perfoliata</i>	<i>Haworthia margaritifera</i>	<i>Fachyphytum bracteosum</i>
" <i>ericoides</i>	" <i>fasciata</i>	" <i>roseum</i>
<i>Echeveria fulgens</i>	" <i>attenuata</i>	<i>Rochea falcata</i>
" <i>metallica</i>	" <i>tessellata</i>	<i>Sempervivum holochry-</i>
" <i>glaucia</i>	" <i>spiralis</i>	<i>sum</i>
" <i>retusa</i>	" <i>radula</i>	" <i>spathulifolium</i>
<i>Echinopsis multiplex</i>	<i>Kleinia fulgens</i>	" <i>aureum</i>
" <i>Eyriesii</i>	" <i>repens</i>	" <i>Haworthii</i>

THE ARBORETUM.

ON TREE MANAGEMENT.

ANYONE observing timber trees in woods and in hedgerows as he passes by rail through any fifty miles of England can hardly fail to be struck with the absence of anything like method in timber management. He may find some exceptions to this general rule in some few woods which are of sufficient magnitude to return a regular yearly income. But, even in these cases, the knowledge of the subject is almost invariably inferior to that displayed in the culture of land for ordinary purposes. Two distinct systems are followed, both equally injurious to the general good: in one district everything is cut down; in another, everything is left to stand. Here the trees are injured by indiscriminate crowding, good, bad, and indifferent, in which case the good are the sufferers. On the other hand, whole districts are dismantled of their fairest ornaments, and neighbouring crops are left to starve from the destruction of their natural shelter. In both instances, the largest profit which can be derived from land by the judicious admixture of agricultural and timber crops is lost to the individual proprietor, and, of course, through him lost also to the country.

Farming and timber-growing are considered by some to be antagonistic interests; but, if common sense were allowed to arbitrate between them, the two would be closely and firmly allied friends. This injurious war of interests is clearly apparent in the two systems to which we have already alluded. In one district, some large landed proprietor, devoted to farming only, cuts down every stick on his estate. The tree that is venerable from age, but useless as property, and the straight growing sapling, which is yearly bringing the highest value the land is capable of, share the same fate. A clean sweep is

made—a cultivated desert created. Angry indeed is the neighbouring lord, who expresses himself not in words, but in trees. In this case, the noblest specimens stand inconspicuous in a crowd of the mean and the worthless. And thus the systems act and react on each other, converting our pleasant England into a starved waste or a badly-regulated wilderness. "We want more light." A new system must be commenced, by which the annual value accruing from timber may be secured to individual proprietors as income, and through them to the country.

The value of an estate well covered with timber is worth more by many thousands of pounds than one destitute, or nearly so, of trees; yet trees, for the most part, are allowed to grow haphazard. Though loved for their beauty, they are treated with supreme neglect. I venture to assert—and I could furnish half-a-dozen examples of what I say in any one of the midland counties—that the mismanagement, or rather, non-management, of timber on the lands of many large and rich landed proprietors is such, that they would not dare to have their cereals or other crops cultivated in the same style. Such neglect would excite public attention.

The cause of this state of things is not far to seek. I have alluded to the high farming crotchet which sacrifices everything to agricultural produce. This is, however, not the only cause. Timber is nobody's business. Sometimes it is looked after by the proprietor himself, or it is left to a land agent, a bailiff, or a tenant. Of these, the first has too much on his hands to do the work; the second considers agriculture to be the real interest concerned; the third at present is a foe avowed and deadly. All three are generally indifferent foresters. What care they for the eulogiums of Evelyn, Loudon, or Brown?

Another fruitful source of evil is, that timber is generally regarded as so much ready money, not as a regular income. It is felled on emergencies, not at stated periods or on a systematic plan. No regular succession of trees is kept up. Some landed proprietor gets into difficulties—there is a big cutting down. His successor is well-to-do, and loves trees—there is a big planting. How often do we find trees submitted to the axe at their most growing age, whilst on a neighbouring estate, the proprietor will preserve elms that, being past their prime, are yearly shattered by the winds?

Another result of the want of a recognised system is, that in all other businesses there is capital to fall back upon. No sort of property can be managed well unless the requisite amount of labour is expended upon it at the right time. There must be something beyond the profit of the business itself, or profit itself will be the loser. This principle is, however, not applied to trees.

We must not omit the evil that results from a want of uniformity in the views which govern this kind of property. There are certain rotations of crops both in horticulture and in agriculture, and tenants, who succeed each other go on recognised principles, and seldom entertain theories widely different from each other. Their profession is land management, which is an understood thing; but, with timber the work is done all manner of ways, and the least profit which can be produced from the timber-growing soil may fairly be expected.

WALTER JONES WHITMORE.

EFFECT OF FROST ON CONIFERS.

It is known to those who have had much to do with the planting of the less hardy conifers, that many of them can be got up to form fine specimens, if planted on sloping ground, avoiding either very high or very low situations. A west or northern aspect will be found most suitable, while east or south aspects should be avoided, because of the liability that the tender shoots may be killed through being suddenly thawed by the sun's rays striking them while partially frozen. Many years ago I remember visiting an extensive provincial nursery, where large quantities of silver firs were grown beneath the shade of large fruit trees. The silver firs were remarkable for their fine leading shoots and general health. In a neighbouring open break in the same nursery there were many silver firs of the same age to be seen with scarcely a leading shoot, stunted and unhealthy, and all but unsaleable. The difference arose from the protection of the fruit trees. This is no exception to a general rule; for, as is well known to nurserymen and foresters, the silver fir is liable to be damaged by late spring and

summer frosts till it reaches the height of two, three, or four feet; after which, like many other conifers, it proves to be quite hardy, as many fine old trees scattered over the country amply prove. I believe the same results may justly be anticipated from some, if not many, of the spring-tender conifers which have of late years been so widely spread over the country, some succeeding in less, others in more favoured localities. No doubt there are numerous parts where it would be only labour lost to attempt their cultivation; but where they are likely to succeed, any trouble taken in nursing them is far more than compensated by the possession of well-grown examples of such interesting and beautiful trees. Anyone now visiting the pinetum at Castle Kennedy would have an opportunity of seeing the effects of the late spring and early summer frosts on whole avenues, as well as on numerous specimens, planted throughout the pinetum, of what are generally considered spring-tender conifers, the plants varying from four to upwards of thirty-five feet in height. The young growths on the lower branches have generally been injured to the height of from two to upwards of three feet; while those on the upper branches have, with few exceptions, escaped uninjured. The following species have suffered in this way: *Picea* Pindrow, *P. Webbiana*, *P. cilicia*, *P. cephalonica*, *Abies* Morinda, *A. Brunoniana*, &c. The *Picea Webbiana* avenue, perhaps better than any of the others, illustrates what I am desirous to explain, viz., the probability that many of the spring-tender conifers, if slightly protected for few years after being planted, will ultimately prove hardy in favourable situations. This avenue stands in part on level, and in part on hanging ground. Those on the hanging ground have suffered the least—very little indeed, except where the morning sun strikes them, and then very slightly, and only where the trees are tall, about half-way up from the ground, from their being suddenly thawed by the rays of the morning sun alighting on them. Those growing on the level ground have the young shoots only injured to the height of about three feet on the east and south side where partially exposed, and to the height of barely two feet all round the shaded sides. The trees in this avenue are from about fifteen to twenty-seven feet in height. The effect of the frost line is here so apparent, that it strikes the eye and attracts the attention of the most casual observer. Above the frost line the trees are in perfect health, many of them carrying a few of their lovely purple cones, and making leading shoots of upwards of two feet in length. It is well known that on still, calm, frosty nights, in low-lying or level situations, the cold air becomes the heaviest, and settles down above the surface of the earth, and probably, if properly tested, it would be found to carry a larger amount of aqueous vapour than does the stratum of atmospheric air a little above it; otherwise, I can hardly suppose that the difference in temperature would be sufficient to kill the young growths to the height of two feet or three feet above the surface of the ground, while those a little higher all but escaped uninjured.—*Archibald Foeler, Castle Kennedy, in "Florist and Pomologist."*

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Trees, Shrubs, &c., for the Sea Coast.—What are the best shrubs, flowers, trees, &c., to plant near the seaside?—*OMEGA*.—*Tamarix*, *Pinus austriaca*, *P. pinaster*, *Cupressus macrocarpa*, *Ivy* in great variety, *Eucalyptus*, *Laurestinus*, *Myrtles*, *Escallonia*, *Rosemary*, *Arbutus*, *Phillyrea*, *Baccharis halimifolia*, *Lycium barbarum*. As to flowers, nearly all hardy herbaceous and alpine plants will thrive. All the varieties of the carnation, pinks, &c., are particularly happy near the sea.]

New England Elms.—Nobody knows New England who is not on terms of intimacy with one of its elms. The elm comes nearer to having a soul than any other vegetable creature among us. It loves man as man loves it. It is modest and patient. It has a small flake of a seed which blows in everywhere and makes arrangements for coming up by-and-by. So, in spring, one finds a crop of baby-elms among his carrots and parsnips, very weak and small compared with those succulent vegetables. The baby-elms die, most of them, slain, unrecognized or unheeded, by hand or hoe, as meekly as Herod's innocents. One of them gets overlooked, perhaps, until it has established a kind of right to stay. Three generations of carrot and parsnip-consumers have passed away, yourself among them, and now let your great-grandson look for the baby-elm. Twenty-two feet of clean girth, three hundred and sixty feet in the line that bounds its leafy circle, it covers the boy with such a canopy as neither glossy-leaved oak nor insect-haunted linden ever lifted into the summer skies.—*Elsie Fenner.*

The Oaks of Europe. According to a recent return, oak timber is rapidly disappearing from Europe. In France, since 1669, no oak has been felled until full grown, that is, until within thirty years of its probable decay. The consumption of oak timber in France has doubled during the last fifty years. In 1866, £170,000,000 worth was consumed, of which £500,000 worth was imported, against £5,000,000 worth consumed in 1820, of which £100,000 worth was imported. France requires every year 15,000,000 cubic feet of oak timber for wine casks, 600,000 for her fleet, 150,000 for railway cars, and 750,000 for building purposes. In 1826

the total value of imported staves was £800,000; to-day the total value is £5,000,000. A similar increase of the importation of oak for the next thirty years would probably double the price. France, after losing Alsace and Lorraine, contains 135,000,000 acres, of which 20,000,000 are covered with forest. In Norway, the Administration of Forests declares that it is necessary to stop the cutting down of timber. The same enormous consumption is going on all over Europe. Holland and Belgium are nearly denuded of timber, and are large importers. North Germany is rich in forest, but within half a century has begun to cut down young trees. Austria has sold her forests at auction since railways have been introduced. Spain and Greece are almost woodless.

Extraordinary Root of a Tree.—An instance having just come under my notice of the length to which the root of a tree will grow under peculiar circumstances, it appears to me to deserve being recorded, so far exceeding as it does the generally supposed limit, viz., the height of its parent tree. The circumstances are these:—A long stone wall runs by the side of a road near here, behind which an old hedge ran parallel with it. The owner decided on stocking up the hedge, and while doing this the man employed found a root growing between that and the wall—sometimes close to the surface, at others a foot or so in depth. It had started from a Worcestershire elm in the hedge-row, and for some distance he kept hacking it to pieces as he proceeded, till at length, being struck with the strange distance it was running, he informed his master of it, who desired him to get up the remainder entire, which he did, and the piece measured 75 feet in length (which I now possess). The rest of the distance it had run, when measured afterwards, amounted to 198 feet, making up 273 feet altogether. I went myself to inspect the course of it, and found that, could the whole have been measured, it would have amounted to considerably more; for, after it had proceeded as described, it had come to another tree, which, growing up against the wall, had arrested its course, and forced it to turn beneath the wall, and so under the road, which prevented it being measured any further. The diameter of the root throughout its whole course was about one and a half inch, causing it to have the appearance of a leaden pipe. At the extremity where it was lost it had tapered to about one inch, and it had scarcely a rootlet or fibre growing from it all the way. The tree from which it grew is not more than forty feet high, and one and a half foot in diameter; and the wall which (with the hedge) had confined it to its course, may have been built about fifty years.—*J. Brooke, Houghton Hall, Shifnal, in "Field."*

Sermons in Trees.—I have brought down this slice of hemlock to show you. Tree blew down in my woods (that were) in 1852. Twelve feet and a half round, fair girth; nine feet, where I got my section, higher up. This is a wedge, going to the centre, of the general shape of a slice of apple-pie in a large and not opulent family. Length, about eighteen inches. I have studied the growth of this tree by its rings, and it is curious. Three hundred and forty-two rings. Started, therefore, about 1510. The thickness of the rings tells the rate at which it grew. For five or six years the rate was slow, then rapid for twenty years. A little before the year 1550 it began to grow very slowly, and so continued for about seventy years. In 1620 it took a new start and grew fast until 1714, then for the most part slowly until 1786, when it started again and grew pretty well and uniformly until within the last dozen years, when it seems to have got on sluggishly. Look here. Here are some human lives laid down against the periods of its growths to which they corresponded. This is Shakespeare's: The tree was seven inches in diameter when he was born; ten inches when he died. A little less than ten inches when Milton was born; seventeen when he died. Then comes a long interval, and this thread marks out Johnson's life, during which the tree increased from twenty-two to twenty-nine inches in diameter. Here is the span of Napoleon's career; the tree doesn't seem to have minded it. I never saw the man yet who was not startled at looking on this section. I have seen many wooden preachers—never one like this. How much more striking would be the calendar counted on the rings of one of those awful trees which were standing when Christ was on earth, and where that brief mortal life is chronicled with the stolid apathy of vegetable being, which remembers all human history as a thing of yesterday in its own dateless existence!—*The Autocrat of the Breakfast Table.*

Trees for Seaside Towns.—We are about forming a committee for the purpose of planting trees along our otherwise beautiful streets, promenade in front of the sea, and in other parts of our town. I should feel exceedingly obliged if you will kindly let me know what trees you consider the best for us. We can provide good soil for planting. Very high winds prevail at times; many of the places would be exposed, others sheltered and warm. There are roses and other flowers out in some of the gardens now.—*T. W., Llandudno.*—[Mr. Barron, of Sketty, near Swansea, who has much experience of tree growth on the coast of Wales says that "among the best trees for street planting are elms; and, indeed, for avenues and promenades generally there is no tree to be compared with the elm. There are the different varieties of elms, some with light variegated leaves, others again having purple foliage, some light green, with small leaves; others with large handsome foliage, and almost every variety a sure and steadfast grower in any situation. It will stand exposure better than most trees, because its

roots take strong hold of the ground, and it will grow in our smoky streets, and make headway on our sea-shores. No doubt there are many other varieties of trees suitable, to some extent, for avenues, &c., such as the lime and horse-chestnut, &c.; and where exposure is not so great, the *Ailantus glandulosa* is a very handsome tree, with large and beautiful tropical-like foliage. *Acer Negundo variegatum* is another lovely tree, and where sheltered it grows rapidly. *Populus alba* is the best variety of poplar for street planting, or ornamental planting in general, because of its handsome foliage, and it grows as freely as the Black Italian. Curiously enough, the plane (*P. orientalis*) does not succeed well in Wales; and London is almost its special home. The great thing is to have "seasoned" trees, making elms the mainstay, and balancing and selecting the varieties as the work proceeds. It may be added, that whatever is undertaken in the way of town planting, whether by the sea or not, should be done well.—*January 1, 1871.*"]

GARDEN STRUCTURES.

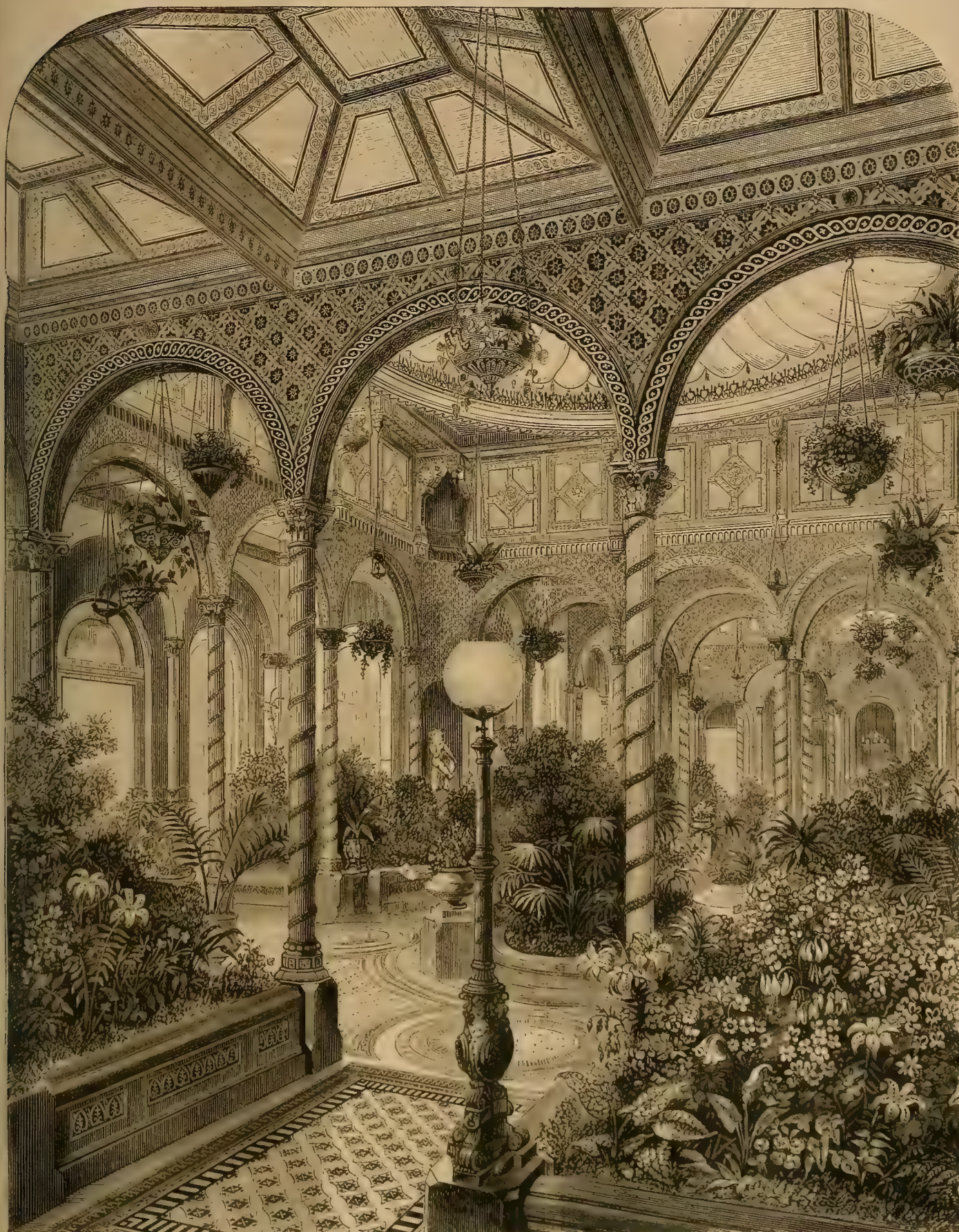
MR. BESSEMER'S CONSERVATORY.

THE most remarkable conservatory erected of late near London is that in Mr. Bessemer's garden at Denmark Hill, Camberwell. It is not remarkable for size, but unrivalled for the elegance of design and beauty of the materials used in its construction.

But few iron structures have been hitherto attempted in which the architectural effect has not been more or less marred by the prominence given to large bolted flanges, tie rods, cross braces, or other devices, which, however necessary in a structural point of view, certainly do not add to the beauty of the building. In the design we now lay before our readers, however, there are no signs visible by means of which the whole is put together, not one flange, tie, or bolt of any description being shown in the whole of the building, externally or internally. The castings have all been executed with a degree of care and beauty of finish rarely seen in any large work. Many of the perforated castings employed in this structure are of extreme delicacy and beauty of finish. Among the heaviest are several from three to four tons in weight each, while there are thousands of others not exceeding four to eight ounces.

The conservatory has two floors or crypts, extending entirely beneath it. The lower one receives a supply of fresh air through a perforated stone screen facing the grounds, and forms the cold air chamber. Above this is a second space of equal area, divided from the lower one by a stone floor. The upper space contains a coil of ten pipes of four inches in diameter, the coil being about a hundred feet in circumference, and giving over 1,000 square feet of heating surface. The ceiling of this upper or hot-air chamber is covered by five-inch York flags, laid on rolled iron beams. On the upper surface of these flags the tessellated floor of the conservatory is laid. Ten large slide valves (all connected by a rack and pinion) admit cold air from the chamber below at equidistant parts to the surface of the hot-water pipes. After passing over and among these pipes, the air enters the conservatory through numerous perforated brass panels in such quantities as may be desired. Massive brick piers pass through these floors, and support the sixteen columns on which the upper part of the structure rests.

The conservatory is formed with a large square central area surrounded by a dome. On each side of the square there are bays or transepts, the entrance to which is beneath three arches, rising to a height of fourteen feet, and resting on columns, of which there are sixteen. The dome is formed of rolled iron ribs, meeting together in the centre and united to a large pendant perforated boss; the ribs (forty in number) are separated by extremely light iron ornamental casting, forming a framework which is glazed with stained glass, which encircles the dome in three distinct bands; exterior to this stained glass is a plate-glass covering, each plate being curved to the true shape of the dome; the plates are each seven feet long, the joints so arranged as to be rendered invisible behind the stained glass panels; the glass is ground on both sides, and embossed in a bold trellis pattern, giving to the whole a most beautiful effect. The employment of ground glass for the dome gives it an apparent solidity when viewed externally from the terrace that surrounds the building, which much increases its architectural beauty. The dome, which is forty feet in height, rests on a series of bold trusses, springing from the sills of the upper windows, and forming a division between them; these trusses are perforated on all sides, and are highly ornamented. The ceiling of the central part surrounding the dome is formed into deep soffits, each filled with elaborately designed perforated gilt panels, with an azure background formed by the flat iron roof above them. In the upper part of the central space there are six windows on each side, each one composed of a sheet of ground plate glass, engraved and painted



CONSERVATORY AT DENMARK HILL, CAMBERWELL.

in pale tints. These windows all open by an ingenious contrivance worked by an attendant from the cold-air chamber below, which is sufficiently lofty to admit of ready access.

The iron columns have a spiral groove running around them, in which small spheres are fitted by stringing them on a copper wire giving an effect which simple casting could never accomplish; these spheres are all gilt, and give to the fresh grey tint of the columns a great relief; the capitals are all built up with separate acanthus leaves of very light and elegant form, and are also gilt.

The arches, which rest on these columns, are all double castings, placed back to back, and are most exquisitely moulded in a perforated pattern, through which the light falls in ever-varying clusters of rays as one walks about the conservatory. There are thousands of rosettes on these perforated screens, all cast separately, and screwed in place, so as to get a bold relief, well undercut, an effect which founding in mass could not give.

The external walls are pierced with large circular-headed windows, glazed with a single sheet of plate-glass, with a small Greek border etched around the edge, and narrow margins of coloured ground glass of a soft grey tint etched in patterns. The walls are entirely encased with polished marble, in pieces so large as to show no joints. A richly-moulded architrave of red Devonshire marble surrounds each window and door, and relieves by its warm colour the spaces between the windows, which are of dark Bardillo marble, against which are placed three-quarter columns of white veined Sicilian marble. The shafts of all twenty-four columns and the angle pilasters are ten feet in length, each in a single piece, and surmounted by capitals carved in white Carrara marble. Above these is a rich entablature of veined Sicilian marble running over the Bardillo, which is ornamented over each window and door, with a rich incised pattern of Arabesque scroll work gilt in all the sunk part. One bay or transept forms the end of the adjoining drawing-room, having two glass doors. The right-hand bay abuts on a billiard-room, having a central door and two large windows looking into it; and opposite to this are two similar windows, and a central door leading on to a raised terrace, ninety feet in length, paved with squares of black and white marble, and extending all along the garden front of the house. The fourth bay is also divided by three equal arches, in each of which there are mirrors of fourteen feet high by seven feet wide, passing down below the floor line, and thus continuing the pattern of the pavement. The mirrors are silvered by a deposit of pure silver, and are not easily injured like those coated with tin-foil and mercury. They are kept warm at the back by a hot-air chamber, which prevents any deposition of moisture on them; they thus, at all times, reflect clearly the whole interior of the building, giving it apparently double its real size. Around the sides of the building are raised spaces for the flowers, having a sort of dwarf screen of polished dove-coloured marble, in which are numerous gilt brass panels for the supply of warm air from the chamber below. In the central space beneath the dome is a large basin, richly moulded in beautifully veined Bardillo marble, with four pedestals of the same material at the angles, which serve to support vases of white marble, containing some numerous plants. Eight similar marble pedestals are also formed in the dove marble screen before named, on which are some choice specimens of Majolica vases containing rare plants. Pendant from the ceiling are six Majolica flower-baskets containing choice ferns and other drooping foliage. There are also eight suspended Roman lamps in bronze, with lotus leaves forming clusters of flowers in gas jets, and also four other suspended Roman lamps of classical design, giving in all eighty gas burners, by means of which the whole building may at night be brilliantly illuminated; there are also near the drawing-room door a pair of exquisitely chased bronzed candelabra, which on ordinary occasions give sufficient light for walking in the evening. The floor is composed of encaustic tiles and tessera tastefully arranged in panels of quiet colours (so as not to interfere with the brilliant colours of the flowers). In this design are embodied mosaics representing spring, autumn, summer, and winter, and a fifth near the entrance represents Old Time with the date of the erection of the building on a tablet beneath him; at each of the four angles of the central part are life-size figures of boys executed in biscuit china at Sèvres. We are indebted to *Engineering* for our illustration of this fine conservatory.

With reference to the plants with which this structure is shown to be furnished: they are not the most suitable kinds to show off its full beauty. Where arch and column seem to vie with the elegant tapering stems of a tropical forest a comparatively poor effect is furnished by dwarf herbaceous vegetation. No such structures are worth erecting unless they shelter in abundance those superb tropical and sub-tropical plants which contrast so charmingly with the herbaceous and small-leaved forms of cold and temperate countries.

BYE-NOTES ON NILE TREES.

My last visit to Egypt was *viâ* Brindisi. I travelled, in November, through Belgium to Cologne, along the Rhine to Munich, over the Brenner Pass to Verona, and so to Venice; there embarked in an Austrian-Lombardy screw-steamer; landed at Ancona—which, like the rest of Italy, was white with snow; by rail to Brindisi. They were shovelling the snow from the rails in Calabria, within thirty miles of that seaport. I don't remember to have ever felt the cold more than in that journey through sunny Italy. After four-and-a-half days from Brindisi, we disembarked at Alexandria, and drove to a country-house in a large garden in its vicinity. No contrast could be greater or more charming; it was like the enchantment of a fairy scene. A balcony, overshadowed by a large old banyan tree, looked down upon groves of bananas, clumps of date palms, their verdure being contrasted with scarlet summits of Poinsettias six and eight feet in height. Glorious purple Ipomeas were climbing and trailing over fence and arbour; roses and Pelargoniums in rich bloom below.

At Cairo I was most struck by the extended fences of huge cacti, and the fine shady over-arching avenues of the "sont" trees (*Mimosa nilotica*), with their long golden pods. There are some grand old Tamarisks, but the foliage is dull. The date palm (*Phoenix dactylifera*) gives the chief and most characteristic vegetable feature to the banks of the Nile, though I must own that, after days of voyaging up stream, it begins to weary with its sameness.

The memory of the varied forms and tints of foliage, the shapes and sizes and branching of the trees, in dear old Richmond Park often came in favourable contrast with the tropical forms I had so much longed to witness. As we entered Upper Egypt, I looked out with a positive longing for the bifurcate stem and the more dwarfed cluster of fan-like terminations of the many dichotomous branches of the second genus of palm, the Dôm, or Doum kind, *Hyphæne*, which marks the warmer latitudes. This genus is diffused, with the exception of the Cape of Good Hope, over the whole of the continent of Africa and parts of Arabia. The trunk is about thirty feet in height, and ringed, and differs essentially from that of most palms in being branched. It is difficult to speak with any degree of certainty of the geographical limits of *H. thebaica*, the subject of our illustration, as its synonymy is somewhat confused; but it is said to grow in Nubia and Abyssinia as well as in Arabia. It is called the gingerbread tree of Egypt. Its stem is frequently three and four times forked or branched in old trees, though when young it is always simple. It is nowhere so abundant as the date palm; its hard, round fruit, with tough, smooth, brownish or yellowish rind, hangs in clusters from the terminal branches. It forms part of the food of the poorer classes in Upper Egypt, the part eaten being the fibrous, mealy husk, which tastes exactly like gingerbread; but its dry, husky character renders it unpalatable. The hard tough wood is used for making various domestic utensils, and rosaries are cut out of the horny seed; hats and mats are made of the leaves. The date palm, however, is unquestionably a grander and more graceful tree; touching which, I may tell you that, after spending a long morning, by special favour, in the gardens of the grand Nile Palace of the Khedive, in which in January all our bedding-out plants were in a blaze of beauty, with endless rare and tropical forms that flourish here in the open air, carefully tended and watered by an army of fellahs, I ventured to express to the head-gardener my surprise that neither Dôm nor date palm were admitted, and suggested the fine effect of a group of the latter reflected from the high (artificial) bank of one of the (artificial) lakes.

"Date paulm!" replied my conductor, in an accent (northern) of contemptuous surprise; "Ye might as weel talk o' planting cawbages!"

Every cluster of mud huts along the Nile is overshadowed by its grove of *Phoenix dactylifera*, and a tax is levied upon the fellaheen for each tree.

There is so much in association of ideas.

R. O.



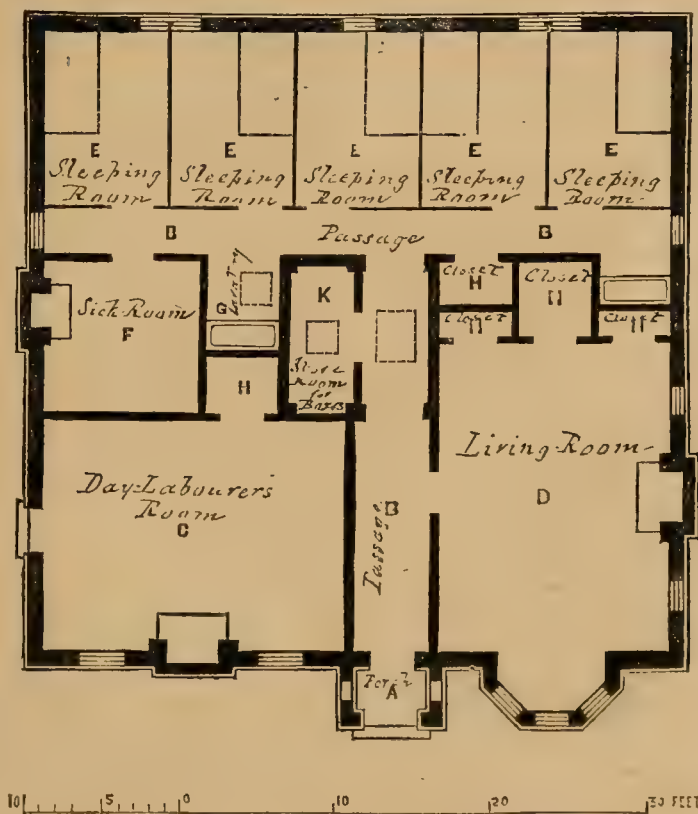
THE DOUM PALM OF UPPER EGYPT.

UNDER-GARDENERS' LODGINGS.

Snow me the homes of a people, and I will define their character, is a broad way of putting a most important social truth. Man is oftener the victim than the master of circumstances. Cramped, foul unhealthy homes have their counterparts in the mind, character, and condition of those who live therein. Hence, not only the physical but intellectual and moral importance of better dwellings for all classes of the community. We are glad to note that at last the tide of improvement has risen high enough to threaten to sweep away one of the most detestable of all places called a house—the “bothie” for young men, hidden away out of sight in the back-slums of so many gardens. We sometimes hear complaints of want of intelligence, culture, and polish among young gardeners. Let anyone look into the hole of this pit, whence so many have been dug, and complain no more. Were it not for an inherent nobility in most young gardeners, and the humanising and ennobling influence of their pursuits, doubtless the “bothie” system would have trodden out every spark of gentleness or goodness long ere now. An earthen or brick floor, a four-post bedstead—ranged sometimes three or four deep in one room—bare

mattress, a table, and a few stools, the whole sufficiently lighted to make darkness visible from a sunless window, without a single convenience for decency, or the slightest attempt to clothe the rawness of its discomfort. Such was, and alas still is, the “bothie” in too many gardens. Who can wonder that it is difficult—impossible—to keep young men at home in such places, or that the village or town public-house, or the street, with its glare of light and its equally glaring vices, draw men out of such dens to a deeper degradation? The most potent receipt for keeping lads or men at home is to surround them with home comforts and conveniences. These are among the most powerful aids to a virtuous life. Place young men in such a house as is here set forth, and the chances are that their conduct will be, or will become, worthy of it. If men accustomed to rove, they will stay in this home at first, probably for the simple reason that they might go further and fare worse in regard to outward comfort. By and bye higher aspirations will spring forth from the order, quiet, cleanliness, and comfort of the place. A process of assimilation will go on. The man will imperceptibly partake of the character of his home; a love of study will be born of its quiet, of culture and refinement of its simple comfort. The three great wants of gardeners at the present day are deeper knowledge, higher worth, more polish; and few things would contribute so much to these as comfortably-arranged rooms for young men, and good houses for head gardeners. One of the most excellent houses for young gardeners we have seen is that in Mr. Peck's gardens at Wimbledon, and of which we give a plan.

D. T. F.



Plan of the Young Gardeners' House at Wimbledon Park.

Ventilation of Ice Houses.—Mr. Cunningham's communication on this subject (p. 136) would have been more useful to us if he had been more definite in his details, a truism which all writers on gardening would do well to remember when they endeavour to impart instruction to others. Mr. Cunningham says, "I have never," after the incident which he records, "used straw as a lining between the ice and walls of ice-houses." But he does not say what he uses as a substitute, nor of what his walls are composed, whether of wood, brick, or cement. Our ice-house here is ten feet deep from the ground level, and twelve feet in diameter. It has a conical roof, thatched with heath. The walls are of brick, cemented inside. The first time it was filled there was neither straw nor anything else put between the ice and the wall; and when it was opened, early in the summer, all the ice was gone. The following winter straw was used with a little better success. Six years ago I asked my employer if I might put three iron pipes, two inches and a half in diameter, through the roof, in order to secure a thorough circulation of air, as I consider that to be essential to success—the rabbits at Pitchford Hall, the seat of the late Earl of Liverpool, having taught me this lesson. There was an ice-house there twelve feet cube, the walls of which were built partly

of wood and partly of brick. The roof was thatched with straw, and the same material was used as lining between the ice and the walls, as well as to cover the ice with. The rabbits used to make holes through the roof, so that as soon as you got the doors open you could see daylight through them. By this means perfect ventilation was secured, and the house was never empty of ice for six years. The cause of its being empty then, was, because we could not get any ice during one winter with which to fill it. After we had put iron pipes through the roof of our present house, and had placed some faggot-wood between the straw and wall, ice has kept in it so well that, when we began to fill the house on the 7th of December last, there were two cart-loads of it left. If the wet straw is removed from the top of the ice two or three times during the summer, it will be of advantage to its keeping.—DAVID WALKER, *Dunorlan Gardens, Tunbridge Wells.*

Experiment with Glass of Various Colours.—It has long been a question how far colour can influence the growth of plants. On this subject M. P. Bert has addressed an interesting communication to the Academy of Sciences.

Having placed twenty-five kinds

of plants in a greenhouse provided with glazed frames of various hues, he watched their progress under the influence of the different lights they received. Milfoil and mullen figured among the plants requiring much sun; violets, &c., among those wanting shade; cactuses and house-leeks represented the thick-leaved classes; there were besides green acotyledons, plants strongly tinged with red, such as Perilla, and lastly, firs. The individuals of each species were of the same size, having been sown at the same time. The glass of the frames was respectively transparent white, dulled white, black, red, yellow, green, and blue; and the whole greenhouse was shielded from the direct rays of the sun. The observations commenced on the 20th of June; on the 24th various seeds were sown, which all sprang up at the same time in all situations. On the 20th of August the acotyledons alone were still alive, though perishing, under the black and green; and as to the rest, the red had proved more hurtful to them than the yellow and blue. The stalks were much taller, but also much weaker under the red; blue seemed to be the colour least detrimental to the plants; their greenness had remained natural, and even deeper than under the yellow. The plants sown on the 24th of June had all died off very quickly under the black and green, later under the red, and had thriven better under the blue than under the yellow. As for the plants under the white glass they all continued to live, though less luxuriantly under the dulled than under the transparent glass.—*Galignani.*

NOTES AND QUESTIONS ON GARDEN STRUCTURES.

Distance of Boiler from Vinery.—What is the greatest distance from the boiler at which I may place a late span-roofed vinery?—CLERICUS. —[A late span-roofed vinery may be placed at any distance from the boiler, varying from ten to one hundred and fifty feet. You must, however, bear in mind that the greater the distance the larger and more powerful the boiler must be, and the more fuel will of course be consumed. If you can so arrange it, it would be much better to have a boiler of smaller size fixed near the vinery, with underground stoke-hole, and a brick arch turned over it; the boiler to have a small iron chimney.]

THE FRUIT GARDEN.

TREATMENT OF WALL TREES.

SOME half a century back the wall trees of most of the leading gardens of Britain were superior to what they are at the present time. Where must we now go to find peach-trees with stems measuring from eighteen inches to two feet in girth? True, there are some fine trees still to be found, as, for example, the grand old specimens at Chatsworth, the largest of which last year produced about 1,400 fruits, unsurpassable in quality. If a finely-flavoured peach or nectarine is required—in fact, a superior-flavoured fruit of any kind commend us to an old tree; for, whatever may be the reason, the fact is incontestible, that old trees produce fruit of much finer quality than that which can be procured from young ones. So well aware was the late Duke of Portland of this fact, that in his garden at Welbeck he would not have an old fruit-tree of any kind destroyed until it was quite worn out.

Forty years ago I transplanted at Welbeck dozens of these old trees which had then become barren through penetrating the subsoil; and upon a recent visit to Mr. Tillery, I was glad to see that many of these veteran trees have been removed to the new garden that since that time has been made there. It is astonishing how well large-sized fruit-trees will bear transplanting, and how grateful they are for a fresh supply of good loamy soil.

If taken in time, nothing is so easily renovated as an old fruit-tree; but, as a rule, the pruning, or branch improvement, should precede interference with the roots—that is, we should rectify the branches this season, and transplant the tree, or lift the roots, and add fresh soil, twelve months hence. By reducing the branch action, and concentrating that of the roots upon those retained, we should obtain additional strength of bud, so that when the roots were lifted, that would assist in promoting vigorous root action. From these veterans, of course, we must not expect trees of fine symmetrical proportions, more for sight than service; for though it is not to be denied that “eye sweet” trees do sometimes produce fine crops, we believe the rule will prevail, that those trees which have been the least restrained by training are in the most fruitful and healthy state.

Do not let me be misunderstood—I want system in forming the tree; but I consider the restraint too frequently imposed upon the branches not only unnecessary, but positively injurious. In stone fruits, apricots and peaches especially, the laceration consequent upon the straightening of a branch may, in the first instance, be the parent of “gum,” and in future years the inexplicable cause of the sudden collapse of large and healthy branches. This I think much more probable than sunstroke; though sunstroke, acting upon a diseased limb, may be more powerful for evil than if acting upon a perfectly healthy frame.

To prune a tree so as to cover the entire surface of the wall at all times with healthy bearing wood is the secret of correct management. Tested by this standard, half the trained trees in the country are ill managed; for even in pears, while the top of the tree and the ends of the branches may be full of blossom, the centre will be entirely destitute of fruit.

A few years back, a cottager, who had for a long time been the first wall man in a large establishment, had upon his cottage a splendidly-trained Marie Louise pear. The tree, as an example of training, was perfect to look at, but it bore no fruit. A change of tenants caused the tree to be neglected, and for two seasons it grew innocent of the pruning-knife. In the following spring every branch was found to be a wreath of blossom-buds. The strongest and the very weakest branches were thinned out, and those remaining were tied in in a pendant form, and ever since that tree has stood sponsor for the rent of the house, and for some pounds beyond that amount.

Excessive pruning is worse than no pruning at all, for nature, uncontrolled, will produce fruit; but the unrestrained pruning-knife is too frequently the parent of barrenness. Just the same is it with the peach and other stone fruits. A house or wall has to be replanted, and, to save time, we buy in,

at a high price, two to three seasons' trained trees; and what do we do in the majority of cases? We cut the fine healthy branches back to within a foot or eighteen inches of the bottom—for what? to form what is called a good base to the tree; then, when the tree gets into growth, and the time comes for distending or thinning the young branches, the best shoots, or “robbers,” as custom calls them, are rubbed off, and only those of moderate growth are retained. In fact, we want vigour; but we commence with mediocrity, and if the tree attempts the vigorous form, we directly thumb-screw it in some way or other. In this way, it takes something like five or seven years to cover a twelve-foot wall; while, with proper treatment, planting well-prepared trees, a wall of the height named may be covered in a superior manner in three to four years.

To secure healthy, well-rooted trees of moderate growth, plant them, if possible, directly the leaf has fallen, thin out the weak branches, and shorten the others no lower than to where the wood is fully ripe. In this way you will start with a tree covering from its base a radius of three to four feet, and if it is properly planted, and you have the courage to do it, you may increase the radius thereto four feet every season, until the wall is filled. And that is not all; for by such treatment you will insure such vigour as can never be secured by the restraining process. You will obtain, indeed, what our American cousins would term “a live tree,” an article very different from the common-place examples which the rule of thumb and pinching processes must give us. I can look upon such trees planted last season, to train which a man uses a ladder, and each tree is capable of bearing several dozens of fruit this season. This is what I call peach culture. To realise the fact that it is the gardener's duty to direct, not to control, nature is the only way in which we can make any marked degree of progress in fruit culture. W.

NEW PEARS.

I AM always glad to hear that additions have been made to our stock of useful pears, and if the four new kinds described by M. Baltet, viz., Clapp's Favourite, Poire de l'Assomption, Fondante Thiriot, and Beurré Baltet Père, can be relied upon to retain, at least in some degree, the excellent qualities ascribed to them under the many circumstances of soil and position to which all our cultivated fruits are exposed, in spite of the already formidable list of varieties already in cultivation, we shall find room for them, and welcome them; but this ordeal of latitude, longitude, altitude, soil, and rain, is a trying one, and in my experience many pears with great names and high characters have failed to pass it. It must be remembered that the climate of Troyes presents more favourable circumstances for the full development of the pear than can be found generally in England, and varieties, whose excellence would be admitted when grown in good localities in France, too often fail to maintain the high character sent with them when grown under our cloudy skies. I find a good illustration of my remarks in the list of pears given by M. Baltet, who names, amongst others, several that he esteems unsurpassable in quality—Beurré Diel, Tromphe de Jodoigne, Duchesse d'Angoulême. These are large and handsome pears, but, even with the advantage of good wall culture are quite worthless grown at Belvoir. The determination of special soils and localities for particular classes of pears is a work that can only be pursued slowly, as experiments must extend over many years, but it is one that merits attention and consideration. I have observed that fruits, both apples, pears, and plums, and, I may add, apricots, originated in a particular locality seem to have acquired a constitutional fitness for it, and to be less liable to the ailments trees imported from another locality seem prone to. I think we are all bound in our time and generation to do as much as we can towards the increase of good and useful things, and wherever there is a chance of raising a few seedling fruits it should be done. The Rev. Mr. Kingsley's views concerning the selection of the extreme point of a seedling pear, or those shoots that indicate fruitfulness, are of great practical value, and will, if practised, help to shorten the term of watchfulness which, when it lasts eight or nine years, leads to the heart sickness of hope deferred.

Belvoir.

WILLIAM INGRAM.

Oranges.—The quantity of these which arrived in Paris for New Year's Day amounted to 254,000 cases. The boxes contained from 320 to 340, but taking the smallest number, we find 81,280,000 in all, or about forty for each inhabitant.

NEW FRUITS OF 1871.

A.D. 1871 was not a fruitful year, so that our acquisitions in this department are not so numerous or important as usual. Still we have to record several novelties of no mean merit, and such as we may gladly welcome. Grapes, as usual, come most prominently before us. Our indefatigable friend, Mr. Pearson, of Chilwell, presents us with a batch of four, all of considerable promise. In Dr. Hogg we have an improved Duchess of Buccleuch—that is, improved as to size and constitution, the quality being the same, resembling that of the well-known Chasselas Musqué. Abram Bass is a fine, firm-fleshed, oval black grape, raised from Mrs. Pince's Muscat. Chilwell Alicante resembles the Alicante or Black Tokay, and has a fine rich pleasant flavour which the older variety does not possess. Emperor of Morocco is also a fine-looking black grape, of very rich and pleasant flavour, raised from the Black Morocco. We must here also say just another word for Mr. W. Paul's Waltham Cross, which is one of the noblest-looking of late white grapes yet produced.

Of peaches, Mr. Rivers gives us a batch of novelties, some of which are of great merit. Especially we would note this of Goshawk, one of the richest mid-season peaches grown. Of others we may mention Albatross, Condor, Golden Eagle, Merlin, very rich. Of nectarines, Darwin and Humboldt are two fine acquisitions of the Stanwick class. We may also notice as a mid-season peach of remarkably fine quality the Markly Admirable of Mr. Knight. In apples we have no addition of note; neither in pears is there any very remarkable novelty. We may, however, invite attention to one or two which during the past season have proved of great excellence, viz., Beurré de l'Assomption and Souvenir du Congrès, both having the character of Williams' Bon Chrétien. In cherries we have to add Bigarreau Noir de Schmidt, a fine black heart; and Early Rivers, a very fine, large, fleshy, richly-flavoured sort of great repute. Let us hope that in a propitious season we may have more meritorious novelties to notice.—A. F. B., in "*Florist and Pomologist*."

PUBLIC GARDENS.

THE THAMES EMBANKMENT.

TURNING down what is called the Albert Embankment stairs to the right, after crossing Westminster Bridge, pedestrians have before them the finest footway in London, but a footway only, and scarcely will they have descended the stairs when they will begin to wonder, and wonder the more because they will wonder in vain, why a high brick wall has been built along the whole front of the new hospital just built there, narrowing the embankment, cutting it, as it seems to do, in half, and converting what might have been a high road into a footpath. Why, it may be asked, was not the ground left open to the hospital arcades? Such a concession would have blessed both those who gave it and those who took it. It would have made the embankment a wider way, it would have given passengers something to look at on the land side besides a blank brick wall, and it would have shown off the fine colonnades of the hospital. Were the latter a lunatic asylum there would be some apology for this exclusive wall, which has come so near the water that it has taken inside it the trees planted along the embankment. As it is, we can see no reason for such an arrangement, but that old dog-in-the-manger spirit which induced a Shropshire nobleman of the last generation to spend untold sums in building a wall round his great park high enough to keep out the hunting field. The brick wall in question, however, serves a purpose, for along it are fastened the wooden posts and shabby lamps which light the embankment. Why it is not lit by the proper lanterns, which ought long ago to have been fixed on the handsome dolphin-wreathed pedestals which ornament the outer parapet, is more than we can say or excuse. Opposite Lambeth Palace is a bit of "garden," a work which often does not mean much in London, but which means more in the shabbiest square than it means here, upon a work the imperial magnificence of which was thought worthy of a princely name. This garden is fenced by a vile hoarding covered with bill tatters, and by prying between its chinks we may read written in unconscious satire, "Albert Embankment." At another place, some iron railings, no doubt to be in due course coated with "indestructible paint," are in course of erection. Why each patch of garden here and on the Victoria Embankment should be securely fenced in with an unsightly fence, or any fence at all, is not apparent. Foot passengers are practically kept out of them, for who will delay to hunt for the gate? The embankment, which, despite the brick wall of St. Thomas's, began in magnificence opposite Westminster, ends in mire opposite Millbank. A small muddy space is here being reserved for a garden, and another muddy space, which ought to have been so reserved, is "to be let for 50

years." Less ornamental than this "notice board," but quite as significant are the wretched rusty iron stands which protect the trees. One of the trees is badly broken at the top, and if we might make one petition it is that it be substituted by another this very winter. We would further beg that at this season when we hear so much of distress and want of work, a few men be hired to redeem the upper end of the embankment from the filth, the slovenliness, the wilful incompleteness which deface it. Something should, perhaps, be conceded to the *genius loci* of the Surrey side, but even that slatternly goddess must feel ashamed of herself as she flits over piles of paving stones and heaps of rubbish. Something we are ready to concede to her, but something we must demand from the Board of Works. Not that they should do their work; that were hopeless and too much to expect, but that they should not take credit for having done it when they have left it so shamefully undone. If even this be too much to require of them, we can at least say with confidence that, whatever credit they may choose to give themselves, they will not get any from that portion of the public which walks along the Albert Embankment. That this work and its more than match on the other side of the river are noble works, that they were boldly conceived, undertaken with spirit, and finished in their solid and costly parts with ease and success, only makes the present neglect of them the more inexplicable.

SITUATION OF CITY PARKS.

FIRST of all, a public park should be as near as possible to the town; best of all, perhaps, if in the very centre of the town, or, as in the case of some of the old walled towns of Europe, girding it with a circle of green. I hardly think any public gardens of the world contribute more to the health and enjoyment of the adjacent population than those of Frankfort-on-the-Main, which lie all about their homes, and which are planted upon the line of the old fortifications. Even the ill-kept walks upon the ancient walls of Chester and York (in England), by their nearness to the homes of the people, and by the delightful out-look they offer, are among the most cherished promenades I know. But with us, who have no girding walls, and rarely vacant spaces about our commercial centres, these pleasant breathing-places must be pushed into the outskirts of our towns. I say—rarely vacant spaces; but while I write, there occur to me instances of beautiful opportunities neglected, one of which, at least, I will record. The thriving little city of Norwich, in eastern Connecticut, is situated at the confluence of two rivers, which form the Thames. Along either shore of the Yantic and the Shetucket, the houses of the town are picturesquely strewed with patches of white and grey; but between the rivers and the lines of houses, the land rises into a great promontory of hill—toward the east, forming a Salvator-Rosa cliff, shaggy with brush-wood and cedars—towards the south and west, a steep declivity on which the swiftly slanting sward-land is spotted with outcropping ledges; to the north a gradual slope falls easily away to the great plains where lie the bulk of the suburban residences. Within twenty or thirty years the whole upper surface of this central hillock might have been secured for the merest bagatelle, and would have made one of the proudest public promenades imaginable, accessible to all walkers from the south and east, and to all equipages from the north, and offering level plateau for drives that would have commanded the most enchanting of views; but the occasion has gone by; inferior houses hold their uneasy footing on the hill-side, and a gaunt gaol, which is the very apotheosis of ugliness, crowns this picturesque height.

Another little city, that of Hartford, in the neighbour State of Connecticut, has made the most of its opportunities by converting into a charming public garden a weary waste of ground that lay between its railway station and the heart of the city. The opportunity was not large, to be sure, but it was one that needed a keen eye for its development, and the result has shown that commercial thrift may not unfrequently take its lesson with profit from the suggestions of a cultivated taste. There is many a growing town having somewhere within its borders such unsuspected aptitude and capability, that only needs an eye to discern it, and the requisite enterprise to develop in the very heart of the population a garden and a public promenade that would become a joy for ever. It must be remembered, furthermore, that it is quite impossible to make such transmutation of waste and unsightly places into an attractive area of garden-land, without increasing enormously the taxable value of all surrounding property. I recall now, in one of our most thriving seaside cities, a great slough of oozy tide-mud of many acres in extent, shut off from the harbour front by a low railway embankment, showing here and there a riotous overgrowth of wild sedges, foul with heaps of garbage, uninviting in every possible way, and yet lying within stone's throw of the centre of the city. Sandy highlands, almost totally unimproved, flank it immediately upon the west—disposed there, as it

would seem, for the very purpose of furnishing easy material for the filling in of the flat below. A few thousands would accomplish this, and judicious planting and outlay would in three years' time establish a charming promenade or garden in the centre of the sea-front of the town, and there is not one of the adjoining pieces of property but would be doubled in value by the operation. The neglect of such opportunities, whether due to miserable local jealousies or, as often happens, to the short-sightedness and indifference of municipal authorities, is surely not complimentary to our civilization.—*Rural Studies.*

NOTES AND QUESTIONS ON PUBLIC GARDENS.

The Colosseum in Regent's Park.—This, we learn, is to be converted into a site for baths of all kinds. The surplus space of the plot of ground in which it stands is to be laid out as a winter garden, and the block of buildings facing Albany Street will be partly rebuilt, and converted into club chambers.

Enlargement of Victoria Park.—A public meeting, convened by the committee of the Victoria Park Preservation Society, in furtherance of the above-named object, was lately held in the New Town Hall, Hackney; Mr. C. Reed, M.P., in the chair. The chairman said since the rising of Parliament at the end of last session it had seemed to him as if everything they held dear in the way of recreation-grounds were in peril. Within a recent period they had had a struggle with regard to London Fields, Hackney Common, Hackney Downs, and Epping Forest; and only last week it was his duty, as one of the representatives of that borough, to appear before the Conservators of the river Lea to protest against the pollution of those once beautiful waters, to which so many of the inhabitants had been in the habit of resorting for recreation and sport. In the case of Epping Forest the Corporation of London had stepped in to support the cause of the people, and he trusted there would be speedy redress. In the present instance there was no charge to make against any one taking away property. Victoria Park was set apart under an Act of Parliament in the year 1842 for the benefit of the people, only 290 acres being devoted to that purpose, and about 90 acres being reserved with a right of building. This right had been already exercised to a certain extent; a belt of about 30 acres was still left in the most interesting portion of the park, and it was the intention of the Government that that ground should be let on building leases. Well, the Government no doubt felt that it was performing its duty in the matter; but it would be a pity if, when the people of that district had laid their case before the constituted authorities, and, as would perhaps be done ultimately, before Parliament, their voice in reference to their own park was disregarded. The rector of Bethnal Green moved the first resolution, viz., "That this meeting is of opinion that the area of Victoria Park should be enlarged by the addition of the Crown lands reserved for building purposes." He thought the inhabitants of that district should not confine themselves to the present demand, but also ask for the 125 acres, on which were to have been erected the accumulated gasworks of London.—Mr. Holms, M.P., in supporting the resolution, said he was surprised that under all the circumstances they should have to come there to protect only 29½ acres of land. He believed that a very good case could be made out before Parliament. The West-end parks and Battersea Park were all maintained at the public expense; and during the last ten years while £59,000 a year on the average had been spent upon them, only £6,600 a year had been spent on the East-end parks. He regretted the use by the Society of the word "enlargement," the object being in reality simply to maintain what the district already possessed. The resolution was carried unanimously.

THE HOUSEHOLD.

THE PARASOL AGARIC.

(*AGARICUS PROCERUS*.)

THERE are but two other agarics that at all resemble this, and both are edible. One about the same size is *Agaricus rachodes*. It is not generally considered so good in flavour as *A. procerus*. Mrs. Hussey, however, says plainly, "If *Agaricus procerus* is the king of edible funguses, *Agaricus rachodes* is an excellent viceroy." The other is the *Agaricus excoriatus*, a very much smaller fungus, with a more slender habit, a shorter stem, and no true bulb at the base. This elegant little fungus is also very good eating.

Whenever an agaric on a long stalk, enlarged at the base, presents a dry cuticle more or less scaly, a darker coloured umbonated top, a movable ring, and white gills, it must be *Agaricus procerus*—the parasol agaric, and it may be gathered and eaten without fear. When the whitish flesh of this agaric is bruised it shows a light reddish colour. This is one of the best of the edible fungi, so commonly passed by as useless.

The Pileus is fleshy ovate when young, then campanulate, and afterwards expanded and umbonate (blunt pointed), from three to seven inches across. Cuticle more or less brown, entire over the umbo, but torn into patches, or scales which become more

and more separated as they approach the margin. Flesh white. Gills unconnected with the stem, fixed to a collar on the pileus surrounding its top. Ring persistent, loose on the stem. Stem six or eight inches high, tapering upwards from a pear-like bulb at the root, hollow with a loose pith, whitish brown, but more or less variegated with small and close-pressed scales.

The parasol agaric has a very wide range of growth. It is a common fungus, and is in high request all over the Continent.

The following are the opinions of good judges on the merits of the Parasol Agaric as an edible fungus:—

"A most excellent mushroom, of a delicate flavour, and it must be considered a most useful species."—M. J. BERKELEY.

"Were its excellent qualities better known here, they could not fail to secure it a general reception into our best kitchens, and a frequent place among our side dishes at table."—DR. BADHAM.

"If once tried, it must please the most fastidious."—W. G. SMITH.

There can be no question but that, when young and quickly grown, the parasol agaric is a delicious fungus. It has a light and delicate flavour without the heavy richness which belongs to the ordinary field mushroom. The writer has prevailed on many persons to try it; all without exception have liked it, many have thought it quite equal, and some have proclaimed it superior to, the common mushroom.

The following are the modes of cooking the Parasol Agaric:—

BROILED PROCERUS.—Remove the scales and stalks from the



Parasol Agaric, or Scaly Mushroom (*Agaricus procerus*). Grows in pastures, in autumn; colour, pale brownish buff; diameter, 5 to 12 inches.

agarics, and broil lightly over a clear fire on both sides for a few minutes; arrange them on a dish over fresh-made, well-divided toast; sprinkle with pepper and salt, and put a small piece of butter on each; set before a brisk fire to melt the butter, and serve up quickly. If the cottager would toast his bacon over the broiled mushrooms, the butter would be saved.

AGARICS DELICATELY STEWED.—Remove the stalks and scales from young half-grown agarics, and throw each one as you do so into a basin of fresh water slightly acidulated with the juice of a lemon, or a little good vinegar. When all are prepared, remove them from the water, and put them into a stew-pan with a very small piece of fresh butter. Sprinkle with white pepper and salt, and add a little lemon-juice; cover up closely, and stew for half an hour. Then add a spoonful of flour, with sufficient cream, or cream and milk, until the whole has the thickness of cream. Season to taste, and stew again gently until the agarics are perfectly tender. Remove all the butter from the surface, and serve in a hot dish, garnished with slices of lemon. A little mace, nutmeg, or ketchup may be added; but there are those who think that spice spoils the mushroom flavour.

COTTAGER'S PROCERUS PIE.—Cut fresh agarics in small pieces, and cover the bottom of a pie-dish. Pepper, salt, and place

them on small shreds of fresh bacon, then put in a layer of mashed potatoes, and so fill the dish, layer by layer, with a cover of mashed potatoes for the crust. Bake well for half an hour, and brown before a quick fire.

A LA PROVENÇALE.—“Steep for two hours in some salt, pepper, and a little garlic; then toss in a small stew-pan over a brisk fire, with parsley chopped, and a little lemon-juice.”—DR. BADHAM.

AGARIC KETCHUP.—Place agarics of as large a size as you can procure, but which are not worm-eaten, layer by layer, in a deep pan, sprinkling each layer as it is put in with a little salt. The next day stir them well up several times, so as to mash and extract their juice. On the third day strain off the liquor, measure, and boil for ten minutes, and then to every pint of the liquor add half an ounce of black pepper, a quarter of an ounce of bruised ginger-root, a blade of mace, a clove or two, and a teaspoonful of mustard-seed. Boil again for half an hour; put in two or three bay-leaves, and set aside till quite cold. Pass through a strainer, and bottle; cork well, and dip the ends in resin. A very little chili vinegar is an improvement, and some add a glass of port wine, or a glass of strong ale to every bottle. Care should be taken that the spice is not added so abundantly as to overpower the true flavour of the agaric. A careful cook will keep back a little of the simple boiled liquor to guard against this danger: a good one will always avoid it. “Doctors weigh their things,” said a capital cook, “but I go by taste.” But then, like poets, good cooks of this order must be born so; they are not to be made.

THE FORESTS OF INDIA.

THESE are beginning to show the effects of the system of conservancy recently adopted. Formerly they were so much neglected that in some districts there were great difficulties in obtaining timber for the public departments; fires, too, did great damage; but in 1863 the Government appointed Mr. Brandis and Dr. Cleghorn to organise a departmental system of conservancy for all India, and the condition of the forests has ever since been constantly and steadily improving. New species of trees are being introduced for acclimatization. The gross revenue from the forests has increased from £304,443 in the financial year 1863-64 to the (estimated) amount of £573,220 for the year 1871-72. But the expenses have increased at a greater rate, and are estimated at £451,000 for the year 1871-72, leaving a surplus of only £122,000, the expenditure absorbing four-fifths of the produce. But the object in view is not merely revenue. The forests must be preserved, even if it costs money to keep them in good condition. They are of the utmost importance for the production of timber and fuel, and also for climatic purposes. The systematic supervision of the forests is, however, still in its infancy, as the first set of trained European conservators, under Mr. Brandis, went out only at the end of the year 1869. Nevertheless Parliamentary returns recently issued, show much progress made under the new system of administration. The three principal sorts of trees in the old forests are teak, sál, and deodar. The teak is of peculiar value for shipbuilding and other purposes from the power of the oil to conserve iron. Teak is by far the most valuable of Indian woods. First-class teak for shipbuilding takes seventy or eighty years in coming to maturity; for house building and furniture there is a ready sale for the thinnings in twenty years. Sál wood is used for engineering purposes, for shipbuilding, and for house building. The trees grow very closely together. Planting is not required; the seeds fall viviparous into the ground. This wood takes a long time to season, and it is liable to the attacks of some insects. The best of the deodar timber comes from territory which is not British. Deodar is, in fact, used for sleepers, but it is far too valuable a wood for that purpose. Then there is black wood, of great value for ordnance purposes, for house building, and for carved furniture; it is planted in the same situation as teak, and can be obtained of as large size as teak. Ebony is a wood of great value, and sold by weight. The cinchona cultivation has been a remarkable success on the Neilgherry hills. It is of extremely rapid growth, and the bark of commerce is obtained at an early age. There are at least 2,000 acres of cinchona on the Neilgherries. It is expected that the leaves may yield a febrifuge for the masses. Of bamboo there are several species; next to the cocoa-nut, the bamboo is, perhaps, the most valuable wood in India for domestic purposes. It combines toughness and durability with extreme lightness. Rattans grow in great abundance in the forests of Malabar. The rattan is a species of palm, the stem of which runs along the ground for great lengths (eighty feet to hundred feet or more); it is a product of considerable value, and likely

to become a larger article of trade. Cassia lignea is an inferior variety of bark, resembling cinnamon in smell and appearance; it is found pretty extensively in Malabar, and some revenue might be derived from it. Wild cinnamon is also found in the forests of Malabar; for all such articles there is a coming demand. There are several woods that produce good bark for tanning. Caoutchouc and gums of similar properties are found largely in Assam. There are several species of gum to be obtained in the forests of India, and dye stuffs; and a very large production of honey and beeswax. The breadfruit tree is grown in gardens. The betel nut is a valuable tree. The casuarina, or beef-wood, is a very useful tree, of rapid growth, and the timber of great hardness. It is quite large enough for building purposes. The wood is very hard, and turns the edge of the axe. It has the peculiar property of durability under water. The satinwood is much used for picture frames and fancy purposes; it resembles the American maple. The Indian dogwood, a small tree of about fifteen feet, is considered remarkably suitable for charcoal for gunpowder purposes. Many other species of wood might be mentioned which it will be useful to conserve and propagate—the red cedar and some species of the mahogany family; ironwood, which is practically imperishable, and so forth. The cultivation of wood for fuel is of importance; in the drier parts of India it is so deficient that manure is burnt, and consequently the land is starved and production diminished.

Reports from British Burmah show that, of the total area of 60,000,000 acres, there are 1,534,000 acres of teak-producing forests, and 2,946,000 acres of forest void of teak, besides 26,000,000 acres of low-lying forest land and land occupied by 12,845 towns and villages. The Pegu division is the largest and most important. The average age of a first-class tree of six feet girth in this division is found to be 124 years. Besides teak there are valuable forests of ironwood, catechu, thingan, and other trees. The Oudh report describes the forest establishment as beginning to work pretty fairly. Conservancy has been introduced very gradually into the province, regard being had to the requirements of the population, and their prescriptive rights. It is the minor forest produce that is chiefly affected by such claims. The whole of Coorg proper is stated to be dotted with stately forests. The trees attain their greatest magnitude on the declivities of the Ghâts—a stupendous ridge covered with a rich stratum of mould, in which trees grow to a prodigious size. Bamboos of great excellence are found everywhere. From the North-Western Provinces we have accounts of the plantations of Australian trees at Raneekhet, which are going on favourably. In some cases there has been wonderful progress; but some of the fruit-trees from England died from the heat on their way up the country. The successful introduction of the rapidly-growing Australian trees is regarded as a matter of the highest importance with a view to the supply of fuel. The Bengal report notices the importance of the Soom forests for the production of the Mooghah silk, one of the most profitable occupations of the inhabitants of the Luckimpore district. A full account is given of the teak plantations at Nellamboor, in the Madras Presidency. The trees near the streams run to five feet in girth, with straight cylindrical stems sixty feet to seventy feet in height. The Canara conservator dwells upon “the vast resources of the Bala Ghâts of Canara, with its 1,950 square miles of magnificent forests.” Measurements of trees in the Sherolie Forest, above Ghâts, gave from eighty feet to eighty-four feet in height from the ground to the intervention of the first branch, with clear cylindrical stems, carrying a girth of nine feet from the ground upwards. In some districts in this province, where forest lands were made over to the Inamdars, effects of denudation are felt. The people say the rainfall gets less there every year; creeks are silting up, and shoals and bars forming at mouths of rivers. Since the forests were cleared along the ghâts, nothing checks the rush of water down the hills; it no longer soaks into the ground. The Sindh forests comprise 317,245 acres; the two remaining districts—Berar and Mysore—are administered for native States. The conservator of Berar, referring to the importance of caring for the humbler trees of the coppice, states that it is certain that, from whatever cause, the rainfall of Berar is not so copious as it was a few generations ago. The Mysore conservator tells of the great forests of the Western Ghâts, with trees of clear stem of eighty feet to one hundred feet to the first branch. He gives some account of the sandal-wood. The tree attains maturity in about twenty-five years, and its girth then varies from eighteen to forty inches. The best parts are used for ornamental articles. The roots and chips, which are richest in oils, go to the still, and are the basis of many scents. It is burnt by rich natives at the burial of relatives. The Province is divided into twenty-four sandal districts under managers, who mark and collect the wood. It may be added that the Forest Department in India covers an area greater than that of the British Isles.—Condensed from “Times.”

THE AMATEURS' REMEMBRANCER.*

In-door Plant Department.—The conservatory will now be daily receiving fresh floral life from the forcing pit, and to the latter constant successional supplies must be introduced. Shelves edged gracefully with *Isolepis* or with *Lycopodium denticulatum*, will now be gay with early tulips, lily of the valley, cyclamens, poinsettias, primroses, and the earliest cinerarias; while tastefully dispersed amongst the more permanent occupants of the house will be azaleas, kalmias, rhododendrons, heaths, and similar flowering shrubs. These with camellias, some of the earlier acacias, tea-scented roses, and the powerfully sweet-scented *Luculia gratissima*, will maintain an amount of enjoyment greater by far than that derivable from much more brilliant displays made later in the year. Keep up a night temperature of some 45 degrees, allowing a rise of ten degrees or more during the day. At this season, more than any other perhaps, the value of tree ferns, palms, the nobler types of succulent plants, dracenas, &c., is felt. They give us in the midst of our dreary winter all the ravishing exuberance of lovely forms that are seen in the fairest parts of tropical countries. In a conservatory now filled with these plants a few kinds of flower and berry bearing subjects go as far as thrice the amount in one of the very commonly seen conservatories naked of all beauty of form.

In-door Fruit Department.—Succession pine-apples must be kept growing steadily; they must therefore be supplied with sufficient heat and moisture to keep them in that condition, and the amount of air-circulation must be increased as the days lengthen. As they will soon require re-potting, have soil and pots in readiness for that purpose. Pines finishing off fruit should be kept all but dry; but such as have fruit still swelling should have a good soaking of tepid, clear manure water at the root, as often as they appear to require it.—Vines in houses from which the fruit has been cut, should now be pruned and cleaned, preparatory to their being again started into growth. As light increases early vines may be indulged with a little more heat than would have been advisable a week or two back.—Cucumbers sow for early spring use in a hotbed or moist warm stove. Temperature from 65 degrees to 80 degrees.—Seakale, rhubarb, and asparagus, place in heat according to the succession required.—Potatoes started in pots or boxes plant out into frames or pits near the glass on a gentle bottom heat, always giving them abundance of air when there is no danger from frosts.—Radishes and small salads may be sown between the rows.—Mint, tarragon, &c., may be easily supplied from pots placed on shelves along with French beans.

Flower Garden and Shrubberies.—While the weather is favourable all alterations in the form of ground work should be finished with as much expedition as possible. New rosaries may still be made and planted, care being taken to put stakes to standards so as to keep them from wind-waving. Tender sorts should be examined, and where the protection given them seems insufficient, or has been displaced, fresh, dry coverings must be supplied. Fern, laurel, or spruce fir branches make excellent protections, and these are in general plentiful enough about most gardens. In most places, however, this period is one of rest in this department. In-doors, nevertheless, much will have to be done in the selection and ordering of seeds, &c., for spring and summer sowing.

Hardy Fruit and Kitchen Garden.—Pruning and nailing of wall trees must now be pushed forward with activity, as must also the pruning of espaliers and pyramids and dwarfs in borders. Trees in orchards should likewise have their generally overcrowded heads thinned out a little, removing in the operation all ill-placed branches, or such as cross one another. Defer pruning gooseberries and currants until a little later in the season.

In the kitchen garden, where cabbages have been loosened by frosts, go over them and make them firm with the foot, afterwards earthing them up a little with the draw hoe. A row or two of early peas may be put in on a sheltered border, but care must be taken to keep them from being injured by mice. A few mazagan beans may also be put in, and a pinch of radishes and horn carrots may likewise be tried in some warm corner. Clear off crops now done with, and trench and dig the ground they occupy in order to be ready for other crops.

Labels.—I want to give a little more information on the subject of labels than is given at page 156 of your last number. The cast-iron labels for herbaceous plants there recommended were largely introduced into the Botanic Garden, Regent's Park, years ago by yourself, I believe, Mr. Conductor. I visited these gardens recently, and thought I would just look at the labels. I found some of the oldest, done seven or eight years ago, and noted their dark, dim colour, and general indistinctness. I rubbed them with my wet finger, and they brightened a little; I rubbed again and again, and they became as bright as new. I then looked out for the very dimmest I could find. This I rubbed, touched the soil with my finger, rubbed again, and it became bright and perfectly legible. Therefore, if, instead of painting afresh every six years, they are simply well scrubbed, and newly varnished, they will want nothing else. A great point in regard to these labels is their comparative invisibility. A large bed may have two hundred of them on it, and yet at twenty yards distance you will scarcely suspect the presence of one. On the contrary, white ones with black letters are very conspicuous. I wish some good firm would set to work, and get up a stock of these labels; they ought to be obtainable at from ten to twelve shillings per hundredweight. Anyone interested in this matter may readily see these labels just as I rubbed them in the herbaceous garden near the head of the lake in the Botanic Garden, Regent's Park.—A. D.

* Complete general calendars, written by some of the most able gardeners in the country, are published in *THE GARDEN* in the first issue in each month.

Vegetation on Houses.—We inspected recently several hundreds of villas and mansions that had cost from £2,000 to £10,000 each, and had been built within the last eight or ten years, near a growing city. The architecture of these houses was very varied; but our conclusion was that they were all staring and ugly until they were clothed with creepers and fringed by foliage, and that they were pretty in proportion as they were well planted and covered with vegetation. If we invite the imagination to separate the picturesque old square-built cottage from its adornments, its patches of house-leek and moss on the roof, its vine-covered wall stained by age, its jessamine and honeysuckle, and rustic porch with skeps of bees close by—what a very ugly building we behold: four plain walls, capped with a red-tiled roof, more frightful than a red nightcap.

COVENT GARDEN MARKET.—January 13th.

Flowers.—These consist of Acacias; Azaleas, both cut and in the form of small plants; Begonias; Callas; Camellias; Cinerarias; grand examples of Lily of the Valley; Coronilla; Cyclamens in pots in excellent condition; Dentzias; Heaths; Euphorbia jacquiniiflora; Hyacinths; Tulips; Genista; Geraniums, of various sorts, including those with scented leaves, a class now too much neglected; Christmas Roses; Mignonette; Poinsettias; Primroses, both wild and Chinese; a few cut Roses and berry-bearing plants, such as *Ardisia* and *Solanum*.

Prices of Fruit.—Apples, per half sieve, 2s. to 5s.—Cobs, per 100 lbs., 60s. to 65s.—Filberts, per lb., 8d. to 10d.—Grapes, per lb., 2s. 6d. to 6s.—Lemons, per 100, 7s. to 10s.—Spanish Water Melons, each, 2s. to 5s.—Oranges, per 100, 6s. to 10s.—Pears, per dozen, 3s. to 6s.—Pine-apples, per lb., 4s. to 8s.—Pomegranates, each, 4d. to 8d.

Prices of Vegetables.—Artichokes, green, each, 6d. to 8d.—Asparagus, per 100, 8s. to 10s.—Beet, per dozen, 1s. to 2s.—Broccoli, purple, per bundle, 10d. to 1s. 3d.—Brussels Sprouts, per half sieve, 2s. to 3s.—Cabbages, per dozen, 10d. to 1s. 3d.—Caulicums, per 100, 1s. 6d. to 2s.—Carrots, per bunch, 5d. to 7d.—Cauliflowers, per dozen, 2s. to 6s.—Celery, per bundle, 1s. to 2s.—Chilies, per 100, 1s. 6d. to 2s.—Cucumbers, each, 1s. to 2s.—French Beans, new, per 100, 3s. to 4s.—Herbs, per bunch, 2d. to 4d.—Horse Radish, per bunch, 3s. to 5s.—Leeks, per bunch, 2d. to 4d.—Lettuces, per score, 1s. 6d. to 2s.—Mushrooms, per pottle, 1s. to 2s. 6d.—Onions, per bunch, 4d. to 9d.—Parsley, per bunch, 2d. to 4d.—Radishes, per bunch, 2d.—Rhubarb, per bundle, 1s. 6d. to 2s.—Salsafy, per bundle, 9d. to 1s. 3d.—Scorzonera, per bundle, 9d. to 1s. 3d.—Seakale, per punnet, 1s. 6d. to 2s. 6d.—Shallots, per lb., 8d.—Spinach, per bushel, 3s. to 4s.—Tomatoes, per small punnet, 3d. to 6d.—Turnips, per bunch, 3d. to 6d.

ANSWERS TO CORRESPONDENTS.

P. J. N.—1. Fernery at not less than from 55 degrees to 60 degrees, as it contains tender species; 2. The flower-forcing house at from 60 degrees to 65 degrees, and from six to ten degrees higher with sun-heat.

R. W. FERRY.—1. Better leave them till April; 2. Wilkie's Composition; 3. being of general interest will be answered in our Fruit Department next week.

R. A. P.—We know of no remedy except presenting the dog to some of your friends.

C. J. (Wales).—Mr. Baker has done much to clear up the nomenclature of lilies in the *Gardeners' Chronicle*, and in the *Journal of the Linnean Society*. There is no real difference between the varieties you name.

WASHINGTON, T.—Next week.
GREAT MALVERN.—"Mrs. Loudon's Amateur Gardener's Calendar."
J. J. WHEBLE.—The "Grizzly Giant" is a specimen of *Sequoia* (Wellingtonia) gigantea. Your "Taxodium" is also a *Sequoia*, and old trees of both species have very thick bark.

W. STEVENS.—Where lies the difficulty? The bridge is certainly made without nails.

C. C. (Bromley).—The American fruit-preserving jars are not, so far as we are aware, sold in this country. They might easily be imported.

P. B.—The Black Hamburgh.
W. E. D.—The Primula blooms sent were large in size and richly coloured.
J. H. C.—The fullest account of the subject is in the book you mention.
J. S. FARRELL.—"The Wild Garden," published by John Murray.
G. M. (Dublin).—Any respectable nurseryman.

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All communications for the Editorial Department should be addressed to WILLIAM ROBINSON, "THE GARDEN" OFFICE, 37, Southampton Street, Covent Garden, London, W.C. All letters referring to Subscriptions, Advertisements, and other business matters, should be addressed to THE PUBLISHER.



"This is an art

Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare*.

THE IN-DOOR GARDEN.

CONSERVATORIES IN THE NATURAL STYLE.

BY EDOUARD ANDRÉ.

ALTHOUGH considerable progress has been made during the last few years in the art of grouping plants in the open air in harmony with their natural affinities, the same cannot be said of their disposition under glass. In England more especially, where amateur gardening is so highly developed, and where more attention is concentrated upon the beauty of individual plants than general effect, next to nothing has been done towards developing a more picturesque style in conservatories. Even our largest establishments leave much to be desired in this respect. Of course, in a mercantile or a small private establishment where the plants are either awaiting sale or where they are frequently removed, they will be arranged for convenience, like the bottles in a chemist's shop. But it is surprising that in planting the noble glass palaces of the rich, such as we find at Sion House, or spacious palm houses, like that of Kew, so little regard has been paid to general effect by their originators.

The cause is simply this, that practical cultivation alone has been considered in England, and in all other European countries, and that the knowledge of plants has hitherto been limited to experimental culture. Gardeners have ignored the teachings of plant distribution in so far as it relates to their natural characteristics and the effects resulting therefrom. Information on this subject can only be gained by studying the narratives of travellers, and these unfortunately are often incomplete and uninteresting on this point.

To supply in some measure this defect, we shall attempt to show how a winter garden in the picturesque style should be treated. Before doing so, however, we should mention that there are some notable exceptions to the monotonous repetitions which we so heartily deplore. In Mr. Llewellyn's garden at Penllergare, in Wales, might have been seen a few years ago an orchid-house aquarium where these lovely denizens of the tropics were planted in the admirable disorder which they present in their native forests. True, it was only on a small scale, but the effect produced was most pleasing. Again, at Paris, the Gardens of Aclimatisation in the Bois de Boulogne possess a large and beautiful house, which is designed and planted in the most attractive manner, representing a tropical scene, terminated by a background of rockwork with a cascade falling into a pool at the base and continued onwards in a rivulet meandering through a valley of Selaginellas.

There are also other places known to us, though too few in number, where there are plants of sufficient development to permit of similar disposition, and which might form the main features of such a tropical semi-wild garden as we have in view. There would be little difficulty in thus beautifying the Palm House at Kew, the large Pavilion of the Museum at Paris, the Horticultural Society's fine conservatory at South Kensington, a portion of the Crystal Palace at Sydenham, the large houses at Sion and Chatworth, &c. When in Belgium last year we visited the seat of M. Varocqué, at Mariemont, where a new winter garden, between fifty and sixty feet high, had been erected on the site of an old orangery, in which a Belgian landscape architect of some note (M. Fuchs) had essayed to introduce the style that we advocate. Magnificent palms, tree ferns, cycads, &c., formed the principal features in this splendid building, with an undulating carpet of Selaginellas beneath them. Immediately facing the grand entrance door was an artistic

group of rockwork flanked by a water basin, and planted with evident care. But, in our opinion, the result was not commensurate with the pains bestowed. The walks are too winding, the surface too uneven, the rockery too imposing to appear natural, and the plantations confused, the sides being naked and the centre excessively dense. The artist aimed at the picturesque, but he has failed to produce it in consequence of too great profusion, to the detriment of the general effect and the loss of harmony in the details. We quote this example to show that it is easy to err in carrying out the best of plans, and that exaggeration in the intended natural style is more to be deprecated than crowding in the inevitable uniformity of houses with stages and benches.

Even in winter gardens where the aim has been to produce picturesque effect, there is always something in the structure to remind us of the artificial surroundings. Thus, walks are indispensable, and they should be of sufficient breadth to admit of free and agreeable promenading. To try to imitate the forests of Brazil by compelling the spectator to scramble over the rotten remains of trunks of fallen trees, rough stones, and withered fern fronds, would be the height of absurdity. And those interminable winding tortuous walks are equally opposed to good taste, with the rectangular paths which remind us of the system and order of a purely botanic garden. There is thus a *mezzo-terme*, a happy medium, to be studied; and the *nil nimis* of Horace, which neither admits of too much nor too little—the great rule that reigns supreme in all matters of taste and judgment—is equally applicable in the case of our ideal garden.

An outer circular or slightly devious walk near the well-clothed side-walls or lights should surround the central area, where the eye rests upon choice specimens standing out distinctly upon a carpeting of Selaginella denticulata, trailing Commelynaceæ, Lippia repens, Spargula pilifera, and other plants which readily form a close and compact verdure. To be brief, the space between the walks and the walls should be filled with dense masses of foliage effectually concealing the stems of the plants, and rising gradually from the walk outwards; and the centre should show isolated trees and little groups upon an open lawn of creeping plants.

Such is the arrangement indicated upon the plan (see p. 184), though the detached specimens must not be planted indiscriminately in the central area, which is surrounded and intersected by the walks. They should be grouped in combinations or planted singly, according to size and foliage, and in such a way that the view between their trunks is uninterrupted; and at the same time their heads should harmonise together in colouring and outline.

Instead of undulating the surface in an infinity of insignificant hillocks, as in M. Varocqué's winter garden, we recommend limiting it to two intercepting dells. A longitudinal one from the rockery, terminated by a bower, under which are placed a table and seats, and ending at the side entrance in a single hollow, of which the pool or basin is the lowest point. From this pool to the flower-bed No. 94, the ground rises slightly, and the cross walk curves towards the middle in agreement with the lower ground. The boundary walk is of the same level throughout, except towards the rockery, where it rises and terminates in four or five rustic stone steps leading to the alcove. The beds Nos. 94, 123, and 167, should be elevated about two feet above the walk; and each of the isolated trees should be planted on a scarcely perceptible mound of earth, with the exception of the groups on either side of the rockwork, which are on an abrupt slope, and the large clump on each side of the bed No. 94, which should be raised about nine inches above the walk and gradually sloped off.

It now remains for us to enter into the planting, which is certainly the most important part of a winter garden. This may be considered from several points of view, according to the class of house, whether cold, temperate, or hot, or for orchids or an aquarium. For the present we will content ourselves with treating of a warm-temperate winter garden with a mean temperature of from 65° to 68° Fahr., in which we could place palms and similar house plants, that would thrive all the better for the increased warmth.

We shall take it for granted that, previous to planting, due

care has been given to the drainage and the composition and preparation of the soil. As bottom heat is the main thing to produce luxuriant vegetation in plants, we will assume that the hot-water pipes are properly arranged and covered over with flag-stones to prevent the plants on the walls from being scorched, instead of being around the outside, and exposed, as usually is the case. As we consider the question of foliage-clothed walls of paramount importance we must be explicit. If uncovered pipes are considered absolutely essential along the base of the walls, a brick or other partition of some sort should be placed between them and the plants, to prevent too great an accession of direct heat from the pipes. But a still better method is to conduct the heat through underground brick channels to points with open gratings in the walks to allow the heat to rise. The soil, well drained at the bottom, and crossed here and there by the pipes we have mentioned, will materially induce the luxuriant vegetation we so much desire around the walls of the house. The middle will have less need of bottom heat. A good drainage of broken bricks and mortar rubbish will suffice for the subsoil, leaving a depth of about three feet from the mould intended for the plants. Two drains running below this through the house, with an outlet outside, will carry off the surplus water. The composition of the soil may be varied according to the class of plants it is intended for. But, as a general rule, for strong growing plants and large palms it will be found advantageous to prepare the mass in the following manner:—Upon the layer of broken bricks and mortar rubbish a layer of reversed turfs about eighteen inches thick, should be placed, and upon that a second formed of—

Argillaceous earth	-	-	-	3	parts.
Ordinary garden soil	-	-	-	3	"
River, or white sand	-	-	-	2	"
Coarse pieces of earth and brickbats	-	-	-	1	"
Leaf mould	-	-	-	1	"

10

Mix this well together and apply it about a foot thick. Then for the surface add a layer about five or six inches thick of peat, loam, and leaf-mould from hedgerows, or rotten willow, oak, or chestnut trunks, if attainable, with a tenth part of sand. The peat should be but slightly broken up except just at the top, and the roots left in it. Prepared in this way, it will be ready to receive the *Selaginella*, which will thrive admirably in it and speedily clothe it with verdure.

It will be understood that these three layers, forming a total thickness of three feet, will not be of uniform thickness all through the house, because the surface will be undulated. The measurement of one yard is merely given as a basis or unit, for the total depth of subsoil in different parts of the house will vary, having, for instance, a depth of only eighteen inches near the basin in the centre of the little lawn, and from four to five feet for the clumps abutting on the flower-bed No. 94. But the top-dressing will be equal all over.

The majority of large tropical plants can be grown in such a compost. And those which may require special treatment may be potted in suitable soil and plunged; the pots being plunged deep enough to conceal them. Allow the *Selaginella* to spread over their surface. Liquid manure, if used in moderation and judgment, will accelerate the growth of most plants, including ferns. So much for the preparations for planting. But the key of the question, the secret of success, depends above all upon the choice and grouping of the plants. This selection may vary to infinity, such are the riches of exotic flowers at our command. It is difficult to lay down rules on the mode of arranging plants according to the colour and character of their foliage. We may, however, remark that in houses, no matter how splendidly constructed, the effects of uniformity are bad, and that masses of one species or of one genus of plants should be avoided. The harmony and grandeur of unity in composition, attained with difficulty even in large parks, is here impossible. The object to be sought, then, is contrast in the foliage and habit of the plants employed. Two species of massive foliage, for example, should not stand side by side, such as a *Musa* and a *Ravenala*, or a *Coccoloba pubescens* and a *Theophrasta*. But a large tuft of a *Strelitzia* beneath the shade of a *Cocos plumosa* is very effective, and a fine con-

trast is presented to the eye by backing up the grand foliage and yellow spikes of *Hedychium Gardnerianum* with clumps of ferns, bamboos, or feathery conifers. The rigid foliage of rhododendrons and camellias should be excluded, these beautiful plants being reserved for a separate house, where they will better display their charms in a collection.

In dense masses of foliage, like those adjoining the rockery in our plan, the arrangement should be in gradual rising ranks, thick, heavy foliage forming the basis, surmounted by lighter and more graceful forms of palms and tree ferns, whose slender plumed columns break through the sombre undergrowth.

Limit the use of "flowers" to the borders and special beds, with the exception of here and there one on the rockwork, beyond those belonging to the plants themselves. We mean by "flowers" such plants as are grown in pots in special houses and taken to the winter garden for temporary decoration, as—primulas, cyclamens, Van Thol tulips, hyacinths, heaths, crocuses, &c.

The side walls, or sashes, should be provided with wire trellis-work, or wooden lattice-work against a dead wall, to support climbing plants all round the house. For covering the surface of the soil nothing is better than *Selaginella denticulata*; and this should be planted or re-planted in autumn, or in spring, as the dry heat of summer is unfavourable to the success of this operation. Small fragments, about three inches long, planted four or five inches apart, will soon cover the ground. For edging the walks use slight castings in imitation of rustic



Section of a Conservatory arranged in the Natural Style.

woodwork or archlets such as may be found in the squares of Paris. These will keep the border even, and prevent the feet of visitors from straying upon them and the loose earth from crumbling away. Above all a good system of shading must be ensured to protect the plants from the direct rays of the sun in summer.

The paths may be formed of fine gravel, or, better still, asphalted or paved. The construction of the rockery should be of the simplest kind, composed of a few stones naturally disposed and projecting slightly from the earth so as to be discovered rather than seen. Monumental rockwork should be avoided, and, above all, reject the so-called pretty stones. Geological or mineralogical toys may be all very well in the cabinets of the learned, but they are altogether out of place in a garden where the object is to reproduce natural beauties in their native simplicity. If a small pond be added to the rockwork it should neither be absolutely round nor sinuous. The golden rule—simplicity without excess—should everywhere prevail.

In order to secure a warm, humid atmosphere, so essential to the well-being of plants, we recommend having the pipe that feeds the cascade and replenishes the basins made so as to pass through the boiler, which will sufficiently heat the water in its transit to cause it to give off a portion by evaporation when discharged. In this way the atmosphere will be thoroughly saturated with moisture, adding thereby greatly

to the healthy appearance of the plants. We would direct especial attention to this contrivance for ensuring a congenial atmosphere.

As regards choice of plants, as has already been observed, it may be varied indefinitely. But instead of treating of this subject under the numerous aspects it presents we prefer giving the arrangement we suggest for the house represented in the accompanying plan. This arrangement is, of course, applicable to a far larger structure than the one under consideration. But we have selected this example because it comes within the means of a greater number of amateurs. Furthermore our design is open to every conceivable modification. We may add, too, that the outlay may be reduced by substituting less costly plants for some to be enumerated.

DISTRIBUTION OF THE PLANTS.

Perennial climbing plants for placing alongside of walls, or for covering supporting columns, may consist of,—

(1) *Aristolochia cordifolia*, which is very vigorous, and has large

blue flowers with yellow centre; (60) *Thunbergia laurifolia*; (62) *Passiflora Buchananii*, and (63) *P. marmorea*, two pretty, vigorous species; (65) *Bougainvillea lateritia*, fine red bracts; (68) *Aristolochia gigas*, a very large striped flower, resembling a pilot's cap; (71) *Bignonia incarnata*, flowers tubular and flesh-coloured; (72) *Tropaeolum Lobbianum*; (74) *Allamanda nobilis*; (77) *Clerodendron Thomsonæ*; (80) *Cissus discolor*.

If we enter the principal doorway of the house and bear to the left, near No. 1, we shall come to the outer border of which we have spoken, which should be filled mainly with strong-growing foliage plants. Nothing will prevent these from being increased and renewed as often as we please. These plants being grouped according to size, the larger ones behind may consist of the following species, viz. :—

Anomum grana-paradisi, *Andropogon squarrosus*, *Panicum plitatum*, *Fuchsias*, *Aspidistra*, *Dracaenas*, *Begonias*, *Coleuses*, *Cyperus*, *Eugenia*, various free growing tufted Ferns, *Ficus elastica*, *F. rubiginosa*, *Aralia* and *Oreopanax*, *Hedychium coronarium*, and *Gard-*



View in a Conservatory Planted in the Natural Style.

leaves and enormous flowers; (3) *Thunbergia Harrisii*, moderately vigorous, flowers numerous and delicate; (5) *Argyrea argentea*, leaves oval and silvery; (7) *Ipomæa Horsfallii*; (9) *Tecoma stans*, which has pinnate leaves and pretty flowers; (12 and 13) *Plumbago capensis*, a fine species, having numerous clusters of azure flowers; (17) *Hoya carnea*; (19) *Smilax marmorea*, leaves oblong and marbled with white; (21) *S. macrophylla maculata*; (23 and 25) *S. marmorea*; (27) *Hoya imperialis*, a vigorous kind, bearing corymbs of rich brown flowers; (28) *Stephanotis floribunda*; (30) *Passiflora Decaisneana*, a species with large foliage, and large rose and violet flowers; (31) *Quisqualis indica*, a free blooming scarlet-flowered plant; (33) *Tacsonia Van Volxemii*, a kind with long, pendulous, splendid rosy flowers; (36) *Aristolochia leuconura*, cordate leaves with white veins; (37) *Hexacentris mysorensis*, flowers variegated red and salmon; (41) *Centrostemma multiflorum*, a charming melastomaceous plant; (44) *Passiflora carmesina*; (45) *Aristolochia clypeata*, a new species, with finely marked flowers; (49) *Tacsonia mollissima*, flowers rose-coloured, long and tubular; (53) *Quisqualis pubescens*, magnificent orange-red flowers; (54) *Passiflora trifasciata*, trilobate leaves, stained with red; (58) *Meyenia erecta*, charming

nerianum, *Hibiscus rosea-sinensis*, *Heterocentrum*, *Salvias* (to be frequently renewed), *Hamatoxylon campechianum*, *Imantophyllum Aitoni*, *Lantanas* (various), *Ageratum coelestinum*, *Senecio platani-folia*, *Laurus Camphora*, *Melastomaceæ* (various), *Plumbago coccinea*, *Pogostemon Patchouli*, *Poinsettia pulcherrima*, *Rogieras*, *Sparmannia africana*, *Xylophylla latifolia*, *Abutilons*, *Allamanda nerii-folia*, *Pipers* and *Macropipers*, *Begonia Sedeni*, *Centradenia grandifolia*, *Francisecas*, *Gardenias*, *Hebeclinium ianthinum*, *Siphocampylus* (bicolor and fulgens), *Iresine Herbsti*, *Amorphophallus*, *Hibiscus littlorus*, and *Marantas*, &c.

Above this groundwork of foliage and flowers the following species, with taller stems and stronger habits, may rise :—

- | | | |
|-----------------------------------|--------------------------------|-------------------------------------|
| 2. <i>Musa paradisiaca</i> | 35. <i>Cyathia medullaris</i> | 59. <i>Ficus Chauvieri</i> |
| 4. <i>Oreopanax dactylifolium</i> | 37. <i>Chamarops excelsa</i> | 61. <i>Oreopanax platani-folium</i> |
| 6. <i>Alseodaphne australis</i> | 39. <i>Artocarpus meisa</i> | 64. <i>Scandophyllum pulchrum</i> |
| 10. <i>Stadmanina australis</i> | 40. <i>Musa violacea</i> | 66. <i>Astrapea Walliehoi</i> |
| 15. <i>Anthurium acule</i> | 42. <i>Hedychium coccineum</i> | 67. <i>Anthurium regide</i> |
| 16. <i>Rhopa a Organensis</i> | 43. <i>Carludovica palmata</i> | 70. <i>Cereus mexicanus</i> |
| 20. <i>Saurauja sarapi-gensis</i> | 46. <i>Cibotium regale</i> | 73. <i>Theophrasta imperialis</i> |
| 22. <i>Dracena arborea</i> | 47. <i>Castilleja elastica</i> | |
| | 48. <i>Anthurium cordatum</i> | |

- | | | |
|----------------------------|-----------------------------|-----------------------|
| 24. Rhopala Jonghei | 50. Dracena fragrans | 75. Cyathea dealbata |
| 26. Theophrasta regalis | 51. Maranta Lindeni | 76. Cocos hexuosa |
| 32. Musa sapientum | 55. Musa paradisiaca | 78. Ficus macrophylla |
| 34. Hedychium gardnerianum | 56. Chamaerops staurocantha | 79. Areca lutescens |

The bed No. 94 will be decorated with dwarf, bright-coloured flowers, to be renewed as often as required.

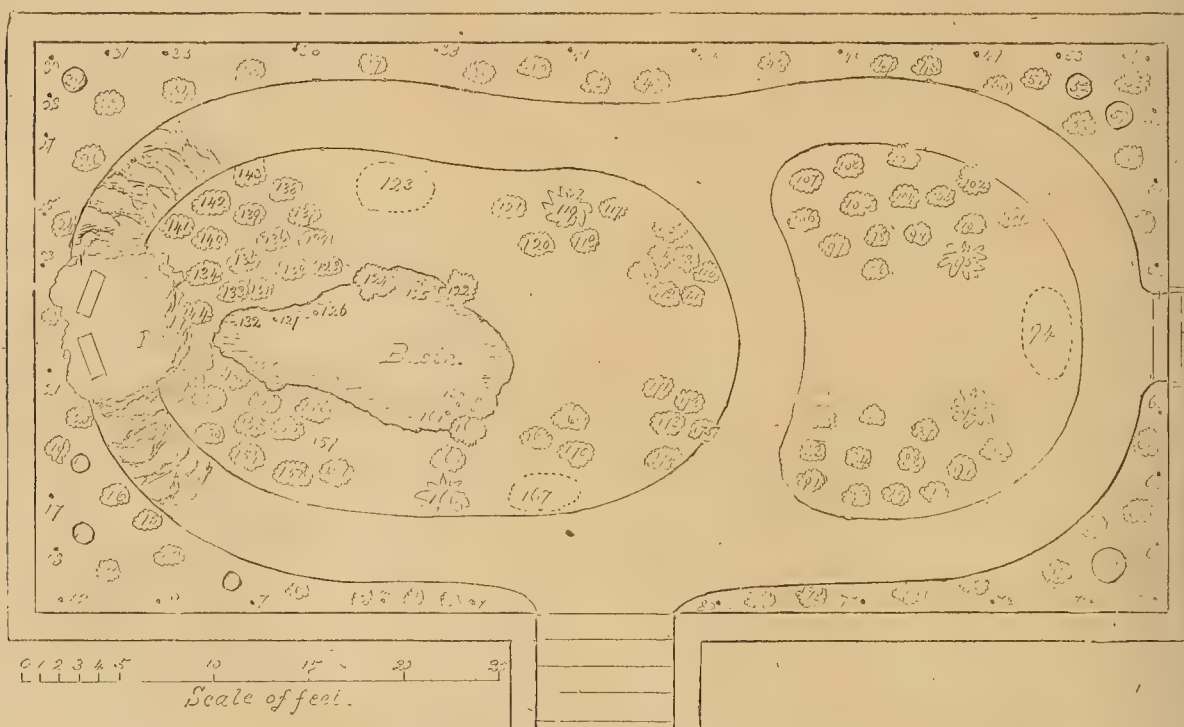
The two groups encircling the portion of green near this bed will be composed as follows:—

- | | | |
|--|------------------------------------|-------------------------|
| Plants with tall stems, but varying in height. | | |
| 100. Balantium antarcticum | 97. Caryota sobolifera | |
| 104. Areca sapida | 105. Ficus elastica | |
| 95. Coccobola pubescens | 109. Laurus Camphora | |
| Of medium size. | | |
| 101. Pteris argyrea | 103. Asplenium macrophyllum | 105. Cycas circinalis |
| 102. Medinilla magnifica | | 108. Dracena terminalis |
| Of medium size. | | |
| 107. Clivia miniata | 93. Attaccia cristata | |
| 106. Anthurium leuconcurum | 96. Crinum amabile | |
| | 99. Acalypha tricolor (Wilkesiana) | |
| With tall stems. | | |
| 81. Cyathea Beyrichiana | 87. Theophrasta macrophylla | |
| 85. Oreodoxa regia | 90. Rhopala corcovadensis | |
| 84. Phoenix reclinata | 92. Scaforthia elegans | |

- | | | |
|----------------------------------|-----------------------------|------------------------------------|
| 133. Carludovica atrovirens | 161. Vallisneria spiralis | 168. Cyrtopodium barbatum superbum |
| 144. Hoya bella | 160. Nymphaea dentata | 167. Attalea excelsa |
| 141. Acanthus latifolius | 156. Musa Ensete | 170. Dion edule |
| 142. Clivia miniata | 157. Crescentia regalis | 171. Cyanophyllum magnificum |
| 140. Clusia rosea | 159. Disteganthus basilaris | |
| 136. Ficus Cooperi | 158. Cycas revoluta | 172. Dracena Guilloylei |
| 139. Musa paradisiaca | 154. Carludovica plicata | 173. Sciadocalyx digitaliflora |
| 143. Pteris cretica albo lineata | 155. Balantium culcita | 174. Cordyline indivisa |
| | 153. Lomaria gibba | |
| | 175. Croton maximum. | |

Such are the prominent distinctive features of this mode of grouping the principal furniture in this palace of flowers. As we have already observed, these combinations are capable of endless variations, and numerous small species may be inserted in empty spaces between the larger plants; and we may add baskets of ferns, Bromeliaceae, orchids, &c., suspended from the rafters on slender wire. These may be planted in the baskets or the pots placed in them, the interspaces being filled with growing moss. The rockery will be adorned with all sorts of plants that will flourish in the interstices between the stones, including a complete collection of Selaginellas creeping amongst innumerable ferns.

Lastly, dead trunks of trees, fixed in the ground by means



Ground Plan of Conservatory in the Natural Style.

- | | | |
|----------------------------|-------------------------------------|--------------------------|
| 83. Amorphophallus nivosus | 89. Croton undulatum | 88. Asplenium nidus avis |
| 82. Dracena australis | 91. Colocasia macrorrhiza variegata | 93. Dracena cannaefolia |
| | | 86. Anthurium hybridum |

MAIN LAWN.

- | | | |
|----------------------------|---------------------------|---------------------------|
| 110. Syagrus botryophora | 111. Anthurium magnificum | 118. Cordyline indivisa |
| 112. Pandanus ornatus | 110. Blechnum brasiliense | 119. Cibotium princeps |
| 115. Latania rubra | 113. Alpinia nutans | 120. Pteris argyrea |
| 114. Rhipis flabelliformis | 117. Medinilla magnifica | 121. Agave Verschaffeltii |
| 116. Areca sapida | | |

Flower-beds Nos. 123 and 167 refilled from time to time with flowering plants, bulbs, &c.

- | | | |
|---------------------------------------|----------------------------|-------------------------------|
| 122. Bambusa Thounsi | 139. Platyloma falcata | 152. Billbergia zebrina |
| 124. Philodendron pinatifidum | 137. Vriesia gigantea | 151. Theophrasta imperialis |
| 128. Phajus Wallichii | 132. Thalia dealbata | |
| 129. Phoenicophorium Seychellarum | 147. Philodendron pertusum | 149. Musa sinensis |
| 130. Phormium tenax folius variegatum | 127. Pontederia cordata | 143. Cocos coronata |
| 121. Pandanus elegantissimus | 126. Nymphaea gigantea | 146. Pteris argyrea |
| | 125. " Ortigiesiana rubra | 145. Platycerium grande |
| 135. Durio usibethinus | 163. " cerulea | 166. Verschaffeltia splendida |
| 134. Lomaria gibba | 162. Philodendron Lindeni | 165. Bambusa Fortunei |
| | | 164. Colocasia nymphaeifolia |

of iron stakes to prevent them from falling in decomposition, should be placed at the spots Nos. 8, 14, 18, 29, 52, 57, 69, and covered with tropical creepers and epiphytes, and a whole collection of Bromeliaceae, especially Tillandsia usneoides and orchids. A short time will suffice for these to assume all the picturesque appearance they present in the tropics. Here ends this rough sketch of our winter garden. That this rude model may be the means of bringing cleverer minds to bear upon the subject is our most ardent wish.

[In justice to M. André's admirable suggestions for the carrying out of this most desirable improvement which he advocates, we may state that the "view" prepared by our artist from the section kindly supplied by M. André fails to show the abundant vegetation by which our correspondent rightly wishes the walls to be hidden. His plan, however puts this clear. We have only to add that the greatest charm we can give to our large conservatories would be to plant them in the natural manner, after M. André's fashion.]

PUBLIC GARDENS.

HAMPSTEAD HEATH.

SATURDAY last was the day appointed by the members of the Metropolitan Board of Works for taking formal possession of Hampstead Heath, and for dedicating the same to the public. Thus, after years of agitation, an arrangement has at last been effected by which the great bulk of the Heath—that is to say, land consisting of the upper and lower Heath proper, to the extent of some 225 acres—has been secured to the public for ever at a total cost to the metropolis of £45,000. The wet and unpropitious weather prevented anything like festivity; but Colonel Hogg, M.P., chairman of the Board of Works, and other gentlemen, were invited by the Hampstead Vestry to a *déjeuner* at “Jack Straw’s Castle.” The Rev. Charlton Lane presided. It was stated that, by the liberality of the Lord of the Manor, the “Lovers’ Walk” and other classic localities, supposed to have been surrendered to bricks and mortar, were really given up to the public, which, it was said, was to have the Heath for enjoyment as it is, and not as a London park. Thus, bit by bit have we secured our famous, healthy, charming, and invigorating Heath. Let us, therefore, be grateful. We may build fine squares by the score; but we can never create such another landscape, in close view of London, as was looked over by the authorities on Saturday from the windows of “Jack Straw’s Castle.” There are to be no more disputes concerning this Heath; its broad and breezy upland is safe henceforth as the playground of the metropolis, inspiring health into thousands upon thousands, offering pleasure upon every holiday, spreading its wide and unsophisticated landscapes up hill and down dale—at all events, from the railway station to the famous flagstaff—and constituting to the whole north and north-west of London, frightfully and hideously overbuilt as it is, what Epping Forest, which is the next of our relics to be saved, is to the denizens of the east. We are glad to learn that it is not contemplated to convert the Heath into an ordinary London park, with pathways of gravel, parterres of flowers, mazes, and, worse than all, fences; it is to remain as open and as wild as a thousand years ago, unhedged and unpalisaded on any side, requiring no keepers to prevent bounding and buoyant youth from carrying home trophies of the golden furze, turning up little sods of moss, rolling, tumbling, and playing at its own sweet will, and altogether enjoying the happiness of unlimited liberty. It will be a satisfaction to the public to know that in the coming spring they will not glance down those pretty dells with the feeling that they may gather wild violets in them for the last time, or in the coming summer frisk along the finest road near London with a dread lest it should before they go again have its beauty blocked up by mansions. The Hampstead Vestry has, however, already appealed to the Board of Works against encroachments which are taking place round the Heath since it was bought by the Board. The following appeal was addressed to the Vestry by fifty-nine of the artists of London:—“Jan. 11, 1872.—We the undersigned artists, having learnt that the Metropolitan Board of Works have omitted from their recent purchase of Hampstead Heath many very important pieces of ground, and that your Vestry are taking steps in the matter, would urgently represent the great loss to the picturesque beauty of the Heath if these pieces were enclosed or cut off from the public ground. We are intimately acquainted with the different beauties of the Heath, and feel strongly that these beauties would sustain great injury should any buildings be erected on the above-mentioned pieces of ground. We therefore most earnestly request you to use every means to secure them for the public. We would also add our great desire that the Heath should be left as nearly as possible in its present wild state, to alter which would in our opinion be a grievous mistake.”

THE ESSENTIALS OF PUBLIC GARDENS.

It is desirable that a town park should offer a charming drive; so far charming that every townsman will feel it incumbent on him to give each stranger guest a full view of its attractions. These latter must lie, either in commanding views of the town itself and its environs, or in landscape effects which have been wrought out by skill and attention in the park itself. Neither Hyde Park nor the Bois de Boulogne offer any commanding range of view; the delights all lie in the neatly-kept roadway; the flanking lakes and parterres, the bright, green slopes of shaven turf; at Richmond Hill or on the Pincian at Rome, on the other hand, you forget the roadway, you forget the bits of pretty turflet, you ignore the copses, you are careless of the odour of flowers, for your eye, carrying all your perceptive faculties in its reach, leaps to the fair vision of flood and field and trees, which sweep away, in sun and in shadow, to the horizon.

Undoubtedly if the surface of adjoining country will permit, it will

be far less expensive to establish a park whose charm shall lie in exterior views than one whose attractions shall consist in what the professional men call (by use of an abominable word) its gardenesque features. Yet, with such economic purpose, it will never do to go too far in the country. It must never be forgotten with us that the men of equipages are by no means the only class who are to participate in our æsthetic progress; the town park, to have its best uses, must not only be within easy reach, but it must have, too, its spaces of level ground to allure the cricket or the base-ball players. Areas should be ample enough to prevent the possible interference of these sports (which every sensible township would do well to encourage) with the enjoyment of a quiet drive.

While there is no need for making the wood of a public park a complete arboretum, I think that special care should be taken to give specimens of all the best known timber and shade trees, and that these should be definitely marked with their botanical as well as popular names, so that strollers might come to a pleasant lesson in their seasons of idleness. The particular habits of individual specimens and of forest growths might, I think, be safely and profitably noted as lending additional interest to them, and creating a sort of fellowship with the trees. Every forester knows that oaks and maples of the same species have yet idiosyncrasies of their own—one blooming a full fortnight before its neighbour, and another taking a tawny hue, while its companion is still in full array of green. In the garden of the Tuileries there is a chestnut which enjoys the traditional repute of showing leaflets upon the twentieth of March (hence called *Vingt de Mars*), and the venerable old tree, well known to every frequenter of the garden, has come to have a character of sanctity by reason of this early welcome of the spring. In a field within sight of my own door, there is a sugar-maple which, by some fault in the planting, or some inherent defect in the tree, has made little or no growth these last six years, and which every August—a full month before the earliest of its companions—takes on a hectic flush of colour, which it carries, with the buoyancy of a consumptive, all through the autumn. This accident of colouring gives an individuality and interest to the tree which distinguishes it from all its stalwart and thrifty fellows. . . .

It is a common mistake, I think, to imagine that anything like a finical nicety in the arrangement of turf or walks or parterres is essential to the permanent and larger utilities of a town park. This, indeed involves great cost, and diverts from larger and more important ends. A flock or two of South Downs, confined by movable hurdles, and under charge of some custodian, who might have his rural cottage at the gate of entrance, would keep turf in very presentable condition. After this good drainage, hard gravelled roads—subject to monthly rolling—and judiciously disposed clumps of shade are the main things; following upon which, as the town grows in taste or ability, the parterres of flowers and the arboretum and the observatory might be superadded.

But quite above and beyond our present question of treatment is the larger one of gaining, in due time, possession of available space. No town that counts upon its thirty or forty thousand inhabitants within the next score of years should neglect it. There can be no loss in its becoming a large landholder within its own territory. If the charming but costly disguisements of a park cannot be ventured upon at once, the land may at least be turned over into a town farm, where the town's poor may be set to the work of combing down its roughness or preparing it by slow degrees, earning their own support, meantime, for the richer ends in view. The scheme is by no means chimerical; scores of workers, through the less active months of the year, and who are dependent on the town for partial support, might thus be put to remunerative labour upon the town property. A judicious design of a park as a facility upon the land in question might underlie, in a measure, and qualify the regular farm labours. A well-appointed drive might gradually uncoil itself over the hills and through the cultivated flats, the wood crop out upon the cliffs, and the flowers unfold in their sequestered nooks. It seems to me that a park or garden, growing up in this way by degrees under the tutelage of the town, not fairly throwing off its economic and food-providing aspect until the plantations have ripened into fulness, would have a double charm. I commend the suggestions to such boroughs as keep their town's poor festering in some ill-ventilated almshouse, with limited grounds in the foulest suburb of the place.—*Rural Studies.*

New Park for Warrington. It is stated that the Corporation of Warrington have purchased of Col and Wm. Patten, M.P., his Warrington residence and eighteen acres of park and garden land, for a town-hall and public park, for £22,000. The residence, called Bank Hall, is a noble Italian-English building, having for its front a lawn of several acres, and gardens of considerable size. The whole is walled round, is in what will soon be the centre of the town, and has a prospect for miles, both back and front, which scarcely can be interrupted.

Epping Forest Fund.—A public meeting was recently held at the Agricultural Hall in support of this fund, which has been established for the purpose of preserving Epping Forest for the people. Mr. McCullagh Torrens, M.P., presided. Captain Warner Dennis moved the first resolution as follows, viz.:—"That this meeting recognises the paramount necessity of open spaces being preserved for the recreation and enjoyment of the dense population of the east of London, and is of opinion that her Majesty's present Government utterly fails to appreciate the feelings of the people on the subject of Epping Forest." He said, at present there were about three thousand acres left, and as it had been clearly shown that those who had the sale of the present land did not value it at more than £5 per acre, it would at that computation only take £15,000 to purchase it, and secure it to the public at large in perpetuity. Whilst such large sums were laid out on West-end parks, the rule should be applied with the same liberality to Epping Forest, which was the favourite resort of the East-enders. The chairman suggested that a subscription of 6d. per head among the electors of the three eastern metropolitan boroughs would create a fund more than sufficient to answer all purposes.

Improved Wooden Pavement.—By the sanction of the Commissioners of Sewers a new principle, already successfully adopted in the United States, in Paris, St. Petersburg, and Vienna, has been lately introduced, and is now on trial at the south end of Bartholomew Lane. This pavement lays claim to the following advantages—absence of slip, noiselessness, elasticity, durability, and an even surface at all times. The construction of the pavement varies according to traffic and other circumstances. In Bartholomew Lane it is laid on a bed of sand, of sufficient depth to form a good grade, say from one to two inches; on that a flooring is placed, which consists of two thicknesses, one laid horizontally, the other transversely, each thickness consisting of a three-quarter inch board prepared with tar. Upon these boards blocks of wood measuring nine by three by five inches, are placed, and between each row of blocks a strip of wood one by three-quarters of an inch, is nailed to the flooring, the object being to steady the blocks in their places during construction; after being thus laid, the spaces or joints are filled with hot gravel, upon which hot tar or pitch is poured. This is rammed tight home, and again repeated until the spaces are filled up. Subsequently another application of tar is made over the surface, on which a dressing of fine gravel is thrown; when dried the pavement is complete. Its success remains to be proved.

Swimming Baths for London.—It is to be hoped that the death of Mrs. Browne, says the *Lancet*, will not deprive London of the munificent gift which she contemplated making in the erection at her own cost of swimming baths somewhere in Hyde Park and Regent's Park. It is to be hoped that her Majesty will direct that the well-known wishes of the deceased shall be carried out, notwithstanding the absence of a will.

City Mortality.—Dr. Liddle, the Medical Officer of Health for Whitechapel, in a report which he recently presented to the local sanitary authorities, remarks that the intimate relation between defective ventilation and the mortality from tubercular diseases, convulsions in children, teething, atrophy, debility, infantile diarrhoea, and insanity, is not sufficiently understood; and until the public thoroughly comprehend the fact that these diseases are largely induced by the want of fresh air, sufficient attention will not be given to the danger arising from the crowded localities in large towns, so that these nuisances may be effectively dealt with. Hitherto the attention of local boards has been principally directed to the number of deaths from epidemic diseases, many of which are supposed to be caused by filth and defective drainage, and hence the formation of sewers and drains has been extensively carried out in the metropolis; but the numerous deaths which are caused annually by consumption and its allied diseases have not been duly considered. As the local rates, however, are continually increasing for the relief of sickness and the support of widows and orphans, the building of asylums for the insane, and the providing of work-house infirmaries for the debilitated and prematurely old, it is probable that local boards will direct more attention to the condition of the houses of the poor than they have hitherto done.

INSECTS, BIRDS, ETC.

INSECT POWDERS.

We owe to Professor Karl Koch, of Berlin, the first introduction of insect powders into Europe, he having, in the course of his travels in the East, become acquainted with their valuable properties. His first experience with them was at Tiflis, in 1836. Afterwards he found them used generally by the natives of the neighbouring countries, and on inquiry into the source from which the powders were obtained, he found that they were made from the pollen of certain species of *Pyrethrum*, more especially that of *P. roseum* and *P. carneum*. The specific property lies in the pollen, and it is according to the greater or lesser amount of it that may be in the powder that it is more or less effective. The manner of using it is to scatter the powder about the apartment, and it has the effect of causing the insects to fall down as if dead or asleep, even bees and wasps succumbing under its action. The larger insects, however, by-and-by recover as if coming out of a swoon; the smaller never come out of it. It is as if they had taken an over-dose of chloroform.

The way in which the powder ought to be made is to cut the

flowers and shake them over sheets. The pollen is in great quantities, and, like that of many conifers at the proper season, colours all the ground around; but it is difficult to get half-civilised nations to take the necessary precautions to secure it properly. It is easier to pull the plants up by the root, and by threshing and breaking them a greatly larger quantity of dust or powder is got than by the proper way of taking nothing but the pollen. Another consequence follows from their mode of procedure, which is that notwithstanding the great natural abundance of the *Pyrethrums* in their native countries, constant pulling up by the root before they seed, will, of course, sooner or later, exterminate the species altogether; and already there are symptoms indicating that such a result is approaching. Koch's discovery and proclamation of the virtues of this pollen as an insecticide has given rise to a great demand for it—a demand much greater than can be supplied from the plants or the districts which first were had recourse to for the purpose. Consequently, in the first place, the fabrication of the powder instead of being restricted to *Pyrethrum roseum* and *P. carneum*, in Persia, Kurdistan, &c., has been extended to various allied plants in other districts; for all the *Anthemidæ* possess something of the same virtue in a greater or a lesser degree; and in the next place, even of these inferior species, instead of nothing but the pollen being used, every part of the plant that can be beaten down into dust is sold as the true insect powder. A very considerable trade is thus carried on in Dalmatia and other districts in the south and east of Europe in a powder manufactured from the common Ox-eye Daisy (*Chrysanthemum leucanthemum*), *C. montanum*, *Pyrethrum cinerariæfolium*, &c. These possess the repellent virtues of the true *Pyrethrum* to a greater or less extent, and, doubtless, in a much stronger degree than the same plants possess when grown in a more northern latitude and colder climate. M. Cautraîne (as quoted in a recent number of the *Belgique Horticole*) particularly notes the scarcity of fleas in Ragusa, and other parts of Dalmatia, and ascribes it to the use of these plants. The plant itself (not the powder), it seems, is mixed among the litter of their cattle, and, by making this a persistent practice, the immunity of which he speaks has been obtained. We know nothing as to this from personal experience, but if it be as M. Cautraîne relates, all we can say is that it is a great pity that the cultivation and use of the *Anthemidæ* has not been extended to the western side of the Adriatic Gulf.

The insect powder that is sold in this country is, from the causes above mentioned, very rarely to be had unadulterated. Indeed, the true—or perhaps it would be fitter to say the best—kind made from *Pyrethrum roseum* or *P. carneum* is rarely to be met with at all. It is not difficult to distinguish between powder made from these species and powder made of other *Anthemidæ*, provided they are both genuine and composed of the pollen in which the virtue chiefly resides. Under the microscope the pollen spores of *Pyrethrum roseum*, for example, have needle-like projections, while those of the other *Anthemidæ* have them rounded. But the fact is, that, as I have said, in the majority of samples no spores of pollen are to be seen at all. We have examined a number for the purpose of endeavouring to determine from what species the powder has been manufactured, but we ended as wise as we began. In no instance have we found any pollen at all—nothing but broken fragments of epidermis, of leaf, flower, or branch. Another test is the smell. Good powder has no smell, and the colour should be a dull, dirty drab. A. M.

Californian Dye-Weeds.—The gathering of *Orchella*, a lichen which yields a beautiful purple dye, is, says the *Christian Advocate*, becoming a considerable business in lower California. This lichen is worth 125 dollars per ton in London, and the supply is inexhaustible. That which is used in commerce is gathered from the trunks and branches of trees.

The Last Years of Adanson.—Adanson, the French botanist, was about seventy years old when the Revolution broke out, and amidst the shock he lost everything—his fortune, his places, and his gardens. But his patience, courage, and resignation never forsook him. He became reduced to the greatest straits, and even wanted food and clothing; yet his ardour of investigation remained the same. Once, when the Institute invited him, as being one of its oldest members, to assist at a *séance*, his answer was that he regretted he could not attend for want of shoes. "It was a touching sight," says Cuvier, "to see the poor old man, bent over the embers of a decaying fire, trying to trace characters with a feeble hand on the little bit of paper which he held, forgetting all the pains of life in some new idea in natural history, which came to him like some beneficent fairy to cheer him in his loneliness." The Directory eventually gave him a small pension, which Napoleon doubled; and at length easeful death came to his relief in his seventy-ninth year. A clause in his will, as to the manner of his funeral, illustrates the character of the man. He directed that a garland of flowers, provided by fifty-eight families whom he had established in life, should be the only decoration of his coffin—a slight but touching image of the more durable monument which he had erected for himself in his works.

PALM AVENUE IN THE BOTANIC GARDEN AT RIO DE JANEIRO.

This magnificent avenue, which for elegance and majesty of aspect is perhaps unsurpassed, makes one long to possess such a glorious feature in our own country; for, however we may dislike formality, nobody can object to the striking and truly imposing effect thus produced. The palm employed for this purpose is the *Oreodora regia*, a kind distinguished by its lofty trunk and terminal head of noble foliage. The photograph from which the representation here given was prepared only takes in half the avenue, which is cut in two by the fountain and basin in the foreground.

For the following graphic account of this avenue, I am indebted to Mr. Herbst, of Kew Nursery, Richmond Road.

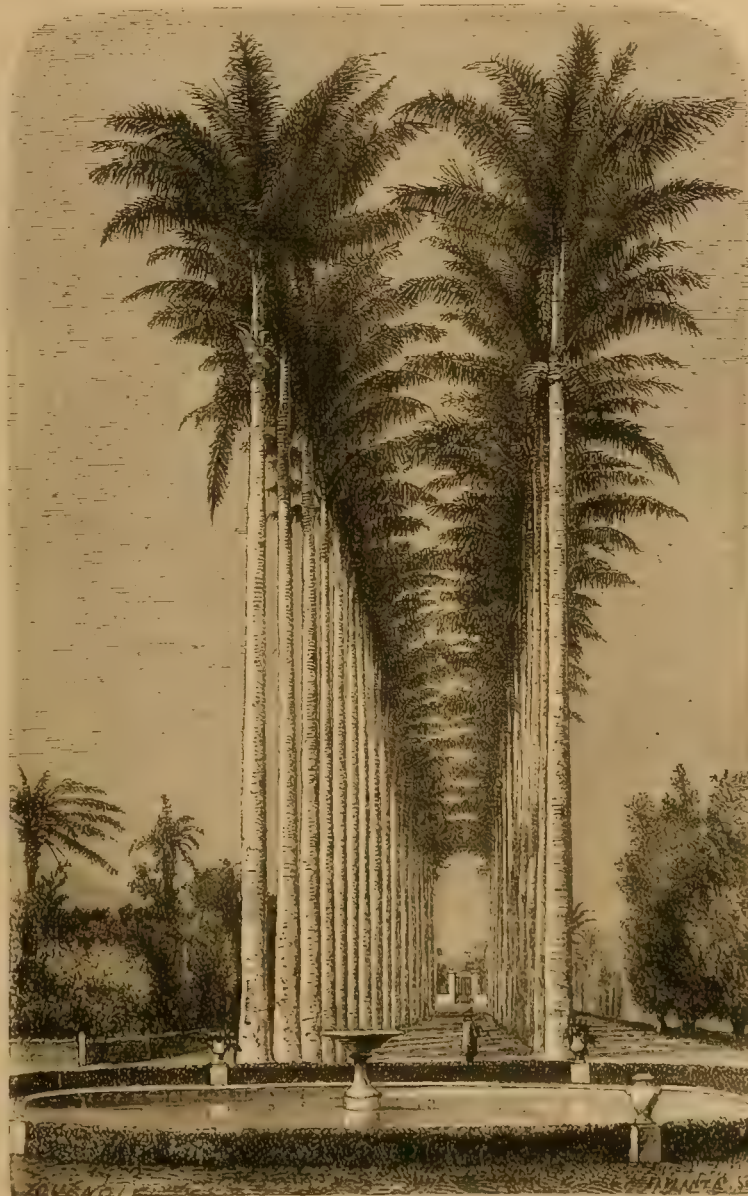
Strangers, he says, from northern countries are invariably struck with the appearance of this avenue, which is unrivalled for its regularity, extent, and beauty. It forms a colonnade of natural Corinthian columns, whose graceful bright green capitals seem to support an over-arching dome of bright blue sky. When I saw it for the first time I felt sensations similar to those which I experienced on entering the great dome of Cologne, or that of Notre Dame; and this feeling of reverence and admiration never wears off with time. The trees of which it consists, ten years ago were about sixty feet in height to the top of the fronds, and were then said to be between forty and fifty years of age; I, however, took them to be younger. They may now be about seventy-five or eighty feet in height. The trunk of each of them is about four feet in diameter at four feet from the ground, and it goes on tapering gradually to a length of more than fifty feet, when it becomes united with another smooth thinner trunk from ten to twelve feet in height, formed of the bright green footstalks of the leaves, which again measure some twenty feet or more.

In young vigorous trees the leaves are considerably longer. The great beauty of this palm is its elegance and cleanliness of aspect; no ragged leaf beats about in the wind even at that great height; the over-ripe yellow leaves unsheath themselves of their own accord, and the trees look as clean as if they had

been trimmed by hand. The colour of the stem is a whitish grey, like that of light stone in dazzling sunshine, and although from top to bottom it is covered with lichens of all the colours of the rainbow, yet so small are they that you only perceive them by approaching the tree closely.

In the same garden exists the parent of these palms, which was planted during the last years of the last century, and is now above 120 feet in height. It is a noble tree, and, as it stands singly and at a considerable distance from other plants, its beauty and height can be seen to the best advantage.

J. CROUCHER.



Palm Avenue in the Botanic Garden at Rio de Janeiro.

Herbaceous Plants for Exhibition. — I have carefully scanned Mr. Brown's list of hardy perennials for this purpose at page 117, and am surprised to observe that hardy ornamental-foliaged plants are entirely excluded. The schedule quoted simply requires that "hardy perennials" shall be furnished, but says nothing about their being in flower or otherwise. On several occasions I have exhibited twelve hardy perennials in pots at a country show, where the rule was to have at least eight in flower, the other four being plants having variegated foliage; and were the same arrangement adopted by exhibitors at South Kensington during the ensuing year, I am both sure that the collections would be improved, and that no reasonable judges would disqualify. Especially do I recommend for exhibition purposes the variegated variety of *Polemonium caeruleum*, which is really one of the very handsomest of herbaceous plants, and one so far hardy that it may be wintered safely in sheltered places. In exposed situations, however, it is liable to suffer, and in such a case it is best to lift and plant in cold frames for the winter. As a bedding plant it is one of the most graceful and effective with which I am acquainted; its sil-

very foliage being exceedingly pretty, and its habit of growth is so dense that it is certain to thoroughly cover the ground allotted to it. Anyone who may possess a few plants of this *Polemonium* should at once pot them up, and grow them on in the greenhouse. Should flower stems show themselves, pinch them out, and when the plants are of sufficient size give them a shift into larger pots; under such treatment they will soon become highly effective and handsome plants. — D.

A Florist's Puriticism is always coloured by the petals of his flowers—and Nature never shows him a black corolla. — *Of the Weather H-b-s.*

THE FRUIT GARDEN.



ORCHARD HOUSES.

WHEN Mr. Pearson (p. 105) stated that the future of British gardening would be "more and more under glass," he asserted what was quite correct; but when he added that a given area of ground could be as cheaply covered by a span-roofed house as a lean-to, he was as decidedly wrong. Given, for the sake of illustration, a space 12 feet wide to be covered with glass, 6 feet high at the sides and 11 feet at the ridge would give from ground line to ground line a girth of 27 feet 6 inches. Given a corresponding space in front of a twelve-foot wall, running at the same angle, but with a short hipped roof at the back, the result will be 6 feet of vertical glass, 12 feet of front, and 3 feet of back rafter, or in all 21 feet of girth, equal to just 6 feet 6 inches less than the span-roofed house. Bring the lean-to at a flatter angle to the top of the twelve-foot wall, and the girth will be 9 feet 6 inches, or 8 feet less than a span-roofed house. Take these measurements at the price of general orchard-house builders, and the result will be, according to the angle of inclination, a saving from one-fifth to one-third in favour of the lean-to house. Of course, I am presuming upon the wall being built; but if it is not, a twelve-foot wall will be built for less than a corresponding area in glass. Therefore, where walls are already existing it will be cheaper to build against them than to erect span-roofed houses. So much for facts; but the propriety of the arrangement is another matter, and a very difficult one to solve. If we again appeal to facts we shall possibly be confronted with the almost unquestionable truism, that the best fruits of past and present times, and a large proportion of the best plants, have been grown in lean-to houses. Still, this is no proof that equally good, and possibly superior, fruit, could not have been grown in houses with light on all sides. The grapes in Mr. Pearson's large vinery last season (1871) were of undoubted excellence. If there is any mistake in Mr. Pearson's houses, it is their extreme size. For an unheated orchard house there is some reason in having it large, inasmuch as the frost-resisting power will be in proportion to the cubic contents of the warm atmosphere enclosed; but when we go to fire-heated houses, then, unless they are to contain large plants, there is no sense in building them disproportionately large. Fruit-houses twelve to twenty feet wide will be more economically managed than those twenty to thirty feet wide. For orchard houses, inconveniently large ones are certainly a mistake, as the fruit is so far from the glass as to render it quite impossible that it can attain the perfect colour and maturity necessary to fine quality. Hence we rarely see first-class peaches and nectarines from orchard houses; and if a market-gardener commences to grow stone fruit it is a rare exception to find him abandoning the trained trellis system of cultivation. With the excessive primness that would lay each branch in its allotted space with almost mathematical precision we have no more sympathy than with the arbitrary rule which would confine every tree to its particular space, saying, So far shalt thou go, and no further. On the contrary, we believe nature cannot be curbed without injury, and that much of the gumming and canker, the dying off of branches and the plague of mildew, that often takes place, may be traced to those straights and stays which are used to strain a branch into exact position. That free and easy mode of training which allows a plant to fill a house, or two houses if it is disposed to do so, and which guides the branches without putting them in leading strings, is the proper system of management, and should not be confined to one variety of tree, but be extended to all trees alike. The future of orchard-house treatment is certainly in this direction, and when we begin to speak of the crop by pecks or bushels, rather than by dozens or scores, orchard houses will have attained their true position of usefulness.

What Mr. Pearson says of the uncertainty of the peach crop, and we might add the life of the tree, is very true; still, there

are ways and means by which, even north of the Trent, they are grown with great success. The finest peach trees I have ever met with in England were in Derbyshire; and no one can look upon the magnificent trees at Chatsworth without being struck with the fact that a cool, if not cold bottom, is best for them. At Chatsworth the roots during nearly the whole of the winter, forcing season included, must be under water, and yet such crops, size, and quality are rarely to be met with elsewhere. The success here and in some other places in Derbyshire certainly point out the advantage of having a cool bottom, calcareous soil, and an abundant supply of water. At the same time, in the interest of truth, the fact must not be ignored, that the peach has been, and we believe is still, very successfully grown with its roots in chambered and hot water heated borders, as, for example, at Ringwood, near Chesterfield, almost as cold a place as could be found in the Peak of Derbyshire. The success in this case may be regarded as one of those anomalies which sometimes crop out in garden experiences, and which puts our philosophy to a strange test. The true work of the accumulating glass erections of the country is not so much the production of peaches, as securing a good supply of those superior pears, plums, and apples that we should have from October through the winter months. Fine as a well matured peach may be in its season, a house-grown pear, apple, or Jefferson plum at the present time—Christmas-day—is infinitely finer. A few days back a friend sent us from Ireland, as a fill-up, among other seasonable fare, a peck or two of large but rather unfavourable-looking apples. As they were evidently of foreign origin they were relegated to the culinary department. Peeling some of them for a tart the odour of pine-apple became so manifest that the temptation to taste was irresistible. Well, out of a green, bruised, and battered skin, a little amber on the sunny side, came, when peeled, a fruit that for exquisite delicacy of flesh, juiciness and flavour would almost bear comparison with any pine-apple in Covent Garden. Upon closer examination—for up to this time we had bestowed nothing beyond a passing glance upon the fruit—we recognised our old friend the American Newtown Pippin, which had been purchased in the town of Derry at the price of half-a-crown for the stone of fourteen pounds; and nothing more truly delicious have we tasted for years. Much has been said of the Calville Blanc when grown as an orchard-house fruit, and though we know the Newtown Pippin possesses no speciality when grown in the open air in this country, we have written to America for established fruiting plants, and if upon trial under glass they prove as good as we anticipate, they shall have devoted to their cultivation as good a house as can be built. To bring these and similar really delicious fruits to perfection should be the mission of orchardists for the future. Erect good houses, prepare sound and healthy borders, and plant your trees so that they can attain something like proper size with full breathing space, and sufficient heating power to repel spring frosts, and then you may congratulate yourself that you have conquered the British climate, and rendered fruit cultivation a certainty. W.

A NEGLECTED FRUIT.

(THE ALPINE STRAWBERRY.)

THE value of this strawberry is better appreciated in France than in this country; this is not because it cannot be grown as successfully on this as on the other side of the Channel, but because it has been so neglected with us that nine out of every ten who grow it do not know what it is capable of producing under good cultivation. The general custom has been to make an edging plant of it, or to plant it in some out-of-the-way corner, where it remains year after year on the same spot, until it degenerates so much as to assume the character of the wild strawberry found in our woods.

Very different is the result when it is treated with that generosity as regards culture which we bestow on the British Queen or Keens' Seedling. I do not hesitate to say that a greater weight of fruit can be grown on a given space planted with Alpines than with any other variety. The Alpine begins bearing early in July, and yields a constant succession of fruit till the frosty nights come on in October, thus extending the strawberry season nearly three months. All through the hot weather they are exceedingly useful for ices, jellies, &c., and a nice basket of fresh-picked Alpines is not to be despised at any time. Some people may say they are small, but I have

frequently gathered them as large as Black Prince. Don't grow them under walls, or hedges, or on narrow borders, where they are half killed by heat and drought; make your Alpine beds across one of the open quarters, where the ground has been trenched up and well manured two or three feet deep, but don't use rank manure. If the trenching and manuring have been done some time previously, so as to give the ground time to settle, so much the better. The best time to plant new beds is about the first or second week in August. I make my beds six feet wide; on a six-foot bed I plant five rows one foot apart, and about eight inches plant from plant in the rows. Before planting let the ground be made tolerably firm, and afterwards give a good soaking of water. Alpines are hardier than other strawberries, therefore no winter weather ever hurts them. In February I give them a good top dressing of rotten manure, and in May, I mulch them heavily and carefully with long litter or similar material, to save watering.

Anybody who has not yet grown the Alpine strawberry, and who may desire to give it a trial, may commence now in the following manner: Prepare the beds at once, so far as the trenching and manuring are concerned, and let the ground lie rough through the winter. About the first week in February procure a packet of seed of the French Alpine, red or white, or both if you prefer to grow both kinds. Sow in seed-pans, the same as you would do tomatoes or ordinary half-hardy annuals; place them in any house, pit, or frame, that will furnish a nice gentle heat; and as soon as the seedlings are large enough to handle, prick them off into other pans, boxes, &c. In April they ought to be strong enough to plant into the beds: They will begin bearing in August, and a good late crop may be anticipated, but not equal to that from August-planted beds. Don't forget the mulching, for this is most important in dry summers—it saves much labour in watering. Never let the beds stand more than two years in the same place if you can avoid it. A good plan is to destroy half the beds every year, and to replant in a fresh place.—*E. Hobday, Ramsey Abbey, Hunts, in "Field."*

MINIATURE APPLE-GARDENS.

I AM an old country resident, says "T. R.," in the *Times*, living in Hertfordshire, in a district celebrated for its cottage gardens, in which roses and apple trees are equally abundant. In other districts of England I am often grieved at seeing gardens neglected, or at best devoted only to potatoes and cabbages. Knowing, as I do, the comfort afforded to families by our best known and easily grown fruit, the apple, I am tempted to assist in spreading the knowledge of its culture, so that every cottager may grow his own apples. Before, however, I endeavour to describe the method of forming a cottager's apple garden, I must give a description—all gardeners know it—of the stock to be employed to bring in the fruitfulness required in a small garden. There is a stock used to graft apples on with an almost fabulous name and origin. It is said to have been imported from Armenia, from the real site of Paradise. French gardeners in old times christened this tree the "pommier du Paradis"—the apple tree of Paradise, and we, as humble imitators, named it the Paradise stock. Soon, however, the name was applied to other apple stocks of the same dwarfing nature, so that we have several varieties of this dwarf stock, which are called English Paradise stocks—kinds suited to our climate and likely to be very valuable to our cottage gardeners.

The first business of the cottager with the garden is to find a corner or square portion of it in which to form his plantation. This space he should mark out so as to hold trees in proportion to his ground. These he may plant in rows round the edges of his garden at a distance of four feet apart, or he may form a square, say twenty feet in extent, which at four feet apart will hold twenty trees. If a square piece of ground is selected it should be planted with apple trees grafted on the English Paradise stock, in the form of bushes, four feet apart row from row, and the same distance tree from tree in the rows. The centre of the space, four feet between each row, eighteen to twenty inches in width, may be cultivated for three or four years, till the trees have grown to the size of a fair-sized gooseberry bush, and in this space may be grown onions and dwarf potatoes, &c., so as to give a paying crop. This portion of the soil may be dug or forked, so as to loosen it, while the space on each side next the rows may be left solid, and be kept clean from weeds with the hoe. We have thus formed an apple garden—say of twenty trees. The sorts may be as follows:—Four trees of winter Hawthornden, four Duchess of Oldenburg, four Lord Suffolk, four Dumelow's seedling or Wellington, and four Cox's Pomona. These are large apples, all great bearers, will be in season from August to March, and will pay the cottager well for the slight trouble of their cultivation. My bush apple trees, now four years old, of the above kinds, bore last season half a peck each. My plantation consists of 160 trees, and, in addition to the sorts

enumerated above, I have the Jolly Beggar, Betty Geeson, Mère de Ménage, Small's Admirable, and Warner's King. I mention the names of these prolific trees to assist the cottager's selection; the common Hawthornden and Keswick Codlin may also be included. Some kinds of dessert apples, too, are equally prolific, and may be cultivated by the cottager with advantage. I may mention one sort, Cox's Orange Pippin, which bears well and sells well, and would in itself be a fortune to a cottager.

And now as to their planting and management. The trees, as I have mentioned, should be planted four feet apart; the ground, after being dug, should have holes opened two feet in diameter and one foot deep; in a hole of this size the tree should be placed, and its roots covered with the earth taken from the hole; this should be gently trodden, and the planting is complete. The first season after planting no pruning will be required, as the growth of the trees will be very moderate; the second season, and every year afterwards, about the middle of June, every young shoot should be shortened to half its length with a sharp knife or pruning scissors, and in August the young shoots that have broken forth since the June pruning should be shortened to two or three inches. This is all the pruning required, and under this simple culture, the trees, if grafted on the Paradise stock, become sturdy fruitful bushes about the size of the gooseberry bush, and will give a supply of fine fruit all through the winter. Trees, may, I believe, be bought at 6d. and 9d. each, so as to be within reach of the labourer's pocket; or if a man is ingenious he may buy his Paradise stocks—say at 8s. per 100. The second year after planting he may graft them with the proper sorts.

NOTES AND QUESTIONS ON THE FRUIT-GARDEN.

Grapes in Bottles Filled with Water.—Has recent experience confirmed the good opinions that were advanced some few years ago in reference to this mode of preserving grapes after they had been cut?—*Vitis.*

[Mr. Tillory, of Welbeck, says:—At the present time I have between 400 and 500 bunches of grapes in bottles of water, and I find they have kept as well as if they had been on the vines: the varieties are Black Tripoli, Muscats, Burchardt's Prince, West's St. Peter's, Trebbiano, and the Raisin de Calabre. They have been bottled about six weeks, and will keep up the supply till the end of February. After that, the grapes in the latest viney will be cut off and bottled, the sorts being principally Alicante, West's St. Peter's, Lady Downes' Seedling, and Royal Vineyard. I have found no difficulty in keeping Lady Downes in good condition till the end of May in bottles of water, and there is the advantage of getting the vines in the late viney properly pruned and dressed for the next year's crop. The main thing to be observed in keeping grapes well in bottles is looking over the bunches frequently, and clipping out all decaying berries, attending to the temperature so as only to keep out frost and damp, and this can be best done by having a room fitted up for the purpose, as has been done here.]

Notes Concerning Pot Vines.—In the middle of October my pot vines had ripened and shed their leaves in a natural manner, they had never been allowed to remain dry during any time of their existence, their laterals had been removed, and the canes shortened to the required length as soon as they showed signs of ceasing to grow. On the 30th of October they were placed in a temperature averaging 55°, with a close moist atmosphere; they are still kept no warmer than this during cold weather, but are allowed a higher temperature during sunshine. As soon as the buds were seen to be swelling, air was given, and has never been taken off since. Treatment very similar to this will continue till the flowers are set. My object in writing this is to introduce some notes concerning root action. I have more than once stated very positively, in opposition to several eminent gardeners, that root action in the vine is never visible till a considerable amount of foliage has been made. Well, about a month after these vines had been placed in the above-named temperature, and the buds were swelling perceptibly, I examined the roots and found to my surprise that they appeared in full vigour, and the feeders, in myriads, were plump and of a greenish-white colour. Now, thought I, I have committed a mistake in contradicting men of half a century's experience, and after all finding that they were right, and that I was wrong. Meanwhile the buds continued to swell, and in a few days I examined the roots again, and found to my relief that the fibres were fast decaying, and that, although the roots were plump and healthy, there was no sign of extension; the rootlets I had seen on the first examination were late and not early ones. My former observations were confirmed, and I was spared humiliation. The canes have now broken regularly and strongly all the way up, quite as strong at the lower as at the upper end, and I have no doubt new root action will soon commence, if it has not already done so. Is it the habit of other plants besides vines to make upper growth before the roots move?—*W. TAYLOR, Longlet.*

Our Trade in Dried Fruit.—The arrivals of currants in December consisted of 3,380 tons, and we have had a total, since the 23rd of August—the first day of the season—of 30,300 tons imported into London. This, with the old stock, has made 32,300 tons to work upon, and as the London stock is reported by dock companies and wharfingers to be 11,660 tons, it may be calculated that for all purposes 20,637 tons have been delivered from warehouses or ship's side. Of Valencia raisins, the December arrivals of 544 tons bring the total receipts of the season to 9,062 tons, against 7,660 tons in 1870.

ASPECTS OF VEGETATION.

SCENE IN A BRAZILIAN FOREST.

To those who are not privileged to travel in tropical climes, it is interesting to witness pictorial evidence of the beauties of tropical scenery. This is particularly true of the gardener whose pleasure and duty it is to develop the highest beauty of the vegetation in his charge; for he will do this effectually, or otherwise, just in proportion to his familiarity with the abounding beauty and variety exhibited by vegetation in its more favoured haunts in countries from which the different objects of his care come. We lately illustrated the giant herbaceous vegetation of Siberia, and now go south to the magnificent forests of Brazil, letting Mr. Darwin and our illustration describe them for us.

After delineating the elements of the scenery, "it is hopeless," says Mr. Darwin, "to paint the general effect. Learned naturalists describe these scenes of the tropics by naming a multitude of objects, and mentioning some characteristic feature of each. To a learned traveller this possibly may communicate some definite ideas; but who else, from seeing a plant in an herbarium can imagine its appearance when growing in its native soil? Who, from seeing choice plants in a hothouse, can magnify some into the dimensions of forest trees, and crowd others into an entangled jungle? Who, when examining in the cabinet of the entomologist the gay exotic butterflies and singular cicadas, will associate with these lifeless objects the ceaseless harsh music of the latter and the lazy flight of the former—the sure accompaniments of the still, glowing noonday of the tropics? It is when the sun has attained its greatest height that such scenes should be viewed; then the dense splendid foliage of the mango hides the ground with its darkest shade, whilst the upper branches are rendered, from the profusion of light, of the most brilliant green. In the temperate zones the case is different—the vegetation there is not so dark or so rich, and hence the rays of the declining sun, tinged of a red, purple, or bright yellow colour, add most to the beauties of those climes. When quietly walking along the shady pathways, and admiring each successive view, I wished to find language to express my ideas. Epithet after epithet was found too weak to convey to those who have not visited the intertropical regions the sensation of delight which the mind experiences. I have said that the plants in a hothouse fail to communicate a just idea of the vegetation, yet I must recur to it. The land is one great wild, untidy, luxuriant hothouse, made by Nature for herself, but taken possession of by man, who has studded it with gay houses and formal gardens. How great would be the desire in every admirer of nature to behold, if such were possible, the scenery of another planet! yet to every person in Europe it may be truly said, that, at the distance of only a few degrees from his native soil, the glories of another world are opened to him. In my last walk I stopped again and again to gaze on these beauties, and endeavoured to fix in my mind for ever an impression which at the time I knew sooner or later must fail. The form of the orange-tree, the cocoa-nut, the palm, the mango, the tree-fern, the banana, will remain clear and separate; but the thousand beauties which unite these into one perfect scene must fade away; yet they will leave, like a tale heard in childhood, a picture full of indistinct, but most beautiful figures."

TREE, SHRUB AND PLANT LABELS.

(Continued from p. 156.)

For fruit trees, roses, &c., perhaps the simplest and best kind of label is a common wooden one, three inches long or so, and with a hole bored through at one end, through which a copper wire may be passed to attach it to the tree, the name being written on while the paint is moist, and the copper rather loosely though securely bound round the branch, so as to allow for its expansion. In some places where large collections are kept it is usual to put numbers to the plants, and enter the names with those numbers in a book. In such cases all that has to be done is to provide suitable numbering material, and the best known are little narrow strips of lead, on which the number is impressed with type for the purpose, and then the strip is wrapped round a small branch rather loosely but securely.

For all common bedding and similar plants, ordinary wooden labels are at once the most convenient and the simplest. If you require them of a somewhat lasting character, dip the ends in tar or pitch. In most gardens it is the practice in writing those wooden labels to write the name from the part that goes in the ground to the top—a bad way, inasmuch as the label always begins to decay at the base, and thus the beginning of the generic and specific name gets obliterated, while the end of it may be quite legible. Always begin to write it at the top, and then, if it does decay at the bottom, the commencement of the names will, in most cases, lead to their recognition. This may seem a small matter, but really is of much importance where there are many plants named with common wooden labels. It becomes as easy to write from the top after a little practice as the other way. In writing the names always begin as near the top as possible. The wooden labels are most readily made from laths if they be not bought by the bundle, in which way they are now frequently sold. They are also generally used for pot plants, and are the best for general purposes. When we have nice specimen plants it is often desirable to furnish them with more permanent and horizontally written labels. The readiest and best way, however, we have found of doing so is as follows:—There are little zinc labels of several shapes sold by seedsmen, and usually written upon with some acid, but they are generally unsatisfactory when so written, and not sufficiently legible. By painting these with a little white paint made without oil, you may write upon the surface with common ink, and by placing over the lettering and general surface of the label when dry a touch of the best copal varnish, a neat, effective, and most convenient label for pot plants is the result. The labels can be written by anybody, and are as quickly and conveniently done as any. It is best to write each letter distinctly—to "print" it after a fashion, in fact. Of course there are others equally suitable, but one may obtain a dozen of these for the price of one of the impressed labels, and they may be used again and again, like the cast-iron labels recommended for trees. We are the more desirous of recommending these economical and efficient articles from having frequently seen the labelling of trees, &c., given up in disgust in consequence of the failure of expensive glazed and other labels. Where large collections of camellias or any other hard-wooded plants are grown, the small strips of lead, with the number impressed on one end and the strip folded on so that the numbered end shall be presented to the eye, are excellent, as well as for roses, fruit trees, &c., in the open air.

With regard to the way of writing a label, it is generally a good plan to give a place to what is called the "common name," if that name has any basis, not otherwise. The Columbian maple, the dove plant, the maiden-hair—these and such as these that are really "common," or have some recognition, or some meaning, or association, should be given; but to merely translate the Latin name, to give us something like the "acuminate-leaved Sarcoglottis," or the "long-tubed brain-bane," as they do in Kensington Gardens and St. James's Park, is not desirable. Therefore we never put a "common name" upon a label unless it be really such, and if the plant has any peculiar use or association that is not expressed by this common name, it is sometimes desirable to record it. Never omit the generic name in full, as they frequently do at Kew. The native country, in addition to the scientific name, should always be given; to put the date of introduction or natural order is unnecessary. One may see labels in some botanic gardens so much covered with authorities and one thing or the other as to scare away the visitor whom they ought to attract. Of course this refers to large and important subjects; for small ordinary plants the single name only should be used.

After trying every way we are quite satisfied that the best way of all is to have a stock of strong but neat iron labels, and have some person to rewrite them occasionally in winter. The most suitable size for general purposes of labelling young trees, &c., is, about nine or ten inches high, one inch wide in the shank, the head four or five inches across, and one and a half or two inches deep. Of course these cast-iron labels will only be obtained by those who really wish to name their choicer trees, shrubs, &c. In the first instance we made a model in wood of the desired kind of label, and, sending it to Glasgow, had a number cast at a cheap rate per hundredweight—getting somewhat more than a hundred labels per hundredweight. In writing the labels it is best to first write the outlines, and then fill in rather thickly; the paint to be finely strained, of course.

The following description of a new garden label, contributed to the *Journal of Botany*, by Professor A. Church, of the Royal Agricultural College, Cirencester, will be of interest. The Professor says:—"The indestructibility of solid paraffin suggested to me its use for the preservation of printed plant labels. The plan having proved successful, and the 'paraffined' labels having resisted the adverse atmospheric influences of two seasons, I cannot but hope that more extended trials will confirm my conviction that a permanent garden



ASPECTS OF VEGETATION.—A BRAZILIAN FOREST.

label, legible and inexpensive, has been attained. The following is a brief description of the mode of preparing the labels:—Print the names, &c., of the plants on stout, smooth, white paper of suitable dimensions and form. Prepare cast-iron label-holders with a flattened spike to keep them straight in the ground, and with the upper expanded portion so contrived as to have a sunk flat space about a quarter of an inch deep, and the right size for the reception of the printed label and its protective glass cover. Paint this sunk space with several coats of good white paint, and allow it to dry thoroughly. The next step is to unite the label to the glass plate with paraffin. The paper-label and glass being cut to the same size, the latter is cleaned and kept hot—about as hot as boiling water—while the label is being dipped into a bath of melted paraffin. The label is then quickly pressed on to the hot glass, a board and a weight being put upon both. When cold, the glass with its adherent label is placed in the sunk space of the label holder, and secured with good putty. Subsequently, a coat or two of paint on this putty will keep all secure. The above directions are much easier to carry out than they appear to be at first sight, while several contrivances and precautions will suggest themselves to anyone who carries them out on a large scale. For instance, the glass plates may be kept hot in an oven, and removed with a pair of crucible tongs as wanted, while another pair of tongs or pincers will be useful to hold the labels during their immersion in the melted paraffin. Here it should be stated that the best paraffin is that which is freest from any kind of fat or grease, and melts at a temperature at least above 56° centigrade. It might be found advisable to imbed the label and glass in paraffin, or to modify the plan of fixing the label to the glass by putting it, soaked in paraffin, between two sheets, but the principle of all these modifications is identical. The air and rain are excluded, and cannot give rise to the discoloration of the label."

On the above attempt of the able Professor we have only to remark again that no label deserves general adoption in a large garden which will not permit of being used again and again, if from any cause the plant it was originally used for disappears from the garden or perhaps receives another name; and as to permanence, that question is already settled. Iron labels, painted black, and with white lettering, covered with a coat of copal varnish, done eight, seven, and six years ago in the herbaraceous department of the Botanic Gardens in the Regent's Park, are now as legible as ever. This is permanent enough for all ordinary purposes. Grand old oaks or other objects no more liable to suffer from vicissitudes than granite rocks, may require as permanent labels as can be devised.

THE ARBORETUM.



TREES FOR CITIES AND TOWNS.

MANY think that it is difficult or impossible to grow many kinds of trees in London. This is an erroneous notion. The after-mentioned trees are such as I know will grow in London, and, consequently, in our other large cities:—

THE HORSE-CHESTNUT.—This thrives in London where it is well planted, and the trees retain their leaves longer than they do in Paris; therefore, they are much fresher, and more agreeable to look upon in autumn. The most conspicuous plantation, perhaps, is the avenue in Regent's Park, where, however, the trees are crowded, and the soil is very inferior compared with much that may be found in other London parks. It should be borne in mind that when street trees are planted on the Continent they receive proper soil, and are otherwise treated so as to ensure good specimens. With us the rule has been the reverse of this. It is by mere accident that most of the fine trees seen in London have got their heads above the crowd of young trees and shrubs among which they have been carelessly stuck into the ground. In the squares and in the open roads of London, such as that of the new Thames Embankment, the horse-chestnut, if properly planted, would in due course become—what it is already in our parks—the noblest in flower of all our stately forest trees, and we may add that the double variety lasts much longer in flower than the common form. The red kind would also thrive well, as indeed would all other sorts of chestnut.

ROBINIA (FALSE ACACIA).—This thrives in all parts of London; but it is rarely so planted as to ensure more than half its full development. It retains its verdure till late in autumn, then sheds its leaves quickly, and goes to rest for the winter. It has, in this respect, an immense advantage over the lime, which occupies half the summer in shedding its rusty leaves. The round-headed variety, which forms such compact and glorious masses of verdure in various cities in Italy, is well worthy of attention; and so is the pyramidal one, which has a habit like that of the Lombardy poplar. It is a peculiarly graceful tree, and especially adapted for positions in towns and cities where a tree with wide-spreading branches might be objectionable. Its columns of graceful verdure may rise in the narrowest streets, or from the smallest enclosures round public buildings, &c., without shutting out light, or giving rise to any objectionable drip. This variety may be seen in pretty good condition along the flower-walk in Kensington Gardens. There are other varieties of this elegant tree equally important, such as *sophoræfolia*, *macrophylla*, *microphylla*, and *Decaisneana*.

GLEDITSCHIA.—This is much less known as a town tree than the Robinia, but is even more valuable, retaining, as it does, its leaves in a perfectly green condition till late in autumn, and attaining, under favourable circumstances, a height of nearly eighty feet. A tall and well-developed Gleditschia is more beautiful than the finest Robinia; indeed, taking stateliness and grace into consideration, I know of no tree to surpass such specimens as that of the Gleditschia in Professor Owen's garden in Richmond Park. I have observed these Gleditschias thriving in small gardens in London, where they have been most carelessly planted; therefore, there would be no difficulty in growing good specimens of them in our streets and squares.

MAPLES.—Nearly all the species of this noble family may be grown well in London, and any of half-a-dozen distinct species of maple are better worthy of a place in town than the common lime. Among sorts to be recommended may be mentioned the Great Columbian, the Neapolitan, the Hungarian, the Siberian, and the Norway maples.

ALDERS.—Of the cut-leaved kind there is a fine old tree in the Duke of Buccleuch's garden at Montague House. This variety, which forms such a distinct-looking tree, attains as great a height as the common kind, and there are other sorts that thrive equally well in towns.

BIRCH.—The weeping birch is quite at home in London, and the nobler species, such as *Betula nigra*, will also succeed, and may be seen in Kensington Gardens and Hyde Park.

CELTIS OCCIDENTALIS.—Of this there is a fine tree at Fulham, overhanging the King's Road.

THE COMMON ASH.—This and its allies, some of which differ greatly from one another in appearance, make excellent town trees. A good collection of them may be seen in perfect health in Kensington Gardens, near the pretty little cottage on the south bank of the Serpentine. They are, however, too much crowded, and begin to want relief in the way of thinning.

THE TULIP-TREE.—This is quite at home in London, and is one of the most valuable of city trees.

THE FLOWERING ASH (ORNIS EUROPEA).—This thrives perfectly, and is very ornamental in early summer.

PYRAMIDAL PLANE.—This is a close-growing variety of the common London plane, and would, doubtless, make an equally good town tree.

POPULAR.—Of the many species and varieties that exist of this, the Abele poplar is, perhaps, one of the finest which we have for towns.

PTEROCARYA CAUCASICA.—This has noble compound leaves, and will do well as a town tree.

AILANTUS GLANDULOSA.—This thrives famously in towns, both in America and in Europe. Good examples of it may be seen both in Oxford and in Cambridge terraces, Edgware Road.

Among the preceding are some of our largest town trees. There is, however, a host of trees smaller in stature, but more beautiful in bloom, and well calculated to relieve the monotony resulting from planting any of the larger kinds in quantity, which thrive equally well in towns as in the open country. These are the thorns in splendid variety, the snowy Mespilus, the almond, the apricot tree, the cherries, double and single,

the Judas tree, the deciduous cotoneasters, the quince, the laburnums, *Gymnocladus canadensis*, *Koeleria paniculata*, *Salisburia adiantifolia*, such vigorous and hardy magnolias as *acuminata*; the Dutch medlar, the double-blossomed peaches, the cherry plum, *Pyrus* in great variety, Weeping *Sophora*, the lilac, and the Weeping *Wych elm*. Many others might be named; but these will suffice to show that if we lack variety in city plantings, it is not for want of materials. G.

WEeping TREES.

As yet we do not know the full value of weeping trees. It is a peculiarity of most weeping trees not to show their full beauty of character till they have attained a considerable age. Who knows anything of a weeping beech who has seen only a young specimen recently planted? Why, it is passed by as a mere curiosity. But give it a generation, and it becomes as picturesque as a gale-tossed ship. So it is with the weeping mountain elm, of which there is such a noble specimen on the lawn of the Botanic Gardens in the Regent's Park. Some species, it is true, show their beauty from an early age; but the above-named marked examples point to the probability that we cannot judge of the effect that will finally be produced by kinds obtained in recent years.

One of the most beautiful of all weeping trees is the weeping form of that fine tree the Japanese *Sophora* (*Sophora japonica pendula*). When well developed, it is attractive in winter or summer. It is more picturesque in outline than the weeping willow, while the shoots hang most gracefully. It is rather a slow grower, its only fault; like the normal form, it would thrive well on dry soils. This tree is more esteemed on the Continent than in this country, and there are better specimens of it there. It probably requires the climate of the south of England to give it a fair chance of attaining perfection.

As to the position suited for this tree, there is no fairer object for isolation in some quiet green bay of the pleasure-ground or lawn. It should never be crowded up in a plantation or shrubbery with a number of ordinary trees, which, if they do not rob it at the root, or shade it at the top, will prevent its beauty from being seen. We should be glad to learn the size of the best specimens of this tree now in this country.

BEECH TREES AND LIGHTNING.

WHILE travelling through some of the extensive forests of North America, in the summer and autumn of 1834, I was astonished to find that during a thunder-storm many of the inhabitants took shelter under the nearest beech tree, believing that such trees are never struck by lightning. Wishing to investigate the truth of this opinion, I made inquiry in various districts through which I passed, but in none could I hear of a single instance of a beech tree having been struck by the electric fluid, although I had seen elms, oaks, chestnuts, and ash trees more or less disfigured by it, both in the United States and the Canadas. The stems of elms and oaks were generally torn into long narrow strips, while the ash was in elongated detached masses of various sizes. On returning to Edinburgh, I made inquiry in various parts of Britain to ascertain if such was

the case in regard to the beeches in this country. Although I have seen and heard of many species of trees being more or less injured, not one proved to be the beech. From this seeming exemption, I was inclined to think that there must be something in the constitution of the beech different from other trees, rendering it less susceptible to the electric fluid. I may here mention one circumstance which is pretty well known to all proprietors of beech forests, that is, the scarcity of vegetation in such places; and in close beech woods nothing is seen but the brown decaying leaves of many successive years. In the American beech woods, as well as some of those in Britain, we do find a few herbaceous plants peculiar to such places, totally different in appearance from the plants found growing under any other species of timber trees. Under the beech trees in American forests we find the different species of "Indian Pipe" (*Monotropa uniflora* and *M. lanuginosa*), also the "Cancer Root" (*Epiphegus virginianus*), while the *Monotropa Hypopitys* is indigenous in some beech woods in England. These plants have, more or less, a waxy appearance, of a peculiar whitish-brown colour, devoid of leaves, but covered with scale-like bodies. During a recent tour through England, I was interested to see at Mr. Smith's, at Worcester, a large weeping beech, which was struck by lightning during the month of June 1857. This tree is twenty-five feet high,

with a stem six feet in circumference at base, and branches off horizontally at top. The spread of the branches varies from thirty-five feet to forty feet in diameter. This beech, instead of being riven in pieces like the generality of lightning-struck trees, has the bark on the upper horizontal portions of the branches injured, just looking as if they had been seared with a hot iron. The health of this tree does not appear to have suffered, as the points of the branches then struck, as well as the secondary ones immediately below the seared portions of the large branches, have grown quite as freely, and continue as healthy



The Weeping *Sophora*.

as those which were untouched by the electric fluid. The three main branches injured vary from twenty-one inches to twenty-seven inches in circumference, and the portion of bark riven along their upper surface varies from four to five inches in breadth, in small, irregular flakes, standing quite upright. The electric fluid must have passed off by means of the pendent branches, as no trace is observable on the surface of the horizontal ones beyond ten, thirteen, and sixteen inches in circumference, nor is there the slightest appearance on the stem of any electric fluid having passed down it, which is not unfrequently the case with some lightning-struck trees. Owing to the peculiar effect produced by lightning on this weeping beech, I am still inclined to think that there must be something in the constitution of the beech tree which ought to be investigated, and which renders it incapable of being injured to the extent of other forest trees. Still, large beech trees may occasionally be struck, and show no more injury than the weeping beech at Worcester.—J. McNab in "Proceedings of the Botanical Society of Edinburgh."

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Extinct Sequoia (Wellingtonia) Forests in England.—In the December number of the *Geological Magazine*, Mr. Carruthers, F.R.S., of the British Museum, has figured and described two new species of fossil coniferous fruits from the Gaultbeds of Folkestone. He states one species to be allied to the existing Sequoia (Wellingtonia), and shows that they point to the existence of a coniferous vegetation on the high lands of the Upper Cretaceous period, which had a facies similar to that now existing on the mountains on the west of North America, between the thirtieth and fortieth parallels of latitude. No fossil referable to Sequoia has hitherto been found in strata older than the Gault, and here, on the first appearance of the genus, we find it is associated with pines of the same group that now flourish by its side in the New World.

The Hemlock Spruce (*Abies canadensis*).—The grandest and most solemn of all the forest-trees in the mountain regions. Up to a certain period of growth they are eminently beautiful, their boughs disposed in the most graceful pagoda-like series of close terraces, thick and dark with green crystalline leaflets. In spring the tender shoots come out of a paler green, finger-like, as if they were pointing to the violets at their feet. But when the trees have grown old, and their rough boles measure a yard and more through their diameter, they are no longer beautiful, but they have a sad solemnity all their own, too full of meaning to require the heart's comment to be framed in words. Below, all their earthward-looking branches are sapless and shattered, splintered by the weight of many winters' snows; above, they are still green and full of life, but their summits overtop all the deciduous trees around them, and in their companionship with heaven they are alone.—*Elsie Venner*.

A Tale about Cedar Trees.—Once upon a time, in a certain private park on the south side of London, there stood some cedar trees, both tall and handsome, lending a sweet and beautiful air to the swelling ground on which they grew. But on an evil day the park was given over to the tender mercies of builders and surveyors. "These trees," said one master builder, "are very precious; they would make innumerable cedar pencils, and would in that way realise a great deal of money." He therefore gave orders to his men to cut them down and make them into square logs. Then he said to a timber dealer, "Come, see my timber, and buy it." So the timber dealer came, but he did not buy; on the contrary, he said, "Foolish man! you have destroyed these beautiful trees, and now they are of no use except to burn; these are not the cedar trees of which pencils are made, and their wood is good for nothing else. These trees were worth a hundred guineas each as objects for park embellishment as they stood, and now they are scarcely worth carting away." Moral:—Don't cut cedar trees down, especially with the view of making cedar pencils or much money out of them.—*ALFRED DAWSON*.

Poplars as Town Trees.—I have a very beautiful poplar on my lawn which I received from Simon-Louis Frères, of Metz, now some seven or eight years since, under the name of *Populus Eugeni*, said to be a hybrid between *P. canadensis* and some other species. My tree is about thirty feet high, and differs from all others; it is graceful, and most rapid in its growth, having some resemblance to the Black Italian poplar; but is far less spreading in its growth, and seems well worthy of propagation as a town tree—for anyone who will look at the groups of poplars behind Whitehall will see that the poplar is a town tree. The poplars I allude to (*Populus canescens*, I believe) in summer are slightly pendulous, and on the whole form the most graceful groups of trees I ever saw. That variety of *P. alba* called *P. acerifolia* is also well worthy of a place in our parks. Its leaves when turned up by a slight wind are of silvery whiteness and very plentiful; both this and *P. Eugeni* strike freely from cuttings.—*SYLVIA*.

Trees.—There is a mother-idea in each particular kind of tree, which, if well-marked, is probably embodied in the poetry of every language. Take the oak, for instance, and we find it always standing as a type of strength and endurance. I wonder if you ever thought of the single mark of supremacy which distinguishes this tree from all our other forest-trees? All the rest of them shirk the work of

resisting gravity; the oak alone defies it. It chooses the horizontal direction for its limbs, so that their whole weight may tell—and then stretches them out fifty or sixty feet, so that the strain may be mighty enough to be worth resisting. You will find that, in passing from the extreme downward droop of the branches of the weeping-willow to the extreme upward inclination of those of the poplar, they sweep nearly half a circle. At 90 the oak stops short; to slant upward another degree would mark infirmity of purpose; to bend downwards, weakness of organization. The American elm betrays something of both; yet sometimes, as we shall see, puts on a certain resemblance to its sturdier neighbour. It won't do to be exclusive in our taste about trees. There is hardly one of them which has not peculiar beauty in some fitting place for it. I remember a tall poplar of monumental proportions and aspect, a vast pillar of glossy green, placed on the summit of a lofty hill, and a beacon to all the country round. A native of that region saw fit to build his house very near it, and, having a fancy that it might blow down some time or other, and exterminate himself and any incidental relatives who might be "stopping" or "tarrying" with him—also labouring under the delusion that human life is under all circumstances to be preferred to vegetable existence—had the great poplar cut down. It is so easy to say, "It is only a poplar!" and so much harder to replace its living cone than to build a granite obelisk!—*Oliver Wendell Holmes*.

Killing Tree-Stumps.—Within these last few years I have remodelled my plantations and shrubberies, and rooted-out cart-loads of ill-grown trees, replacing them with curiously grafted trees more suitable for garden decoration than the common material so persistently planted even yet by those whose knowledge of arboriculture extends no further than that of time-honoured timber trees. Not to make too great an opening at once, a large tree was left at intervals, until the new ones got up a little, and these I wish to destroy by degrees as may seem desirable. The question is, therefore, how can this best be done, as the roots cannot be dug out, and to cut them off at or above ground would only result in the production of ugly stumps, bristling with strong shoots. The only effective way I can think of is to remove entirely a ring of bark in the early autumn before the descent of the sap, and this I purpose trying next autumn, if no one can, from experience or inductive reasoning, suggest a better plan. The trees are from twenty-five to thirty years planted. I thought at first to head them down and cover them with ivy, but a vigorous young oak upon which the experiment was tried threatens (for a time at least) to out-grow the ivy. In order to better understand the case on which I seek advice, it may be well to explain that the south plantation, specially intended to block out a row of houses, is about four hundred feet long, and was originally planted on the level, but having now adopted the raised and undulating style, I have raised the ground from three to four feet with rich soil throughout the entire length. This affords excellent material for the new trees to root and become established in. And to prevent injury to those old trees which for a time it is desirable to retain, a ring of loose stones has been built round the trunks. This raising of the soil, as well as the planting of new trees at a higher level, of course, precludes the digging out and eradication of the older ones when it is wished to get rid of them.—*W. T.*—[As you have rather deeply covered the roots of the older trees, it is likely some of them will perish from this cause. Your best course is to plant ivy and other vigorous climbers against any tall stumps you may have, cutting in the top where that is interfering with the younger and rarer trees. Trees, like weeds, may be destroyed by persisting in cutting off their leaves.]

SEASIDE TREES AND SHRUBS.—Mr. Barnes recommends *Cupressus macrocarpa* as the best conifer for planting in exposed situations near the sea, but I venture to advise the use of it in that way with caution. Twenty years ago this very beautiful tree had so fairly taken possession of my better affections that I was in raptures with it, recommending it and planting it in all directions. In one instance I induced a gentleman to allow me to plant him a full thousand in one plantation near the sea; but, alas! of that large group few now remain to tell their tale of hardships; all except a few solitary unhappy objects have disappeared, so that *Cupressus macrocarpa*, however handsome in some situations, is not the tree to plant to "any required extent." Far from it—it will not stand direct exposure to the sea in most cases; in some quiet snug spot nothing can be more handsome than this fine cypress; but as a conifer there is no pine to equal *Pinus austriaca*: it will stand exposure anywhere and everywhere. I reside, as it were, on the sea-beach, and I could point to some fine examples of *Cupressus macrocarpa* planted by myself in 1850-51; but I could also point to many failures.—*WM. BARRON, Sketty, Swansea*.—[From the situation in which the Monterey Cypress grows on the Pacific slope, we should be inclined to say that, unless the climate be a peculiarly harsh one, it is likely to prove a noble seaside tree. At Monterey it stands on the sea-shore, continually tossed by the cool Pacific breezes and storms, and the trees attain such size and character, that they almost remind one of tall Cedars of Lebanon. We hope shortly to engrave a drawing, by Mr. E. Vischer, of San Francisco, in which the trees and their storm-tossed home are beautifully shown.—*CONDUCTOR*.]

THE FLOWER GARDEN.



IVY-LEAVED PELARGONIUMS.

In many localities great difficulty has been experienced during these last few years in satisfactorily cultivating the various varieties of bedding verbenas and calceolarias, and the result is that in some establishments their cultivation has been nearly if not altogether discontinued. The useful *Pyrethrum* "Golden Feather" has, in some degree, supplied the loss of the yellow calceolaria, and in the various varieties of ivy-leaved pelargoniums may, I think, in some instances at least, be found substitutes for the verbenas; and this will possibly be admitted to be the case when it is remembered that this section of the pelargonium family has of late years been much enriched by what may be termed an infusion of zonal blood, and that many of the hybrid varieties thus obtained are found to be exceedingly graceful and really useful bedding plants. In dry seasons, too, on light land, they will be found to succeed admirably, while under similar circumstances verbenas and calceolarias would probably perish. In fact, in their cultivation as bedding plants, neither a rich soil nor an abundant supply of water is necessary or desirable.

Most of the older varieties of ivy-leaved pelargoniums have been long appreciated as useful plants on account of their graceful drooping habit, which renders them well adapted for suspending in baskets and as marginal plants for large or rustic vases, &c. But it is possibly among the hybrid varieties that really useful sorts for the purpose of bedding are to be found, and the ornamental and rich wax-like foliage of these plants compensates for an admitted paucity of bloom which characterises some of the kinds.

I may remark, *en passant*, that it is very interesting to observe the extraordinary vigorous growth of some hybrids between the ivy-leaved and zonal sections. One of these has covered a large portion of the back wall of a greenhouse here in a few months. Indeed, I am unacquainted with any other variety of plant which could have covered a like space in so short a time, and it does not appear to lose any of its vigour by being increased from cuttings. At a short distance it might well be mistaken for the Irish ivy. Its flowers are large and of a soft rose colour, but few and far between.

Very little difficulty is experienced in increasing these plants, which are usually struck here early in August in the open air. Four cuttings are placed in a four-inch pot of light, sandy soil, and in these pots they usually remain until the bedding-out season arrives, when they are merely shaken out of the pots with little or no soil adhering to their roots, and at once planted thickly in the beds, watering well as the work proceeds. This watering is occasionally repeated, if the weather proves dry, until the plants have fairly established themselves.

Nearly all varieties of Ivy-leaved Pelargoniums may be said to be good bedding plants; but I will name a few sorts which I have proved to be remarkably useful in that way, viz.:—Crimson Ivy-leaved, an old variety and an excellent bedder; *Delicatum*, a good bedder, with blush or light-rose coloured flowers; Duke of Edinburgh, fine variegated foliage, trailing habit, of robust growth; *L'Elegante*, leaves with neat white margins, which frequently become crimson, and when seen in a bed have a most striking effect, which is most telling when the flowers are picked off; Silver Gem, with foliage margined white and flowers lilac-coloured, makes a fine bed or margin to one of large dimensions; Bridal Wreath, this is a hybrid variety, with well-formed pure-white flowers, and very pretty foliage, the young leaves at first being nearly white, changing to bright green when fully developed. To form a white bed I know of no plant that surpasses this variety. Lady Edith, Willsii, and Willsii roseum, are exceedingly beautiful hybrid varieties, and very effective and beautiful bedding plants when grown in a comparatively light soil. For these, I believe, we are indebted to Mr. J. Wills, of South Kensington.

Culford.

P. GRIEVE.

VEGETATION IN THE CHANNEL ISLANDS.

PROBABLY there are few spots of similar extent where there are more gardens and a more general taste for gardening than in the Channel Islands. The colours of the flowers appear to be intensified by some peculiarity of soil and climate. The blue convolvulus and blue lobelia, and the scarlet geraniums, are several shades deeper in colour than they are on our coast. The *Hydrangea*, which generally has a pink blossom here, is usually blue in these islands, but the colour is not constant, and the plant may sometimes be observed changing its hues, one colour apparently struggling with the other.

Among sub-tropical plants we noticed several tender varieties of acacia, the Australian gum tree (*Eucalyptus*), the orange and the olive (both fruiting in the open ground), *Cestrum aurantiacum*, the *Veronica Andersonii* and other varieties of the same pretty flowering shrub, and myrtles, which grow to a large size and blossom freely. The fig overtops the cottage roofs, and its fruit is the earliest that reaches the London market. The geranium and heliotrope stand the winter unprotected, and old plants of these flowers sometimes almost cover the cottage walls. The *Magnolia grandiflora* grows into a small timber tree; one in the garden of Mr. Carey, of Woodlands, in Guernsey, is 45 feet in height, and is said to be the largest in Europe. In the same garden is a cork tree with the trunk as big as the body of a large man, producing cork in thick layers, which has been freely sliced off by numerous visitors. The single red and white camellia grows everywhere; we saw one covering a wall 30 feet by 16 feet. One of the prettiest of evergreen shrubs, the *Escallonia macrantha*, ornaments almost every garden with its bright green shining leaves, and blossoms until Christmas. An evergreen *Enonymus* (*E. japonicus*) is also common; and the evergreen oak is a remarkable feature in the arboriculture of Jersey and Guernsey.

In many gardens the magnificent clumps of aloes decorating the lawn or grounds would fill a large conservatory. They blossom at the age of twenty or thirty years. At St. Peter's we saw an aloe (*Agave americana*), growing in the front garden of one of the houses, which had produced a magnificent stem, loaded with blossoms. The following year the stem stood erect, measuring about 35 feet in height, and the plant, fated to die after the effort of blossoming, was then apparently withering. The aloes are among the plants that help to give the little islands a southern aspect. H. NEWLANDS.

LAW NOTES.

Poisoning Cats.—The *Birmingham Post* says:—"A gentleman evidently of strong feline antipathies, residing in Edgbaston, was summoned by his next-door neighbour to the Birmingham Police-court for having exposed poisoned food in his garden for the destruction of life, contrary to the statute. The particular offence alleged was that the defendant had placed upon his lawn two pieces of fish covered with strychnine, which had been the cause of death of two favourite cats of the plaintiff. Defendant's answer was, in substance, an acknowledgment of the poisoning, but a denial of its illegality on the ground that the land upon which the poisoned fish was laid was inclosed. It seems that, although the statute is very severe upon persons who sow or expose poisoned grain or seed, or place poisoned meat, in fields and open lands, the prohibition does not extend to inclosed gardens. The bench had no alternative but to decide in favour of the defendant and dismiss the summons."

Damaging a Crop by Chemical Fumes.—Hudspeth v. Pattinson & Co.—This was an action brought to recover £39. 18s., the amount of damage alleged to have been done to crops on the plaintiff's land by poisonous fumes from the defendants' works. The plaintiff saw the fumes settle upon and damage the crops on several days during May. The deficiency in quantity was estimated at £25. 11s. 6d., and the deterioration in quality at £14. 7s. 3d.; total damage, £39. 18s. 9d. The defendants said that damage was sometimes done to crops by vapours from alkali works, and the tenants properly got compensation; but in this case they denied that any damage was done. Test papers did not change colour, showing that no acid vapours were present, a fact which was also corroborated by others. The jury nevertheless returned a verdict for the plaintiff—damages, £20.

The Law in Reference to Fruitmen's Baskets.—Mr. Shrubsole, a fruit-grower at Sittingbourne, Kent, sued Messrs. Skinner, salesmen in Covent Garden, in the Westminster County Court, the other day, for compensation for baskets that had not been returned to him. Messrs. Skinner stated that their expenses for baskets were nearly £1,000 a year, that their losses were annually about half that sum, and that it was not the custom for growers to charge for baskets not returned, as they were frequently lost and mixed with others, as in the present instance. It was, in short, proved that the custom of the market was, that baskets were trusted to the buyers without money being left upon them. The judge considered Messrs. Skinner clearly entitled to a verdict, as the baskets appeared to him to be nothing more in relative value than the paper bags or fancy boxes used by confectioners, haberdashers, or others, to send their goods home in. He, therefore, gave judgment for the defendants, and, on application, allowed the full costs of their solicitor and of five witnesses.

The Law as to Landowners and Footpaths.—In the Court of Queen's Bench a case (The Vestry of St. Mary, Newington, v. James) of some importance to owners of property was lately decided. The defendant had applied to the vestry for permission to remove some flag pavement in front of his premises, and replace it by pebbles suited to bear heavy burdens. This having been refused, his waggons were driven over the footway, and broke the flags. Proceedings were thereupon taken against him under the Highway Act, and the magistrates having refused to convict, the vestry carried the case to the Queen's Bench. Their appeal was rejected, however, Mr. Justice Mellor, who delivered the judgment of the court, saying:—"At common law—or under the statutes—an owner who dedicated the soil to the public use as a footway parted with no other right than the right of traffic for the public. If this were not so, the owner of an estate having dedicated a portion of it to the purpose of a roadway, raised on both sides for the purpose of a footway, would, by lapse of time, be precluded from opening a new gateway into his land from the roadway, and thus would be prevented from putting the premises to any new use. But such was not the law. No doubt the owner could not so derogate from his grant as to obstruct or interfere with the full and free right of passage; but that was all that he was bound to allow; and, subject to the public right of passage, the rights of the owner were left unimpaired."

New Entrances into Old Thoroughfares.—In the case of Bean v. Thomas, lately tried in the Court of Queen's Bench, Westminster, a question of great importance to the owners of land abutting on a public way was raised, namely, whether they have a right to open doors or gates into it. The parties to the action are neighbours, and the place in dispute is a narrow lane running between their land. The lane had been used by the public for half a century, people going up and down it, though rarely, as the place was in a rural district. The defendant had lately opened a gate from his land into the lane, and the plaintiff, as the owner of the soil, complained of this as an unlawful encroachment. The case was tried at the last Surrey Assizes, before Baron Bramwell, and it was found that the plaintiff was the owner of the soil in the lane, and that the lane was a public highway. On this the learned baron directed a verdict for the defendant, holding that anyone whose land abuts on a highway has a right to open gates or doors into it at pleasure. Mr. J. Brown, Q.C., moved, on the part of the plaintiff, to set aside this verdict, arguing at some length that the public were limited in their right to use the lane, and could only go up and down from end to end, and that the defendant had no greater right than anyone else. The court, however, were from the first quite clear that this view could not be sustained. Suppose, said the Lord Chief Justice, that I dropped in the lane from a balloon, or took my horse over it in hunting, should I be a trespasser? It was manifest, and, indeed it was admitted, that this would be so, according to the contention of the plaintiff; and surely, said the Lord Chief Justice, this would be contrary to common sense. Is a gentleman a trespasser who jumps over his park wall into the road? There was no trace here of any limitation of the ordinary right of the public on a highway, and that was to go over it in any direction, and to open gates into it at pleasure. This was too clear to be disputed. The rest of the court concurred, and the application was refused.

THE HOUSEHOLD.

SALADS AND SALAD-MAKING.

THERE are few subjects upon which more nonsense is customarily written than those of salads and salad-making, and it arises principally from a slavish imitation of our great cooks, and, to a great extent, from the improper selection of materials. Taking lettuce as the staple article, where, in point of flavour, is there one that is fit to compare with the varieties of the old Brown or Bath Cos, and next to them the Paris White and Green Cos? To those who like soft lettuces, Tom Thumb, Tennis Ball, Neapolitan, and the like are good enough, but not one of them has the true lettuce flavour. I like them occasionally for a change; but not one of them can be compared with a well-grown Cos Lettuce. For such a heterodox assertion I fear I shall be voted vulgar; but oil, though it be the best Lucan, is distasteful to me, and for a delicate salad I would rather have a tablespoonful or two of pure sweet cream than oil. Give me this: a dessert-spoonful of perfectly mashed potato, salt, sugar, mustard, and vinegar to taste; add to these, if you like them, a drop or two of chilli or eschallot vinegar, and you have a salad mixture fit for a queen. Salads I like pure and simple, and would suit them to the joint with which they are to be eaten. If it is lamb, chop a sprig or two of mint quite fine; and if for cold beef or veal, a few young onions treated in the same manner will not be objectionable. At this season get perfectly blanched endive, the broad-leaved Batavian being the best, a stick or two of celery, some beet, and two or three well-boiled mild onions. Try these with the same mixture, and you will have little cause for complaint. I have no sympathy with a great variety of articles in a salad, such as tarragon, chervil, lambs lettuce, radishes, &c. The nutty flavour of rampion is a great improvement; but radishes and cucumber are out of place in salads. I do not even admire "lobster salad"—at least, not the vile compound which one gets served up at public dinners, and many private ones, and which in many cases is an

indigestible mess. Give me the tail or claws of a nice fresh lobster, with a spoonful or so of the spawn: let me have the ingredients before noted, some well-blanchéd lettuce or endive, and the preparation of a salad to eat with lobster will not be a work of many seconds, though infinitely superior to the kind which some compound. As a great admirer of vegetables of all kinds, I like them in their pristine and simple purity, and I would rather have a salad in its simple form, than the best mixture which Francatelli himself could invent. I like these things as sauce to viands, not as viands themselves. A. P.

[We fear our correspondent belongs to the *journalist* rather than the *gourmet* section of salad-caters.]

NOTES AND QUESTIONS ON THE HOUSEHOLD.

"Cole Slaw."—The German population here (United States), as in the great Fatherland, are fond of what they call "sour kroust," which is no doubt wholesome, but it would not be appreciated by English people. In another form, however, viz., that of "cole slaw," cabbage is very relishing; this is simply the nice white hearts of cabbage sliced fine by machinery, seasoned with oil and vinegar, and eaten as a salad. Some may exclaim, What taste! I say try it, either alone or mixed with other winter salading; it is not amiss, too, mixed with sliced raw tomato; but in America "cole slaw" always accompanies raw oysters—an excellent combination. Oysters are cheap here, and the quantity of cabbages consumed in New York along with them, and in other ways, would be a matter of surprise to Englishmen.—JAMES TAYLOR, *South Amboy, New Jersey, United States.*—[We have never tasted in any country a more agreeable salad than "cole slaw" in America, when properly made.]

Carrot Pudding.—Half-pound each of plums and currants picked and stoned, half-pound finely-chopped beef suet, three-quarters of a pound of bread crumbs, half-pound each of carrots and potatoes (raw) when scraped and grated, quarter-pound of fine moist sugar, a little finely-cut lemon-peel (or if preferred, two ounces of candied peel), spice to taste, a teaspoonful of salt. Very little liquid is required to form the right consistency, as the moisture from the vegetables is nearly sufficient. What more is wanted should be milk. Boil in a basin or mould from four to five hours. Serve with or without brandy sauce. This is a very nice and inexpensive pudding, no eggs being used.

White Winter Radishes.—A Russian prince, last October, after complimenting me with reference to the salads supplied to my employer's table, remarked, "Only one thing you require to make your salads perfection." I naturally inquired what that was, when he replied, "The Russian white winter radish." Of this he promised to send me a packet of seed, and if he does, I will grow it and let you know the results.—R. GIBBER, *Brighton.*

Poisoned by Rhubarb.—Mrs. Lucy Snook, aged fifty, wife of Isaac Snook, residing between Oneida and Durhamville, died from the effects of eating for greens the leaves of rhubarb or pie plant, of which she was very fond, and from the poisonous effects of which she suffered for nearly three weeks previous to her death. The stalk of the pie plant, when peeled of its outer covering, is not injurious when used for food; but the leaves are poisonous, and should never be eaten.—*American Paper.*

Nettles for Food.—One of the most neglected, and certainly one of the most common of our British plants, is the stinging nettle (*Urtica dioica*). Three species are known in this country, but the one mentioned is perhaps the most common. Many country people believe in nettle tea as a useful spring medicine, and not a few boil and eat them as a green vegetable. They were in former times grown in Scotland as a pot-herb, and if forced and blanched by earthing up in a similar manner to asparagus and sea-kale, the young tops make a very good dish. In Belgium, Germany, and other parts of continental Europe, nettles are much more generally used as food than they are with us.—*Field's Gard.*

MODES OF COOKING BRUSSELS SPROUTS.

SALTS AU BEURRE. Trim them neatly, and wash them in several waters; put them to boil in plenty of salted water, and, when almost done, strain them, and dry them in a cloth; put them in a saucepan with a large piece of butter, pepper, salt, and grated nutmeg to taste. Turn them gently on the fire until they are quite cooked.

A LA CREME. Boil them as above. Melt a piece of butter in a saucepan with a pinch of flour; add pepper, salt, grated nutmeg, and a small quantity of cream; mix all; put in the sprouts, and keep them simmering till they are ready.

A LA JUS. Parboil them only 5 min. in salted water; then, having drained and dried them, put them to finish cooking in a saucepan with some well-flavoured clear gravy, add pepper, salt, and grated nutmeg to taste.

A LA MAIRE D'HOTEL. Having nearly boiled the sprouts, melt a piece of butter in a saucepan, toss them in this until done, adding some minced parsley, a sprinkling of pepper and salt, and the juice of a lemon.

A LA LYONNAISE. Mince a small quantity of onions or shallots, fry them a light brown in butter, then add the sprouts ready boiled, and pepper and salt to taste.

SAMUEL BROOME'S MEMORIAL.

ALL lovers of flowers who live in London, or who have been frequent visitors to the central part of our great metropolis, will have heard of the work, if not of the name, of Samuel Broome. For thirty-eight years, as gardener to the Honourable Society of the Inner Temple, it was his living task to contribute to the pleasure and innocent enjoyment of thousands of those who made the Temple Gardens their frequent resort, and especially to the delight of the children of this great city, who found in that ancient pleasaunce, not only a playground, but a charming retreat from the crowded streets.

Samuel Broome, though a famous grower of the chrysanthemum, was much more estimable as a man, from his great natural kindness and good-natured frankness of disposition. We have therefore great pleasure in recording the fact that some of his many friends have subscribed to erect a monument to his memory above his last resting-place in Nunhead Cemetery. Of this monument we now furnish an illustration. It consists of a column of Aberdeen granite eleven feet in height, standing on a double platform, and is embellished by a wreath of chrysanthemums in white marble.



Samuel Broome's Monument in Nunhead Cemetery.

No man in his sphere was more deservedly popular or better known than Sam Broome, as might be gleaned from the numerous regretful notices of his death in the press of all rank. We may conclude in the words of *Punch* :—

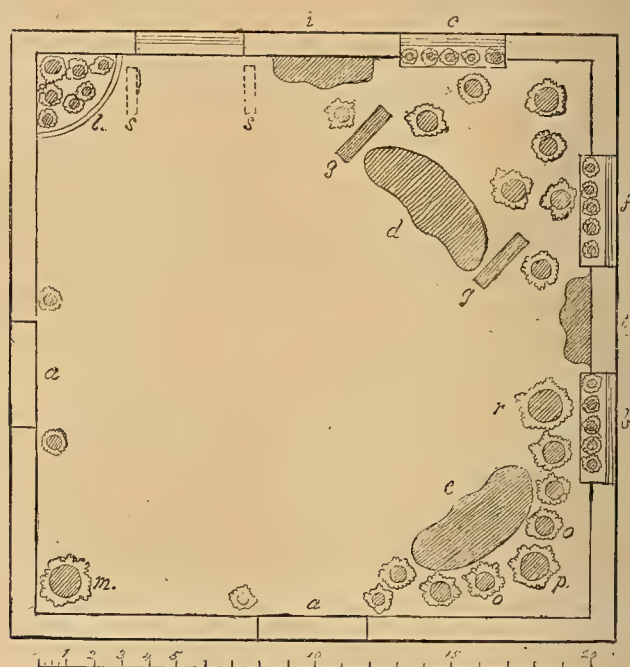
- "Never was simple man more glad than thou,
Never were gentler pride and joy than thine—
Pleased to see pleas'd crowds round thy pompons bow,
Children, maids, barristers of parchment brow,
Who rarely noticed sun's or blossom's shine.
- "Along Thames bank thy blooms stood brave and bold,
The brighter for the brick and mortar round :
And if thy flowers were flowers of gold,
So innocent none grew from Temple mould,
None so enriched, yet cumbered not, the ground.
- "How oft, when Autumn daylight in the West
Was blended with the City's lurid flare,
Pale cheeks and aching brows thy flowers have blest,
That breathed a breath of Nature and her rest,
On brains o'er-wearied with law's cark and care.
- "Farewell to thee, kind, honest, old SAM BROOME."

THE GARDEN IN THE HOUSE.

CULTURE OF PLANTS IN ROOMS.

(Continued from p. 128.)

THE task is more difficult, when, along with a suitable arrangement for culture, the decoration of the apartment is also aimed at. The usual positions selected for this purpose are the corners of the room, and the parts of the walls between the windows. These last positions are generally those which, from considerations of space, people devote to plants when there is not sufficient room for them in the rest of the apartment, but for the culture of plants they are most unsuitable positions, because they are either too far from the light, or the light from the windows cannot fall directly on them. Corners which are opposite the windows receive, at least, the light directly, and so are far more favourable for the culture of plants than, for example, the corners of the wall in which the windows are placed, or the parts of the wall between the windows, which although nearer to the light, do not receive it directly. Therefore, when the culture of plants is confined to the room itself, and the specimens cannot from time to time be removed to the plant-house, these positions should either not be furnished with plants, or a selection should only be made from the few kinds



Plan of Room with Plants.

which succeed in rooms even when they receive but little direct light, as, for example, *Plectogyne variegata* (which cannot be surpassed in this respect), some of the taller kinds of *Anthurium*, with long and broad leaves, and many varieties of ivy. In the immediate vicinity of the fire-place, no plants will last long.

Where it is desired to decorate a room permanently with handsome hot-house foliage-plants, the arrangement must be such that all the plants may be exposed to the direct light from the windows and yet be placed not too far from the fire-place. A few creepers that will thrive in the shade, as the ivies and *Cissus antarctica*, the plants before-mentioned, with a judicious selection and arrangement of the furniture must then help to fill up the plan. On festive occasions, when a greater number of persons than usual crowd one's rooms, any plants that are in the way can be removed for twenty-four hours without injury to the unoccupied corners of the room, which they will serve to decorate for the occasion. But let not the amateur be seduced into making the experiment in winter of ornamenting cold staircases with plants placed around heated stoves, even for a short time. If he does so he will lose, in a few hours, all

the labour and trouble of many years. Plants which occupy rather unfavourable positions should not be allowed to remain there always, but should change places from time to time with the specimens which are better placed.

In order to illustrate the foregoing general principles of arrangement for permanent decoration, I will cite a special case, namely, that of my own dwelling-house, in which I have cultivated most kinds of ornamental plants without removing them into the open air for about eight years. The only favourable positions in my house are the rooms which face the south. Moreover, the double windows are kept fast closed during the whole winter, and the ventilation is not very perfect; the rooms are heated by sheet-iron stoves, and dust, unfortunately, always abounds in immense quantities, so that when the long, cold winter of St. Petersburg, with its short, dark days, is added to the foregoing conditions, they cannot be spoken of as very favourable to the culture of plants in rooms.

The room which, by preference, has by the ornamental arrangement of the plants grown in it been converted, so far as a room can be, into a winter garden, is a corner room with two windows to the south and two to the east. One of the east windows, on account of a balcony in front, is too dark for the culture of plants.

The preceding figure shows the ground-plan of this room, the positions of the plants being indicated by the dark, round marks; *a a* are the doors; *b f* the south windows; *c* the one east window which is suited for plants; *d e* two sofas placed



Sofa Arbour.

across the south corners of the room. Of these, *d* is so placed that its back is in a line with the outer corners of the two windows *f* and *c*, so as to obtain a good deal of room for plants between the two windows; *g g* are two boxes beside the sofa, in which ivy is planted and trained on a trellis, so as to form a canopy over the sofa. In the windows and around the sofas stand the ornamental plants which have been grown in the room, and which are pleasingly reflected in the mirrors at *i i*.

The south-west corner, although only lighted by one window *b*, nevertheless contributes its share to the general effect. The sofa here is placed just so far from the corner that the space between them may be sufficiently lighted from the window *B*, and ornamental plants are arranged around it. Immediately behind this sofa, and near the doors *a a*, it was necessary to place those plants which have greatest powers of endurance, as these are rather unfavourable positions.

As for the rest of the room, the corner *l* is embellished with a flower-stand containing hardy plants, and both sides of the doors *u u* are adorned with festoons of ivy. No plants are placed near the stove *m*, and the position of the tables in front of the sofas, of the chairs, and other furniture, has not been noticed.

To these instructions on the arrangement of ornamental plants for permanent decoration, as exemplified in this special case, we shall add a few remarks. The flower-stand which now occupies the corner *l*, was at first placed in the south-east corner, between the windows *f* and *c*. Here, although standing between two windows, it received no direct light, so that all the plants had to be very soon removed to a more favourable position. In the corner *l*, the flower-stand was for some years adorned by a large specimen of *Anthurium Luschnathianum*, in front of which stood some *Plectogynes*. On the outside are placed *Begonias* with variegated leaves, and, during the winter, *Marantas*, which are brought in from the plant-house. For the permanent decoration of the front edge, the best subject is ivy, allowed to grow with its shoots hanging down. In the corner behind the sofa *a*, before the present arrangement, some specimens of *Musa* were at first placed; these, however, had always to be removed after a few months. After this a large specimen of *Cinnamomum Reinwardtii* (a plant particularly adapted for room culture), was placed there. This stood for more than a year, but by degrees all the shoots which got into the dark corner died off, while the rest struggled towards the window and flourished luxuriantly for a long time. The arrangement shown above in was then fixed upon. At *p* stands a strong specimen of *Monstera deliciosa* (*M. Lennea* or *Philodendron pertusum*), which, in this position, has thriven and grown well for several years. At *o o* are two *Plectogynes*, on stands. At *r*, next to the window, there has stood for six years a fine specimen of the coffee tree which never grows so well in the plant-house as it does here. This plant was covered from top to bottom with dark green leaves, nine inches long by three inches broad, but at last had, unfortunately, to be removed, as it grew too large and made the room too dark.

When the interior of the room was not likely to be much crowded by company the plants behind the sofas were moved close up against the wall, and the sofas, together with the ivy canopy, moved back within easy reach. It will be understood that the foregoing account is not given to restrict the amateur to an imitation of this arrangement. The modes of ornamental arrangement are as manifold as are individual tastes. It is rather intended to show on what principles successful culture may be combined with tasteful arrangement.—From the German of Dr. Regel.

(To be continued.)

NOTES AND QUESTIONS ON GARDEN STRUCTURES.

Boilers.—I was looking at Mr. Weeks's advertisement, about his new boiler, in your second number, in which he says that the boiler is indestructible, and that either half of this boiler may be worked independent of the other, and I was wondering what he meant, because I remember that the iron cement that these boilers are joined with always comes out if the boiler gets red-hot. Well, then, if either half be worked by itself, what must become of the other half? If the water is turned off from that half, and it is drained dry, then the fire will make it red-hot, and so spoil it. But if the water is left in it, without going round the pipes, it will soon burst and destroy everything near it, including the other half of the boiler.—ALFRED DAWSON, *The Cedars, Chiswick*.

How to Make an Ice Stack.—I am anxious as soon as we have a return of frost to make an ice stack, or ice house, on a very cheap scale. If any of your readers have had experience in making them, I will be much obliged by getting any hints as to how it ought to be done.—A. H. M. — A correspondent, having asked some time since for instructions on making an ice house, was thus answered by another subscriber:—"If he will adopt the following plan for a 'stack,' he may save himself the expense and trouble of a house. On a slope of ground (turf, and facing the north if possible), sufficient for water to run off, make a cone-shaped heap of ice broken into pieces; over this put two or three inches of sawdust, cover that with a layer of dead leaves, and over these put some loose straw (not thatch) to prevent the leaves from blowing about. I had one made last winter as above; it was thirty feet diameter at the base, about twelve feet high, and took seventy one-horse cartloads of ice. I have at this date (Aug. 27th) enough ice left for six weeks' or two months' consumption, notwithstanding the intense and continued heat of the summer, and the stack having been in constant use since July 24th. There must be no artificial drainage nor foundation." In reply to a question, he added that he found no trouble from the straw being blown about if attended to now and then; but that small boughs might be laid on the straw, or anything which would not prevent the covering falling as the ice decreases.—ED. FIELD.]

Heating a Small Greenhouse.—I have found Walker's the best stove for cheapness in its consumption of fuel, &c.; it is easily managed, will keep in ten or twelve hours without difficulty—a great desideratum. The chief points to be observed are: To see the cylinder is full the last thing before you retire to rest; to have the coke small and dry, not too small. The draught is regulated by the drawer underneath, assisted by a damper in the pipe which acts as a chimney. All my plants were kept last severe winter in a good state of preservation—I lost none—and this year everything seems promising. I never use the fire or artificial heat when I can avoid it, which saves the stove. Gardeners do not recommend stoves; but for amateurs, whose means and accommodation are limited, I know of no heating apparatus so cheap or successful as the one mentioned above.—*An Amateur Gardener in the "Field."*

Site for a House.—Abundant access of fresh air is of great importance to health in a residence; unnecessary exposure to wind being at the same time to be avoided. Hence to place a residence in the centre of a close array of trees is not desirable; not only is the access of air, light, and heat prevented, but there is, always a tendency induced to dampness in the house. In an open, airy, and well drained situation, the effects of even long-continued wet are soon dispelled; but when all sides of a house are surrounded closely by trees, an opposite result is induced, and in comparatively dry situations many evils of a damp one ultimately ensue. One of our earliest English writers on building, Thomas Fuller (1633), speaking of the choice of situation for a new structure, says: "Chiefly choose a wholesome air, for air is a dish one feeds on every minute, and therefore it need be good. Wherefore, great men (who may build where they please, as poor men where they can) if herein they prefer their profit above their health, I refer them to their physicians to make them pay for it accordingly."—*The Englishman's House.*

SOCIETIES, EXHIBITIONS, ETC.

Horticultural Club.—The annual meeting of this club took place on Wednesday evening last, at Anderton's Hotel, Fleet Street. The Rev. Mr. Reynolds Hole was in the chair, and the proceedings were of the most pleasing and congenial kind.

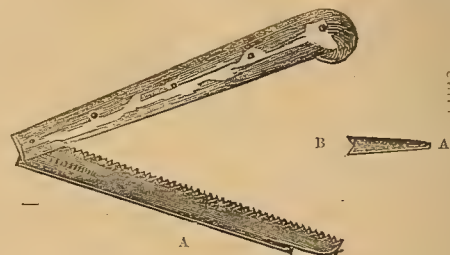
Royal Horticultural Society, Jan. 17th.—The British gardener and British glass-houses have conquered, to some extent, our fierce old British winter. Shows are beginning now to look almost as attractive in winter as in summer. Indeed, more so, for those lovely Cyclamens, which skilful gardeners are rapidly making the most beautiful of all winter flowers, seem far lovelier now than when spring comes with her numerous floral train, and the Orchids, Lilies of the Valley, Primroses, and numerous other flowers of the season (in gardens), look at their best under a gloomy sky. Last Wednesday was most inclement—a wet gale blowing all day—yet the little exposition at Kensington was full of interest and beauty. A number of new varieties of Chinese Primroses, mostly double sorts, flaked and spotted, were shown by Messrs. E. G. Henderson, long known for their success with these most interesting plants. These were deservedly awarded certificates, being quite a novel deviation from the old colours. Their names were, Princess of Wales, very double, white; Exquisite, delicate peach; Magenta King, rose; and Emperor, one of the Fern-leaved class, with very double, lilac flowers. Ivies in pots were a conspicuous feature of the meeting, Messrs. Lane obtaining first prize. Their specimens were trained in a narrowly-pyramidal fashion, which seemed to suit the Ivies better than any other form of support. We, however, think that Ivies should not be trained over a trim trellis of any kind, but shown in baskets, and allowed to trail gracefully down. We were particularly pleased with *Hedera argentea rubra* in Messrs. Lane's collection. Among Conifers in pots, one of the loveliest and most graceful objects we have ever seen was a noble specimen belonging to Mr. Standish, of *Retinospora filifera*. It was like a green fountain, but the general surface was broken up in the most picturesque manner. Most remarkable, too, was a specimen of *Retinospora obtusa pendula*, almost a weeping subject, of great and peculiar beauty when well developed. What gains for our gardens are these lovely dwarf trees with a more elegant form than that of ferns themselves, hardy as British oaks, and in the full flush of verdure in mid-winter! Some Cyclamens with wide silvered bands round the leaves were shown by Mr. Wiggins. We shall soon have quite a number of forms of the Persian Cyclamen. There were many Orchids shown, the most remarkable being *Odontoglossum Denisonae*, a large and very beautiful species, and the exquisite lilac and ivory *Phalenopsis Porteanae*. Many plants of *Bouvardia jasmimoides*, in fine bloom, were shown by Mr. Standish. It is a lovely flower for winter cutting. To bloom well now it is planted out in shallow cold pits in summer, the plants being pinched to keep them dwarf and flowerless. In autumn they are potted. In winter and early spring they are introduced to the forcing-house or warm pit, quite near the glass. Among vegetables, the most remarkable things were some giant garlic, "Naples Giant," the clusters of bulbs of which were as large as a pair of big clenched fists. Prizes were offered for the best three dishes of kitchen Apples, also for the best three dishes of kitchen Pears. For Apples Mr. Parsons, gardener to R. Attenborough, Esq., Acton Green, was first with excellent fruit of Blenheim Pippin, Golden Noble, and Dumelow's Seedling. For Pears Mr. Miles was first with Uvedale's St. Germain, Catillac, and Vicar of Winkfield. Mr. Wilson, gardener to Earl Fortescue, Castle Hill, South Molton, sent two remarkably handsome and large specimens of Charlotte Rothschild Pines, weighing 13½ lbs., from plants seventeen months old. They were awarded a cultural commendation. A report on the system of keeping Grapes in bottles was read by Mr. Moore, gardener to Earl Brownlow, at Belton, Lincolnshire.

THE PROPAGATOR.

THE ART OF GRAFTING.

(Continued from page 157.)

THE SAW.—Hand-saws, with either a fixed or closing blade, are used for cutting strong branches and thick stocks for crown grafting with a tall or a short stem, and for cutting off the heels of grafts made on the branches of the stock when they are dry or too thick for the pruning-knife or the secateur. When a strong branch is to be sawn, the heavy branchlets above the place of incision should first be removed; this will render it easier to work the saw, and the bark of the trunk will not be so likely to be injured. Moreover, the operator slackens the movement of his arm when the branch is nearly



Pruning-Saw.

sawn through; it is often even prudent to cease sawing altogether then, and finish the amputation with the pruning-knife, holding with the other hand the part which is being cut off. Cutlers manufacture saws with a single or a double row of teeth, and with the back of the blade (A) thinner than the toothed part (B). Grafters use excellent saws made of scythe blades, with one row of teeth, and set in the handle at an angle. The saw should never be used on a living tree without dressing and smoothing its marks with the pruning-knife, otherwise the furrows left by the saw will retain moisture on the surface of the wound and retard its healing.

THE PRUNING-KNIFE consists of a handle of wood or horn, either straight or slightly curved, and a blade curved at the end. The point of the blade is more or less prominent. The



French Pruning-Knife (*Scorpette*).

workman becomes so accustomed to a particular shape that he often prefers an old, almost worn-out, knife to a new one of more even form. The pruning-knife is necessary for dressing the wounds caused by the saw or the secateur, for trimming bruised or torn tissues, and for smoothing down a cut so that it may present a level surface, without inequalities, bruises, or splinters. In order to smooth properly, the hand which holds



English Pruning-Knife (Straight-bladed form).

the handle of the tool should have the thumb supported against the branch or stem, while the other hand directs the blade. In the case of a stock of moderate thickness, the shortening of the stem is effected by means of the pruning-knife without having recourse to the saw. The pruning-knife is also employed for cutting up the scions into suitable lengths. If it is preferred to employ a pruning-knife, in cutting and

dressing them finally it will be advisable to have in reserve another finer edged one, and keep the first for heading down cutting off old stems, and such rough work. Grafters who use the pruning-knife for every operation of grafting should choose a blade not much curved, which will be found very handy when it is required to split the stock. The pruning-knife is also used, after grafting, in shortening those stocks which have not been previously cut, and also for removing the heel of the graft after a year's growth. The handle is held with both hands, and thus the heel is cut off with greater ease. This implement is also useful in trimming thorny trees.

THE BUDDING-KNIFE is a tool with a narrow blade, widening towards the end, and with the point curving backwards. At the end of the handle is a spatula, or small, thin blade of ivory



English Budding-Knife.

which is used for raising the bark. This spatula should not be made of metal, as that would soon be rusted by the sap. The budding-knife is indispensable for bud-grafting, for cut-

French Budding-Knife (*Greffoir*).

ting the scions in branch-grafting, for raising the bark, for grafting under glass, or cutting ligatures when too tight for the graft, &c.

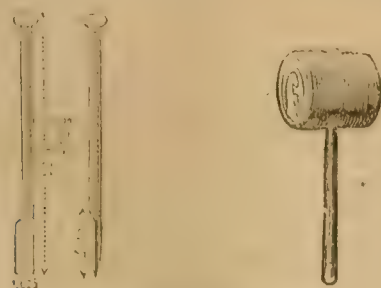
THE GRAFTING-KNIFE.—The handle of this implement is slightly curved in order to facilitate grafting at the surface of the ground; the blade, in form of a comma, or drop, is useful for splitting stocks intended for cleft-grafting when a partial



Grafting-Knife.

cleft is required. A cleft from side to side is obtained by means of a knife with a straight blade, like a table-knife in shape. The handle and back of such a knife should be strong enough to support the blows of the mallet which the operator is sometimes obliged to use in cleaving very thick or hard-wooded stocks.

THE GRAFTING CHISEL has the blade and the handle all in one piece, iron and steel. It has every advantage of solidity and resistance when it is required to cleave strong stems,



Grafting Chisel and Mallet.

either with or without the help of the mallet. When the cleft is made, we can, by half withdrawing the chisel, use it as a lever or wedge to keep the cleft partially open, and facilitate

the introduction of the graft. The chisel used by the vine-growers of the south of France measures fourteen inches in length. The blade is about two and three-quarter inches long.

THE GRAFTING-GOUGE here represented comprises a handle about four inches long, and an iron stem nearly eight inches in length, the upper part of which for about two inches is



Grafting Gouge.

curved inwards, and terminates in a curved gouge, with which the groove to receive the graft is cut. This implement, which is recommended by M. Rose-Charmeux, of Thomery, is useful in grafting by approach.

COMBINED GRAFTER.—M. Auguste Rivière, head gardener at the Luxembourg, Paris, is the inventor of this implement, the special use of which is in grafting by incrustation, which will be alluded to further on. The blade has a double purpose: the gouge (B) at the upper end is angular, so as to produce in the stock a wedge-shaped incision. At the bottom of the blade is a similar angular gouge (C), with which the scion is cut into a



Combined Grafting Knife.

triangular wedge, which will fit perfectly into the incision made in the stock, as the two gouges (B and C) are made with the same angle. That at C may be turned the other way, so as to suit a left-handed workman. Between these two parts, the blade is sharp-edged at A, and serves for cutting the scion from its parent tree, or for smoothing the angles, if they have been imperfectly cut by the gouge at C.

THE METRO-GREFFE.—This tool is composed of a double spatula, which is fitted into the handle of an ordinary grafting-knife. Its use is to measure the scion and stock, so as to make them fit exactly in those modes of grafting, in which the two parts are placed in juxtaposition by simple veneering. The handle (D) bears at one end the blade of the grafting-



The Metro-Grefte.

knife which cuts the scion; and at the other end the double spatula, the two parts of which (A and B) are joined by a screw (C). The metro-grefte answers the purpose of a pair of compasses for measuring the back of the bevel of the graft, and then tracing on the stock a corresponding width for the groove which is to receive it.

All these tools are not indispensable in the practice of grafting; but they have each a special use. The last three are intended to facilitate nice and complicated operations in grafting.—*Charles Ballet.*

(To be continued.)

Propagation of *Sarracenia*.—How is this to be done?—A. D. *Croft*. All *Sarracenia* may be easily propagated by division of the crowns by means of a sharp knife. Be careful, however, to mutilate as few of the small feeding roots as possible. Put the crown thus divided in four or six inch pots, according to their size, using similar material to that recommended for larger plants, and treating them in every way the same.—*T. BAINES.*

THE AMATEURS' REMEMBRANCER.*

Flower Garden.—While the weather is comparatively mild and open, finish all kinds of ornamental planting, and bring alterations in the way of groundwork to a close. Prune and tie in hardy wall plants; but not in such a way as to render them stiff or unnecessarily formal. Bedding-out plants, of which there may be a short stock, place near the glass, in a moderately moist, warm house, to encourage growth for early cuttings; but such kinds as there are plenty of, excite as little as possible; on the contrary, give air liberally while the weather is favourable. The season being mild at present, some of the spring flowers are beginning to peep forth. Where such is the case many will like to make the neighbourhood of the beds as neat as possible. Beyond this in well-ordered gardens there is really little or nothing to do in this department, unless ordering seeds and making various preparations for the busy season that will soon be at hand.

In-door Plant Department.—Conservatories keep about 45° at night, allowing a rise of ten or fifteen degrees during the daytime; this will suit both camellias and azaleas, as well as such flowering plants as may have been introduced from the forcing-pit. Tie out and otherwise regulate the shoots of such plants as require that attention, and see that none suffers from want of water. Take care, too, while our light supply is somewhat deficient, that there is no unnecessary crowding. Keep insects in check by means of fumigation and washings with tobacco water. Orange trees, a tribe of plants not well treated about many places, may now have what little pruning they require, giving a shift to such as want it, and then well washing them with soap and warm water, syringing them well with clean water afterwards. See that the drainage of plants of this kind is in good condition, and when the days are longer, and they have fairly started into growth, feed them occasionally with clear weak manure water. Those who wish for bushy, well-furnished camellia plants should pinch or rub off the terminal bud of each main shoot. The next beautiful conservatory plant now in bloom is the old *Calla æthiopica*. Specimens of it in the warm greenhouse or conservatory should have abundance of water. They will also enjoy weak, clear liquid manure in abundance. The same may be said of the Chinese primulas, of which we have now so many pretty varieties, and which are now coming strongly into bloom. In large establishments, where there is no lack of means or appliances, the following flowers, among others, are now in bloom, or may very soon be looked for:—Camellias, Heaths, Epacris, Azaleas (Indian), Geraniums, Euphorbias, Poinsettias, Justicias, Aphelandras, Epiphyllums, Amaryllis, Bletias, Dendrobium, Hyacinths, Narcissus, Cyclamens, Tulips, Zygopetalum, Rhododendrons, Odontoglossum in var., Azaleas (American), Mignonettes, Violets, Lilacs, Roses, Pinks, Lily of the Valley, zonal Pelargoniums, Cinerarias. Fuchsias, if now beginning to break, should receive what little pruning they need and be re-potted; use loamy, moderately rich soil for the purpose, with surface-dressings and manure waterings. After growth commences they must have the benefit of the light.

In-door Fruit and Vegetable Department.—Pines ripening fruit keep on the side of dryness, and near the glass. Successions keep growing slowly.—Vines started, grow on steadily, syringing the rods and young leaves, in order to assist them to break regularly.—In early peach houses maintain a temperature of from 50° to 55°, with a rise of five or ten degrees during the day, and shut up another house where required to succeed that just referred to, giving the roots a good soaking with tepid water.—Figs in pots, if any, may now be pruned back; also tie in and regulate shoots of figs on back walls or trellises, previously washing them with Fowler's Insecticide.—Get dung and leaves mixed and turned once or twice preparatory to putting up beds for early cucumbers.—If not already done, re-pot orchard house trees, and, if exposed, plunge the pots in dry fern or leaves.—Strawberries keep at all times close to the glass, and remember that they dislike much heat; let 60° or so be the maximum, with a free circulation of air. Until they begin to throw up their blossom spikes, nothing suits them better than a pit or mild dung-bed.—Bring on asparagus in pits in a temperature varying from 50° to 60°.—Kidney beans sow in pots, to be set on shelves near the glass.—Potatoes start in boxes, and bring on rhubarb and seakale in the dark gently, so as to prevent its being weakly and drawn.—To endive in frames give as much air as possible, while the weather keeps mild.—Make up a bed for mushrooms with stable dung and soil previously prepared. Beat firmly and spawn when about lukewarm, afterwards cover with soil, hay, and mats.

Hardy Fruit and Kitchen Garden.—Here, except in places where the autumnal work was neglected, there is as yet little to do; alterations of all kinds, however, the experienced and intelligent gardener will not fear to commence at any time, though he will be much influenced by the state of the ground. Proceed still further with pruning, and where young fruit trees have lately been planted, mulch with rough stable dung. Root-prune dwarf standard apple and pear trees, if they are unfruitful or growing too strongly. This is done by digging a trench round the tree, two or three feet from the stem, according to size, and cutting in the large roots. It is also in some cases found to be a good plan to lift small bush trees every alternate year, to keep them dwarf, and in a fruitful condition. Examine labels on fruit trees, and renew such as are becoming illegible. Rough dig or trench all ground free from crops. To cauliflowers under handlights, give as much air as possible while the weather is mild. Stir the surface soil among growing crops, and make vacancies good where such occur.

* Complete general calendars, written by some of the most able gardeners in the country, are published in THE GARDEN in the first issue in each month.

COVENT GARDEN MARKET.—January 20th.

Flowers.—These still consist of Acacias; Azaleas, both cut and in the shape of small plants; Begonias; Callas; Camellias; Cinerarias; grand examples of Lily of the Valley; Coronilla; Cyclamens in pots in excellent condition; Deutzias; Heaths; Euphorbia jacquiniiflora; Hyacinths; Tulips; Genista; Geraniums, of various sorts, including those with scented leaves, a class now too much neglected; Christmas Roses; Mignonette; Poinsettias; Primroses, both wild and Chinese; a few cut Roses and berry-bearing plants, such as Ardisia and Solanum.

Prices of Fruit.—Apples, per half sieve, 2s. to 5s.—Cobs, per 100 lbs., 60s. to 65s.—Filberts, per lb., 8d. to 10d.—Grapes, per lb., 3s. to 8s.—Lemons, per 100, 7s. to 10s.—Spanish Water Melons, each, 2s. to 5s.—Oranges, per 100, 6s. to 10s.—Pears, per dozen, 3s. to 6s.—Pine-apples, per lb., 4s. to 8s.—Pomegranates, each, 4d. to 8d.

Prices of Vegetables.—Artichokes, green, each, 6d. to 8d.—Asparagus, per 100, 8s. to 10s.—Beet, per dozen, 1s. to 2s.—Broccoli, purple, per bundle, 10d. to 1s. 3d.—Brussels Sprouts, per half sieve, 2s. to 3s.—Cabbages, per dozen, 10d. to 1s. 3d.—Capsicums, per 100, 1s. 6d. to 2s.—Carrots, per bunch, 5d. to 7d.—Cauliflowers, per dozen, 2s. to 6s.—Celery, per bundle, 1s. to 2s.—Chilies, per 100, 1s. 6d. to 2s.—Cucumbers, each, 1s. to 2s.—French Beans, new, per 100, 3s. to 4s.—Herbs, per bunch, 2d. to 4d.—Horse Radish, per bunch, 3s. to 5s.—Leeks, per bunch, 2d. to 4d.—Lettuces, per score, 1s. 6d. to 2s.—Mushrooms, per pottle, 1s. to 2s. 6d.—Onions, per bunch, 4d. to 9d.—Parsley, per bunch, 2d. to 4d.—Radishes, per bunch, 2d.—Rhubarb, per bundle, 1s. 6d. to 2s.—Salsify, per bundle, 9d. to 1s. 3d.—Scorzoneria, per bundle, 9d. to 1s. 3d.—Seakale, per punnet, 1s. 6d. to 2s. 6d.—Shallots, per lb., 8d.—Spinach, per bushel, 3s. to 4s.—Tomatoes, per small punnet, 3d. to 6d.—Turnips, per bunch, 3d. to 6d.

The Wholesale Price of Vegetables.—Some little idea may be formed of the necessity of a reform in our greengrocery arrangements by the following passage, which occurs in the report of Mr. H. J. Morgan, on the cultivation by means of sewage irrigation of the Lodge Farm, Barking, for the year ending August 31st last, which has just been published. "The average price," says Mr. Morgan, "which our best potatoes last year realized was from £6 to £7 per ton. This year we have obtained no more than £2 to £2 10s. Onions, which sold last year for £43 per acre in the ground, and realized a great deal more by marketing, have this year been sold by us at £23, the highest price I have heard of being £30 per acre. In the autumn of last year cut cabbages (Collards') fetched from 1s. to 1s. 3d. per dozen, while this year there has been a difficulty to obtain 3d. and 4d. per dozen, some having even been sold, I hear, as low as 6d. for five dozen. Scarlet-runners, which made 8s., 10s., and 11s. a sieve last year, only reached 3d. and 6d. and 1s., until lately, when they have made 2s. and 2s. 6d. a sieve. Bunching greens have not paid us to market, and we have hitherto fed cattle on them. I have been told by several farmers that they have ploughed in their crops, as it would pay them better to use them as manure than to market them. These differences in price have not at all arisen from differences in quality, as our produce has been, in most cases, as fine and as abundant this year as last. Strange to say," adds Mr. Morgan, with refreshing naïveté, "that in the face of all this the retail prices are as high as ever, a cut cabbage ordinarily costing 1½d., and a small dish of beans 4d. and 6d. with everything else in proportion."

Novelties.—We cut the following from the letter of a French gentleman, a member of a well-known firm, respecting the shoals of so-called novelties that are now being sent out. "Some of your English novelty-mongers are making the question a perfect maze. It takes, for example, six months to know all the new peas of the season, and as much to go through the potatoes and cauliflowers, and then nothing is left for the cucumbers. What if one wishes to know also the new flowers into the bargain? German asters, &c.? Are vegetable shows often held in London? It would, I think, be a better plan, and scarcely more expensive to attend them once or twice in the year than to order and grow fifty new kinds of vegetables every season."

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"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE FLOWER-GARDEN



ROSES AND ROSE CULTURE.

BY S. REYNOLDS HOLE.

I RESUME, while the weather is still propitious for the planting of rose trees, my selection of those varieties which cannot disappoint, always providing that they are placed where the rose will grow, that is, in garden soil, which, naturally or artificially, deserves the name, and which is not affected by smoking chimneys, nor "under the shade of melancholy boughs." Soot as a substance is a good manure and a good medicine (for mildew) to roses, but soot in solution is a fatal foe; and, as to shadow, why her majesty the Queen of the Flowers naturally takes umbrage if any inferior denizen of the garden is placed over her royal head.

I have already commended *Gloire de Dijon* and *Maréchal Niel*, from the Tea-scented or rather Noisette roses; *Blairii* No. 2, from the Summer roses; *Souvenir de la Malmaison*, from the Bourbon; and *Alfred Colomb* and the *Baroness Rothschild*, from the hybrid perpetual class. My next choice from the latter family is *Baronne Prevost*, and I justify my selection by a little incident which occurred to me at the beginning of the last summer. I was leaving home one morning to transact some business in London, when a parishioner, aware of my movements (in a small village the outgoings, the incomings, and it may be the shortcomings, of the priest are quickly and generally known), asked me to take charge of a few roses which she wished to send to a friend. The petitioner was the wife of our Village Blacksmith. It was meet that, like Venus, wife of Vulcan, she should be associated with roses, and I knew, moreover, of a luxuriant rose tree growing upon the wall of her house, but I was greatly surprised to see the beautiful blooms, some ten or twelve of them, which I was asked to convey to town. Something more than surprised—a *sourçon* sore and subdued—seeing that I had just gone over my large collection and only found some half-dozen *Gloire de Dijons* and two or three *Charles Lawsons* on a southern wall. And here was a single rose tree holding its own victoriously. *Athanasius contra mundum!* Something more even than surprised and subdued—ashamed, because I had expelled the same rose tree which produced these flowers from my own garden as not being quite good enough for exhibition. And lo! it took precedence of them all—as I have seen a young farmer, on a rough four-year-old or a bad-tempered screw, lead a field of "pinks" on two-hundred-guinea hunters. The rose in question was the *Baronne Prevost*. It had, it is true, the great advantage of a wall, but it is reliable everywhere for an abundance of its large, fresh, blushing roses. The teacher of my youth, the friend of my manhood, Mr. Rivers, advises that a bed of this variety should be grown wherever it may; at all events, let the young rosarian include in his first order *Baronne Prevost*. It grows best upon its own roots, or on the Manetti stock.

Caroline de Saasal is another old favourite which, though, like the *Baronne*, not quite perfect enough for the rose shows, excels a great number of more symmetrical roses in one most

important quality, *i.e.*, in constitution. There is, indeed, so much of the more delicate "China" blood in our new roses, and they are propagated so rapidly under the forcing system, that we have lost to some extent in vigour what we have gained in beauty. *Caroline*, long acclimatised to our English air, is always bonnie, always bountiful, and thrives on standard or on dwarf with equal excellence.

Comte de Nanteuil is another of the ancient noblesse, which may say with Tennyson's "Brook,"—

"New roses come—new roses go,
But I go on for ever,"

for it has seen hundreds of rose trees bloom and die in my garden. Grown upon its own roots or worked low upon a stock, which is tantamount in the end, because all roses planted below the bud or the graft will send out roots of their own, this variety is a true perpetual, blooming continually from the end of June until rude, pitiless Jack Frost, with icy breath, issues his stern command, "Shut up!" The flowers are as full and as faultless in form as the best, but they lose their colour too rapidly for transmission to our public shows.

General Jacqueminot, again, has far more vitality and power of endurance than most of his more showy but less robust descendants, and never fails, if due consideration be shown, to yield an abundance of those soft, crimson, velvety roses, which on their first appearance in England impressed us rosarians with the firm conviction that at last we had obtained perfection. It thrives best on the Manetti stock.

Two plants of *John Hopper*, which the raiser, Mr. Ward, of Ipswich, kindly sent to me on its introduction, are still flourishing in my rosarium. One of the few grand roses veritably of English birth (the others being *Duke of Edinburgh* and *Miss Ingram*, for I do not believe that *Devoniensis* was of Anglican origin), it is a trustworthy garden rose, and one of the best for exhibition also, although for the latter purpose, as in most other instances, its glories are developed in their full integrity when first it blooms upon the budded briar or Manetti stock.

(To be continued.)

WILL our champion rose-grower, the Rev. Mr. Reynolds Hole, tell us why that very uncertain beauty, *Souvenir de la Malmaison*, has, as a rule, such an awfully hard heart, and how that is to be softened? A rose might as well not be a rose, if its heart is all "eye"—green or otherwise. I agree that perfect flowers of this variety may be worth a crown apiece. But they are very seldom perfect in many localities. No rose of my acquaintance promises more than this one does and performs less. The outer petals begin to unfold, when—oh! grievous disappointment—there is a riven, a distorted, and, not unfrequently, positively a rotten heart. Under glass it seldom serves us so badly, but out of doors the heart of this variety is so unsatisfactory that we have almost given up growing it. My next question relates to the two forms of *Devoniensis*. I cannot think how Mr. Hole could give the climbing sort precedence over the older variety, and even linger fondly over the rampant runner, dismissing our old *Devoniensis*, with others, in a single line as too tender. Tender, *Devoniensis* assuredly is, but only a little more so than *Gloire de Dijon*, and the only one that has stood by it through many winters while other teas perished. As to beauty, it was and is a libel to call this climber by the same name or mention it in the same breath as the queen of all tea roses—yes, and I will add, of all other sorts whatsoever; the true *Devoniensis* is perfectly unique in form, in colour, and in sweetness, for no other rose has the same scent. We often hear the remark made that "we may go further and fare worse," an observation most assuredly true in the case of the climbing *Devoniensis*. It runs further than the old kind, yielding us shoots sometimes six feet long—food for the first frost—for it is the tenderest of all tea roses. *Devoniensis* lives here as a standard, with a handful of fern fronds thrust into its crown, but its climbing variety dies on a wall unless thatched over. One more question, and I've done. Is a soft soil good for roses? As a rule, I have not found it so. Mr. Hole tells us that the best soil is a mellow loam in which a walking stick disappears to the handle. Is this a figure of speech merely, or is the statement meant to be serious? The roots of the dog rose have been accustomed to endure hardness, and it is doubtful if they will know what to make of a soft root-run a yard deep enriched with pig manure. The enrichment may be all right, but the softness seems questionable. Finally, I must heartily endorse all Mr. Hole says of the *Baronne Rothschild*: she "is lovely" beyond description.

D. T. P.

NOTES AND QUESTIONS ON THE FLOWER-GARDEN.

Alpines.—I with many others have some difficulty in understanding what is actually meant by this term as applied to plants in cultivation; botanically I apprehend its application to wild plants natural to elevated situations, but very few of them are capable of or worth cultivation. Would you kindly give me a list of some twenty or more of such plants suited for a sandy soil and exposed position on the northern outskirts of Liverpool?—A SUBSCRIBER FROM THE FIRST.—[The term alpine is applied in gardens to those plants, mostly very small, that we obtain from high mountain regions. With them, however, in gardens are associated a good many plants, not strictly alpine subjects, that grow in lowland meadows on rocks and on walls. It should, however, be remembered that many plants that inhabit the lowlands of our latitudes are mountain plants further south. Hundreds of alpine plants are "capable of and well worth cultivation." The following is a list of forty, but there are 300 quite as good that would grow "on a sandy soil and in an exposed position," anywhere in the United Kingdom, without the aid of "rock-work," or any attention, beyond planting in the level ground:—

<i>Acantholimon gluma-</i>	<i>D. neglectus</i>	<i>Primula denticulata</i>
<i>ceum</i>	<i>D. petraeus</i>	<i>P. vulgaris</i> and vars.
<i>Æthionema saxatile</i>	<i>Dryas octopetala</i>	<i>Ranunculus montanus</i>
<i>Anthyllis montana</i>	<i>Erysimum ochroleucum</i>	<i>Saponaria ocymoides</i>
<i>Arabis albidia</i>	<i>Gentiana acaulis</i>	<i>Saxifraga</i> in var.
<i>Arenaria montana</i>	<i>Gypsophila prostrata</i>	<i>Sedum</i> in var.
<i>Aubrietia</i> in var.	<i>Hutchinsia alpina</i>	<i>Sempervivum</i> in var.
<i>Campnula cespitosa</i>	<i>Iberis corneifolia</i>	<i>Silene alpestris</i>
<i>C. carpatia</i>	<i>I. saxatilis</i>	<i>S. Schafta</i>
<i>C. fragilis</i>	<i>Omphalodes verna</i>	<i>Veronica prostrata</i>
<i>C. turbinata</i>	<i>Pentstemon procerus</i>	<i>V. saxatilis</i>
<i>Cerastium</i> in var.	<i>Phlox reptans</i>	<i>Viola cornuta</i>
<i>Cyclamen</i>	<i>P. subulata</i> and its white	<i>V. lutea</i>
<i>Dianthus deltoides</i>	var.	

Cheap Roses.—I am surprised that roses on their own roots should not have been long ere this offered at much lower prices than those generally quoted by our great growers, with a view to induce amateurs to cultivate them as bedding plants. I know that under certain treatment roses can be struck as readily as willows. I have myself for several successive years put in some thousands, and can reckon always on ninety-five out of every hundred "taking." I calculate that, with the assistance of two boys, a propagator could in twelve months strike 100,000, and pot them in three-inch pots, so as to be ready for sale, with a medium proportion of glass frames and a propagating house. Let us say £50 annually for glass rent, £100 for propagator and £30 for boys, £100 for pots, £30 for coal, soil, and sundries £24 for new kinds, in all £334. Could not these be offered at three shillings a dozen? that would amount to £1,245; allowing a fourth to remain unsold would leave £934 worth sold, or a profit of £600. Will this induce anyone to take up the matter? Packing and baskets, of course, as usual at the expense of the purchaser. In 1853, when bedding plants became first offered at 2s. 6d. per dozen, many expressed their opinion that the trade would be ruined; but what has been the result? While 1,000 used to be sold, 100,000 are now got rid of. Might the same thing not happen in the case of roses? Y.

Aquatic Flower Blooming in January.—I send you a specimen of an aquatic flower found blowing in a pond in South Devon this week, and, as we cannot find it described in Sowerby, we should be glad if you could help us to its name.—*Augusta M. Morris, Courtlands, Newton Abbott, South Devon, Jan. 17.*—[The charming and singular flower you send is that of *Aponogeton distachyon*, a native of the Cape of Good Hope, but hardly in many parts of these islands. It is, however, but very little known or planted. A small pond in the Royal Botanic Gardens at Edinburgh is covered with its graceful leaves. About London we have noticed it beginning to bloom in March in severe seasons; that it flowers even in January is very remarkable. A Cape aquatic, flowering when all the British species are flowerless and at rest, is a curiosity. In a tank or fountain basin, in the conservatory or greenhouse, it is a comely object in winter, flowering abundantly, and filling the house with its fragrance.—ED. "Field."] Y.

Transplanting Sweet Peas.—Rather late last spring we sowed a row of a particular mixture of Sweet Peas across our garden to serve as a screen between the floricultural and horticultural departments, and on the second morning after they had been sown we found that the earth had been much disturbed about them, and that scarcely a seed was left. The following morning, as early as three o'clock, we found wood-pigeons diligently at work unearthing and devouring any seeds that had been left on the day previous. No time was to be lost, the season being so far advanced, in re-sowing, and this time we took the precaution to cover them with a herring-net, hoping that they would be allowed to grow undisturbed. Vain thought! No sooner had they begun to make their appearance above ground than sparrows took advantage of the dilapidated state of our net, and hopping in at various holes picked, pulled up, and destroyed dozens, yea, hundreds, of the young plants. An attempt was made to make the net sparrow-proof, but somehow or other they managed to get in, notwithstanding all our efforts, and it was only by means of scarecrows that we succeeded in getting a thin plant beyond the reach of our winged enemies. At various points the plants were so thin, indeed, that no hopes were entertained of our ever having a creditable hedge. What was to be done? Could we transplant Sweet Peas? We had about half a yard or more of first-rate plants from the first sowing that had escaped the pigeons, and these we forthwith transplanted into the blanks and thin parts of the second sown line, watering them copiously, and shading them from the sun for a few days with a mat, supported on sticks; they thrived well, nor did their younger brethren get up to them till all had attained their full growth.—B. and E., *Coldstream.*

THE FRUIT-GARDEN.



TREATMENT OF WALL TREES.

I QUITE agree with your correspondent "W." (p. 176), that the treatment of wall trees generally throughout the country is not equal to what it was in years past. This, however, more especially applies to the cultivation of peaches and nectarines, and may in some measure be connected with cheap glass, which affords greater certainty of securing crops than open walls. Indeed, it has now become a question whether the cultivation of these fruits ought not to be wholly given up on open walls. It is, however, for open walls which I plead; and I always maintain that if trees on these received anything like the attention bestowed on those grown under glass, the results would be a great deal more satisfactory than they frequently are. What, for example, are the facts? Every attention is bestowed upon the occupants of the peach house; insects are kept in check; the trees are regularly syringed overhead, and have copious waterings at the roots throughout the growing season. In fact, every attention they require is paid them; whilst with their less fortunate neighbours outside the case is just reversed. They are either not half protected from spring frosts, or are half smothered; numbers of their first leaves are allowed to curl and turn yellow before any attempt is made to free them from insects; their fruit is not thinned until it has grown to double the size it ought to have attained before removal, or it is insufficiently thinned. Even where all these matters are properly attended to, one fatal error is not unfrequently committed, and that is, insufficiency of water at the roots during the growing season. No matter what attention is given in other ways, if this is not attended to, failure is certain to follow in the shape of immature wood bearing flowers imperfectly formed, and destitute of strength to resist the slightest frost, large branches continually dying off, &c.

In short, after years of attentive observation, I have come to the conclusion that, to an insufficiency of water more than to all other causes put together is attributable the failure in peach and nectarine crops, and premature decay of large quantities of trees throughout the country. The principal wall devoted here to peach culture is not more than eighty yards long; yet, during dry weather in summer, I give the border not less than five hundred gallons of water a week, keeping the roots well mulched. The result is, the trees mature very heavy crops of fine fruit; and although many of them are old, their general condition keeps improving. As to the large fruit-trees of other kinds that "W." appears to like, they are all very well for cider orchards or fruit-growers for market; but they are a mistake in private establishments. What is wanted is larger numbers of moderate-sized trees of such kinds as are found to do best in each locality, with a reduction in most places in the number of varieties grown, and a better selection of sorts early and late, so as to prolong the fruit season as far as possible. In the majority of places we find a glut during part of the season, and an insufficiency during the rest of the year, a state of things anything but satisfactory.

Southgate.

T. BAINES.

Figs in Mid-Winter.—Commencing with a number of fruiting plants in pots, as soon as the leaves are off, cut the shoots hard back to the old wood, leaving none of the young fruit on to form a first crop—protect the roots from frost, and leave the plants outside till the end of July, by which time they will have made a few inches of growth, and will again show fruit. They must now be taken into a warm, moist house, and if treated liberally will give a succession of fruit from October to February of much better quality than can be obtained from forced plants in spring. I have practised this plan three years with the same plants, and it has exceeded my most sanguine hopes. The sorts which I have proved to be well adapted for this mode of culture are Brown Turkey and White Marseilles.—WM. TAYLOR, *Longleat.*

NOTES ON NEW PEARS.

I HAVE read M. Baltet's account (p. 123) of Clapp's Favourite, Poire de l'Assomption, Fondante Thirriot, and Beurré Baltet Père. My Somersetshire experience with these four pears may, therefore, not be without interest.

The second has been grown by me during these last four years, and has fruited once. All my young trees of it are this season covered with blossom buds. As an addition to very early pears, nothing has appeared to equal it for many years. Besides its earliness, too, it is most prolific, and the tree is robust, hardy, and easily distinguished from any other sort, by its strong upright habit. On the quince it forms beautiful trees, which show fruit the second year from the graft. In this it resembles the Pitmaston Duchesse d'Angoulême, which fruits the second year on the quince; and, in fact, some of the fruits of both sorts resemble one another very much; as does that fine pear the Brockworth Park, which also does well upon the quince.



No. 1. Beurré de l'Assomption. No. 2. Clapp's Favourite.

As M. Baltet has so well described the Beurré de l'Assomption, I shall not venture to farther add to his remarks, but will pass on to Clapp's Favourite. I have cultivated this for about six or seven years, and have found it excellent; it is highly deserving of a place in every garden where early fruit is a desideratum. On open pyramids the fruit is middlesized; but upon a wall it would doubtless come as large as M. Baltet mentions. It must, however, be large indeed if it at all approaches the size of Souvenir de Léopold I., which here attains three times the size of Clapp's Favourite.

As regards Beurré Baltet Père: although I have trees of it, they are yet too young to bear. I, however, saw specimens of the fruit at the Royal Horticultural Society's show on the 4th of October, and liked its appearance very much. If it turns out to be as good in quality as it looks, it will be a desirable variety.

Fondante Thirriot seems to be a promising tree; but with me it is

yet too young to yield fruit. I have these two last worked upon the quince, and will soon be able to prove them.

Whilst upon this subject permit me to add a dozen of delicious but little known winter pears to M. Baltet's list, and which are well worth a trial, even in small collections; viz., Angélique Leclerc, a fine Christmas pear, delicate and savoury; ripe here December 23rd. Angustine Lelièvre, ripe March 26th, rich and excellent. Belle et Bonne de la Pierre, ripe December 15th; very rich, melting and savoury, with a nice sweet scent. Belle du Figuier, ripe January 16th; a fine new pear of honeyed sweetness and fine aroma. Belle Moulineuse, ripe March 6th; this variety is quite new, and is a delicious, rich, melting and juicy fruit, with a nice scent when cut. Beurré de Bollwiller, ripe here April 18th; juice most abundant, savoury and delicate, deserves a wall. Beurré Defays, ripe here February 24th; has a fine, delicate vinous flavour, and abundant juice. Beurré Delaunoy, November 20th; an exquisite, rich and melting pear. Beurré Fideline, ripe Christmas, 1870; melting, rich, and deliciously perfumed. Choissard, ripe here March 4th; flesh breaking with a rich, musky juice, and delicate flavour, deserves a wall. Comte de Flanders, ripe this Christmas, and kept till the 15th instant; very juicy, rich and perfumed with an exquisite flavour. Doyenné Flon Aîné, ripe here February 16th; flesh melting, juice most abundant, and deliciously perfumed.

Even to our old and well tried varieties, the above will, I am sure, be found to be welcome additions. J. SCOTT.

PEARS AND THEIR SELECTION.

THE possession of a large number of pears of undoubted excellence need not necessarily preclude the desire to secure other varieties approaching to the fullest extent the good qualities that characterise a fair proportion of the two thousand sorts now named and cultivated. I still venture to think we have yet much to do in fashioning our pears as florists' have done their flowers, into finer form, more enduring properties, and habits of growth that tend to annual fruitfulness, and greater beauty in the fruit. Our early pears are especially prone to pass away like fragile and fragrant flowers, that exhale their sweetness and perish. We want more enduring types amongst early pears than Doyenné d'Été and Citron des Carmes. We want a Marie Louise that will keep its treasured sweetness for us a few weeks longer than the exquisite, but transient, pear we still value so much. We want a Beurré Clairgeau, to keep until January, and to possess, with its great beauty, the qualities of sweetness, juiciness, and flavour that we possess in Winter Nelis. We want a Josephine de Malines less coy in rendering its sweet gifts; for, after tasting its glorious fruit, we begrudge waiting two years for a second feast. We want more English pears, like British Queen, Monarch, and the fine pears of Huyshe. We want more pears of the character of the old Crassane, that may be kept ripe and fit for use for six weeks; and seeing that so much remains to be effected, and that so much may be done in perfecting the pear, let me urge all who have the means of raising a few seedling pears to do so, and in time we may achieve the results I have faintly shadowed forth as still desirable. The selection of a good parent, and the determination of the character of the union that is to be consummated, will render success more probable.

The accompanying list may be useful to some of your amateur readers who are about to plant pears. Our subsoil is clay; average rainfall, twenty-four inches; altitude, 237 feet, above the sea level; locality, North Leicestershire:—

	Very early.	
Citron des Carmes	Doyenné d'Été	Poire Pêche
	Grown generally on south-east and west walls.	
Beurré d'Amantes	Autumn and Early Winter.	Beurré Supérieur
Louise Bonne de Jersey,	Van Mons Loeu-le-Clare,	Beurré d'Anjou
better on standards than	large-hand some, unequal	Prince of Wales
on walls.	in quality.	Prince of Wales
Williams' Bon Chrétien	Beurre Clairgeau, very	Victoria
Marie Louise	handsome; its beauty	Van de Weyer
British Queen	is its dower.	Orléans d'Enghien
Doyenné Buisson	Suffolk Thorn.	Doyenné du Commerce
	Crassane	
	Winter.	
Josephine de Malines	Winter Nelis	Knight's Monarch
Glout Moreau	Easter Beurré	Bergamotte de Espreux
	Beurré Rance.	

Belvoir.

W. INGRAM.

RAILWAY-SIDE FRUIT CULTURE.

Those who have travelled by day from Brussels to Louvain, from Gretz to Colomiers on the *Chemin de Fer de l'Est*, or from Leopoldsdorf to Soleman, on the Belgrad, Gratz, and Vienna line, cannot fail to have remarked that the railway is flanked at intervals on both sides by apple and pear trees, either growing naturally or trained as espaliers.

According to Dr. Morren's report in the *Belgique Horticole* of February 1869, the trees planted three years previously between the first-named towns had so far thriven exceedingly well, their branches already reaching up so as to form a third and fourth stage, and in the spring of 1868 the majority of them blossomed. They are placed seven feet apart, and trained on a fence of posts, thin horizontal iron bars, and cross rails, the posts being five feet in height by three inches or four inches in diameter, and the wooden rails one inch broad by two-fifths of an inch in thickness. The fence costs about threepence the running foot, and the wear and tear is estimated at one penny. When iron wire is used—and old telegraph wires come in most usefully for the purpose—it may be attached every ten feet to a four feet high oaken post, the lowest wire being one foot and a half, the second two feet and three quarters, and the third nearly four feet above the ground. By means of an iron tightener or *raidisseur*, consisting of a screw and nut, the wires can be drawn tighter in spring and allowed greater play in winter; the chances of their snapping will thus be greatly diminished. One tree may be planted close to a post, and one midway between post and post—the trees will in that case be five feet apart; and if the plan of alternating an horizontal espalier with the columnar pyramidal form be adopted, the fence will in a few years assume the appearance indicated by the accompanying sketch, for which, as well as for much of what follows, the writer is indebted to Dr. Lucas, of Reutlingen.



Fruit Trees along a Belgian Railway.

If preferred, smaller intermediate posts may be used as supports for the espalier trees, and the wires extending from them to the large posts, to facilitate training of the branches, be made to slope upwards. As regards the method of training and managing an horizontal espalier fence, the following details may be of service:—A strong, well-rooted pear or apple tree, one year from the graft, is planted without being cut, at the place intended for it in the row, and about the middle of the ensuing May, when the sap is in full movement, will require to be bent down and fastened in a horizontal position to the lowest wire. To encourage the putting forth of fruitful side shoots along its whole length, incisions are made before all the dormant eyes, whilst too vigorous buds are pinched in. A good even growth of fruit wood will shortly be the result. Owing to the accumulation of sap at the point where the young tree is tied down, the shoot there thrown out will be stronger than any of the others; it must be allowed to grow freely, and be attached in an almost upright direction. In the following year it will require to be bent down and fastened in the opposite direction to the stem from which it sprung, and it then forms the second arm of the tree. To form the second stage of branches, which is the next operation, a shoot must be taken from arm No. 2, and, after being carried up as far as the second wire, be bent down and fixed horizontally. From this third branch, by repeating the operations of the stage below, a fourth leading branch is formed, and the second stage is then complete. As regards the upper or third stage, it may either be formed in the same or in a slightly different manner from the first and second, and in the sixth year the extremities of the two lowest branches will require to be drawn up, and either grafted by approach or otherwise attached to the two uppermost. If the tree push forth very vigorously at first,

its two leading shoots may be allowed to grow in an upright direction in the same year, and afterwards be attached horizontally to the wire.

Respecting the cultivation of columnar-pyramidal trees—a form to be preferred where, on account of the corn crops, much shade is undesirable—a good plan is to put in strong, healthy plants two years from the graft, and the first operation will consist in pruning away all side branches above the union of scions and stock. Incisions are afterwards made above the eyes, with a view to cause them to break out strongly, and in the following spring, the lateral shoots thus developed must be cut short back. During the second year, the



Section of Railway Embankment and Terraces for Fruit Trees.

same mode of proceeding as regards incisions and cutting back of sideshoots (to about one inch in length) should be continued, and the point of the main stem will require to be somewhat shortened. Later on, as the tree shoots upwards—and it will, if permitted, attain a height of fifteen, twenty, and even twenty-five feet—the topmost lateral branches must be pinched, whilst the lower ones are regularly cut back and not allowed to extend beyond one foot from the main stem. If incisions have been made in the latter as above directed, and successive prunings properly attended to, the tree will be clothed from summit to base with short fruiting branches, and in five to seven years from the time of planting will begin to yield.

When it is proposed to utilise the slopes and embankments of railways for fruit-growing, the system of planting the trees, whether espalier or free-growing, on terraces some two or three feet in width, will be found in many cases a very advantageous one; and not only apples and pears, but cherries, plums, gooseberries, currants, strawberries, filberts, walnuts, and other kinds of fruit and wood suitable to the locality, may also be successfully cultivated.

"Already in France and Belgium," wrote, in the spring of 1870, the correspondent of a contemporary (considering M. Baltet's report), "some companies have handed over their lines to a company which undertakes to clothe them with fruit trees. The results obtained are calculated to confound the incredulous, and there is reason to expect that, with [the support of the Society of Agriculturists of France, all further hesitation on the subject will quickly disappear. Messrs. Place and Tricotel have published some elaborate calculations on the subject. They estimate that the extent of line brought into operation in France will soon attain a total of 15,000 or 16,000 miles, and that the maintenance and renewal of all this amount of permanent way, coupled with the plantation and maintenance of fruit trees by the sides of the lines, would involve an aggregate outlay during the next fifty years of £40,000,000. On the other hand, the produce of the fruit trees would, they calculate, be worth £90,000,000, being a net profit of £50,000,000, in addition to the maintenance of the way being secured during the long period of fifty years. Even making allowance for bad years and unforeseen losses, we still arrive at an undoubted profit." On some of the State railways of Sweden the plan is found to work well of engaging a competent man to superintend the cultivation of a certain number of station orchards and gardens, and perhaps it might answer to make some similar arrangement in connection with the planting, pruning, training, &c., of fruit trees grown on the sides of the line. Railway employes in those localities where the traffic is small, would thus be enabled to make a profitable use of their spare time, and, under the direction of an efficient staff of pomologists, be the means of turning to good account thousands of acres of what is now waste, unproductive land.—S., in "Field."

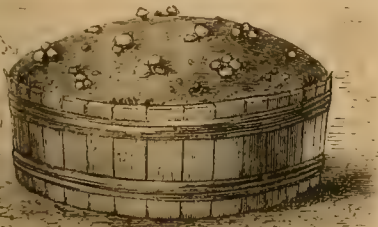
Fruit in Oregon.—Apples grow so big in Oregon that sixteen of them are said to have measured a bushel.

Peach Culture in America.—William C. Curry, says the *Chester County (Pa.) Record*, of West Bradford, set out on his farm an orchard of eleven hundred peach trees last fall.

THE KITCHEN GARDEN.

MINIATURE MUSHROOM BEDS.

No grapes, peaches, or plums fill the eye or satisfy the palate like those men grow themselves. On the other hand, everybody eats, but none but professional gardeners grow, mushrooms. The idea has got abroad that they are difficult to cultivate. This is, however, quite a mistake. They are capricious at times, but that only whets the appetite the more for their possession. Hitherto it has been thought by many that elaborate preparations were needed in the way of buildings, heating, &c., for mushroom culture, but I have mostly found that where the preparations were the most elaborate, there were the fewest mushrooms. In any place—back shed, floor of lathouse, cellar, stable, garret—where a temperature of 50° or 56° can be maintained, mushrooms may be grown. But it is not of such modes of culture that I would now write. We have heard of a Belgian cook who grew them in his old shoes, and assuredly they can be grown very well in four or six inch pots, pans, boxes, or even in a cracked tea-pot. The accompanying is an illustration of how they can be grown in the tops and bottoms of old casks. A barrel is sawn cross-ways into two pieces, each forming a tub. Holes are made in the bottoms of each, and a thin layer of good soil is spread over them inside. They are then filled with good, well-prepared stable-manure, just like that used in ordinary mushroom-beds, the different layers of dung in each tub being well pressed down. When the tub is half filled, six or seven good pieces of spawn are placed on the surface, and the remainder is filled up with manure, which is well pressed down, the operation being



Mushroom Tub.

completed by giving to the heap the form of a dome. The tubs thus prepared are placed in a perfectly dark part of a cellar, and eight or ten days afterwards the dung is taken off until the spawn is visible, in order to see whether it has commenced to vegetate and develop little filaments. If the spawn has spread, the surface must be covered with soil, care being taken to use only that which is fresh and properly prepared. In this or any similar way, there should be no difficulty in growing mushrooms; the boxes or tubs could be filled anywhere, and then carried to spare cellars, &c. In this manner objections against steaming manure might in many cases be got over.

There is one immense advantage in growing mushrooms in portable and small pots, boxes, tubs, or cask bottoms. When the manure gets cooled down, and the crop gets checked for lack of warmth, these portable contrivances, with their freight of young mushrooms, may be plunged bodily into warmer media, such as a sweet bed of fermenting dung. Crops can likewise be safely hastened or retarded by ranges of temperature from 65° to 45°. Thus they may be brought forth from the cellars and placed in forcing-houses at work or plant stoves, in cases of emergency. Even the cook might grow his own mushrooms in pots on his kitchen shelves or under his table, and when they come in with too great a rush, remove them to the cold meat larder to take a quiet nap till wanted. By plunging the pots or pans in a genial medium I have found that the fermenting material inside the pots may be almost dispensed with. The spawn runs best in a little sweet horse dung, that is, manure that has had its grossness sweated out of it by ten days' or a fortnight's gentle fermentation and four or six turnings upside down and inside out. Place a handful of this in a pot or pan, with one or more pieces of

spawn, according to the size of the pot; fill with soil, and plunge in a bottom heat of, say 55° or 60°, and in five or six weeks a crop of mushrooms will be gathered. Should the heat fail, renew it with fresh dung and re-plunge. By this method, a uniform temperature may be provided for the mushrooms through the whole period of growth.

Finally, I never could discover any difference between mushrooms grown in the dark and those grown in the light, and therefore the latter is by no means essential. Indeed, dry, warm cellars are among the best situations for mushrooms. Good spawn is the one thing essential, and whether it is purchased by the bushel or the single brick only, buy it of nurserymen whose characters will guarantee its freshness and growing properties.

D. T. FISU.

HOW TO FIGHT THE WEEDS.

It is a comforting fact that a garden may be kept thoroughly clean at much less expense than is required to maintain it in a weedy condition. A very little labour judiciously applied does more towards perfect cleanliness than a great deal brought to bear at the wrong time. Where weeds are allowed to grow large, they require ten times the amount of trouble to exterminate them than when attacked in a tiny seedling state. Some people never take notice of weeds till they begin to rival the plants in size, and perhaps illustrate the arrangements of nature for the dispersion of seeds by floating their feathery parachutes through the air. To allow them to seed is, of course, gross mismanagement; but to prevent them is not enough. They should never be allowed to get so large, that when they are cut off, it is necessary to remove them from the spot in which they grew. It is the raking and removing after the hoeing which causes the waste of labour. Once let them get up, and then it is not a mere hoeing that is required, but a "clearing" on a small scale. When cut down, it becomes necessary to remove the untidy swath from the ground, and to rake it; and in doing this in a large garden we have seen as much labour thrown away as would be sufficient to keep one of twice the size in a creditable state. If ground is systematically and frequently hoed, no raking is required, and the young plants perish, and leave no trace after the first hour's sun they are exposed to. The Dutch hoe should be passed over the garden once a fortnight. An ordinary workman will cover a great deal of ground in one day, provided the weeds are not strong enough to impede his hoe. It should be done in fine or dry weather, to prevent the rooting of the weeds. Never mind if the ground "looks clean" a fortnight after it has received a thorough hoeing. Start the hoe again the second Monday morning; and by pursuing that system through the growing season the garden will always look clean. A good workman may hoe the garden over, and cut off all the weeds in the bud during a single summer's day; whereas, when they are fully or even half developed, a fortnight may be required to remove them; and through the season some part of the place is pretty sure to be "up to the eyes in weeds."

While many admit all this as regards annual weeds, they apply a different doctrine to bindweed, dandelion, docks, and the like, and take a roundabout way of exterminating them. But no weed can live if you persist in destroying its leafy or above-ground portion before it has had time to become well developed. This is indisputable. The obvious inference is that all weeds whatever may be destroyed in this way. By making it a rule to have infested plots or crops visited once a week or fortnight, and the weeds carefully cut off, you will get rid of every particle of noxious vegetation. Who has not seen the endless huntings and diggings after the roots of convolvulus? No amount of winter digging can exterminate this pest; but a very trifling but regular attention in summer will do so. We once knew an "experienced practical horticulturalist" who made a brave but expensive attempt to get rid of it. A plot of strawberries was infested by it, and very unproductive in consequence of its tortuous wrappings. Being a man of resolution, he determined to cart out the whole plot on to the farm, and he did it to the depth of two feet and a half! That cost a good deal of labour; but horses and men were plentiful, and soon carted in a lot of loam to fill up

the vacancy. *Convolvulus sepium* was exterminated from the plot for a time; but its removal required as much exertion as would suffice to clean a dozen acres. What was the best and cheapest remedy? Why, simply to "dig in" or throw out the strawberries, and plant a crop of, say, Brussels sprouts, or any thinly-planted crop, among which a boy could easily pass once in ten days during the growing season, and cut off at the ground the rising bindweed, which would probably attempt to twine itself round the stems, and thereby be the more readily cut off at the bottom. By persisting in that as long as a leaf showed itself, it is not difficult to divine what would become of the roots, pertinacious as they are when allowed breathing space. In hoeing the garden, seed beds and other such closely planted surfaces must of course be passed by; but they should be hand-picked nearly as frequently as the general surface is tickled with the hoe. Where box edgings are employed, they should, as a matter of course, be regularly hand-picked.

NOTES AND QUESTIONS ON THE KITCHEN-GARDEN.

The Tomato in Southern California.—The *Ventura Signal* says that the tomato in Southern California is a perennial plant, which blooms and bears fruit during the entire year, when properly cared for. Near the seashore, where there are no frosts, the editor has seen them of five years' growth, looking as fresh and vigorous as at any time of their existence. He adds:—"There are many classes of the vegetable kind perennial here that are elsewhere annual."

Guano.—The anchors of ships moored in the vicinity of the Chincha Islands frequently bring up guano from the bottom of the ocean, which is rather contrary to the doctrine that these marvellous deposits are the excreta of birds. The recent researches of Dr. Habel go far to corroborate Professor Edward's view that guano is really a stratified deposit. When the portions of guano which are insoluble in acids are examined, they are found to consist entirely of skeletons of diatomaceæ, polycystina, and sponges, all of which are invariably of marine origin, and sometimes identical with those still living in the adjacent ocean. These forms are also found in patches exactly as they occur in nature. From these and other facts recently obtained by chemical and microscopical investigation, there appears to be but little doubt that guano is an accumulation of the bodies of animals and plants; which, either by heat, by chemical action, or both combined, has had its organic matter converted into bitumen, while the mineral constituents have been preserved in those beautiful forms which make up the infusorial strata in various part of the world.—*Mechanics' Magazine*.

Early Tomatoes.—There is no doubt that cuttings taken from the plants in the autumn, just before freezing up time, stuck in damp soil, and when well rooted removed to six-inch pots, kept in an atmosphere of 40° to 50°, and watered just sufficiently to keep them alive during winter, and by keeping the shoots as they appear properly pinched, and a part of the larger leaves, so as to retard growth as much as possible, is the true way of obtaining the earliest fruit. It will be found that if the plants are well attended to, by the spring they will be thick and strong at the base, and as woody almost as a wallflower. Growing tomatoes, as almost all gardeners do, in hotbeds is decidedly the wrong method, as no doubt many of them have found out. The hotbed plants are weak and spindling. Many put down seeds in this way so early that the plants run up to the glass before the weather becomes sufficiently warm to put them out in the open ground, and the leaves either scorch or become frost-bitten. I have seen many a frame of tomatoes for which I would not give five cents for the best five hundred plants in them.—*Canada Farmer*.

Mushroom Culture.—Last summer I spawned my small cucumber frame and my marrow bed, but, although the spawn worked freely, I did not gather one dozen mushrooms, a few tiny ones, rather larger than peas, being the only result. In August last I had two champagne cases filled with good horse-manure, and when they were spawned and covered with ordinary garden mould, they were placed in a shed in the garden, open in front, but not much exposed. When the weather became cold they were covered with litter and mats; but, alas! at present no mushrooms. Can you suggest anything that would be likely to bring them on? I ought to say that my gardener ascertained that the spawn worked freely, and is still alive, for the manure has a strong odour of mushrooms. Last year I tried to cultivate mushrooms on the asparagus beds, during the winter—spawned the manure when they were covered for the autumn, and then carefully covered them with litter. The winter was unusually cold, but we never had one mushroom, and I fear we shall be equally unfortunate with those in the shed this year. If you can offer any suggestions I shall feel obliged.—A LOVER OF MUSHROOMS.—[You deserve success, though you clearly made a mistake in spawning the asparagus beds in winter. Mushrooms are grown in abundance in the open air in winter, as may be seen in the market gardens at the west end of London and in those round Paris, but they are always grown on well-prepared beds, thickly covered. As to your other mishaps, no one can help you who does not know all the circumstances of the case. In your cucumber frames, &c., they ought to have succeeded, but as they are plants notoriously

variable as to their appearance or non-appearance in a wild state, we must expect them to be equally capricious in gardens, except when grown in structures in which we can almost exactly regulate the temperature and conditions. Persevere, and, if possible, have several beds always at work in the same structure. Where mushroom culture is tried on a very small scale, failure is very apt to result from the neglect of some trifling attention, or from mere forgetfulness.]

Preserving Cabbages.—Many Americans grow cabbages by the hundred acres; it is not, however, of their culture I am about to speak, but of the system of preserving them when full grown during winter, together with some of the uses to which Americans put them during that season. Here everything except the very hardest of the kales is usually wholly destroyed before Christmas. North-west winds and sharp frosts dry up all moisture, and a sudden change of temperature afterwards finishes what escapes the ravages of the ice king. The thermometer on the Wednesday and Thursday nights preceeding Christmas, indicated 6° and 7° below zero, accompanied by quite a gale of wind. On Friday we had about five inches of snow; rain then fell, and the thermometer gradually rose to 32°, then on Saturday evening it ran up to 56°; the increase of temperature clearing all the snow off in about three hours, and this state of things with slight variations will be continued throughout the winter. The way in which we keep cabbages good until May under such circumstances is to choose a piece of dug ground where water will not stand, and as soon as the ground is about to freeze up, to fork up the full-grown cabbages, and place them roots upwards in a row close together, banking up the earth round them like a celery ridge, and leaving the roots exposed. A portion of the ground is covered over with leaves, hay, or other covering, to keep it from freezing so hard as to prevent getting the cabbages out while frost lasts. Some use leaves only as a covering; and no doubt they keep the cabbages safe, but they are apt to give them a bad taste. In England I have seen waste cabbages come out of a rubbish heap quite fresh in spring; therefore this plan of preserving them during very severe winters might perhaps be worth attentive consideration.—JAMES TAPLIN, *South Amboy, New Jersey, United States*.

Value of some of our Vegetable Imports.—The official returns of the imports of foreign and colonial merchandise into the United Kingdom in 1871 show, in regard to many articles, a material difference in computed real value from that of the preceding year. Taking the great article of raw cotton, our largest import, we find the quantity imported in 1871 15,843,890 cwt., being an increase of above 32 per cent. over the quantity in the preceding year, but the computed value of the total import, viz., £55,767,545—shows an increase of not much more than 4 per cent., over that of the preceding year. The computed value of a hundred-weight averaged nearly £4. 10s. in 1870, and a little more than £3. 10s. in 1871. The import of flax (dressed and undressed) and tow advanced from 2,373,528 cwt. in 1870 to 2,597,915 cwt. in 1871; but the value of the import declined from £5,979,127 to £5,791,188. Indigo imported increased from 79,255 cwt. to 135,901 cwt., but the value only from £2,721,208 to £2,932,238. The items of food also show various differences from those of the preceding year. In 1870 we imported 35,705,138 cwt. of wheat and wheat-meal and flour, of the value of £19,647,778; in 1871 we imported 43,392,284 cwt., but the value rose at a greater rate than the quantity, and amounted to £26,783,914. In 1870, 771,854 cwt. of potatoes imported were priced at £245,252; in 1871 the 852,125 cwt. imported at only £225,732. The import of tea shows an increase in quantity from 141,020,767 cwt. to 170,716,140 cwt.; but in price only from £10,097,619 to £11,637,684. On the other hand, while the quantity of currants imported increased from 813,763 cwt. to 1,068,887 cwt., the value rose from £920,923 to no less than £1,483,841. The import of wine presents remarkable figures; the quantity shows the slight increase from 17,774,782 gallons in 1870 to 17,870,078 gallons in 1871; but the value of the import shows a rise from £4,817,294 to £7,069,557. The import in 1871 of red wine from France cost us £1,064,690, and of white wine, £1,272,972; white wine from Spain, £2,367,571, and wine from Portugal, £1,303,693.

The Jute Trade.—The *Dundee Advertiser* says that a noteworthy fact in connection with the staple trade of Dundee during the past year is the immense increase that has taken place in the quantity of jute imported to the town. In no former year has the importation direct from India attained to anything like the magnitude which it has reached during the year just closed. Statistics, carefully compiled, show the number of bales that have been landed at Dundee from Calcutta direct during the past year to be 468,692, which, compared with the quantity imported in the previous year—213,875 bales—shows an increase of 254,817, being 40.942 bales more than double the quantity imported in 1870. On the other hand, however, the coasting trade—i.e., by vessels reloading at London and elsewhere for Dundee—has fallen off to a considerable extent. Last year the importations coastwise amounted to 210,038 bales, as against 317,691 for the previous year, showing a deficiency of 107,653 bales. The traffic in jute by rail to Dundee shows an advance in favour of last year of about 1,982 bales. As regards the total importations to the town, the figures exhibit largely to the advantage of the past over the previous year, there being 739,498 bales for 1871, as against 590,352 for 1870, or an increase of 149,146 bales.

NEW PLANTS OF 1871.

COMMENCING with the hardier series, we propose here to pass in review some of the more important acquisitions of the year which has just passed away. The number of the new plants which annually come to the front is really astonishing, and we can do no more than briefly indicate those which in our opinion are the most desirable amongst them.

In the group of hardy evergreen trees and shrubs we find *Quercus striata*, a Japanese tree, half-hardy, or possibly hardy in sheltered places. This is pyramidal in habit, and its ovate lanceolate, toothed leaves are distinctly banded with oblique lines of green and gold. The French gardens have *Wellingtonia gigantea pendula*, a drooping-branched variety, said to be well-marked and ornamental. The *Juniperus chinensis aurea* is probably one of the finest of recent evergreens, being hardy and free-growing as the type, and well-marked with a thoroughly fixed golden variegation. Amongst deciduous trees *Maackia amurensis* is the most decided novelty. It comes from the valley of the Amoor, bears pinnate leaves, and produces long, dense, spike-like racemes of white papilionaceous flowers. The ever-blooming *Robinia Pseud-Acacia semperflorans* of French gardens, which is said to continue flowering on from April till autumn, must be a fine ornamental tree. *Albizia rosea*, a North American tree, hardy in Paris, is very floriferous, and its heads of long crimson stamens are very showy. Then we have two more of the pretty Japanese Maples in *Acer palmatum ornatum* and *A. palmatum crispum*. Passing on to deciduous shrubs, we find *Cerasus Sieboldii roseo-plena*, a beautiful shrub with pendent branches, and double rose-coloured flowers; and *Cerasus pendula rosea*, slender and drooping, the branches profusely laden with blossoms of a delicate pink, both Japanese; *Rhus Osbeckii*, also Japanese, with handsome pinnate leaves having winged rachides; two Mock Oranges—*Philadelphus rubricaulis* and *P. parviflorus*, both Chinese, and said to be of ornamental character; *Rhododendron (Azalea) molle*, a fine Japanese shrub, with bold deep orange-yellow flowers, and likely to be the parent of a numerous progeny of garden varieties like the hardy *Azaleas* of America; *Rosa rugosa*, at first called *R. Regeliana*, a dwarf and very distinct Japanese species, with large crimson flowers like single *Pæonies*; and *Lonicera Periclymenum aureum*, with golden variegated leaves.

The hardy perennial group has yielded the following subjects of merit:—*Primula japonica*, with its tall, whorled scapes of rich magenta blossoms; *Linum campanulatum*, a very much improved *L. flavum*, from the south of Europe; *Lithospermum petroem* and *L. Gastoni*, also *europæum*, two dwarf plants, with charming blue flowers; *Androsace carnea eximia*, in which the umbellate flowers are rosy-purple; *Baptisia leucophaea*, with trifoliate leaves, and long reclinate racemes of white papilionaceous flowers; *Saxifraga Maw-cana*, a Morocco plant, with large white flowers, and proliferous bulbils; *Saxifraga valdensis*, a little alpine gem, of minute growth, with large white blossoms; and *Thymus citridorus aureo-marginatus*, a beautiful yellow-edged dwarf Thyme, suitable for bedding-out.

Annuals are few in number. The most remarkable are *Amarantus salicifolius*, a half-hardy species, adapted both for in-door and out-door decoration, of pyramidal habit, with pendent, narrow, charmingly multicoloured leaves, and certainly one of the best plants of the year. To this may be added the hardy *Collinsia violacea*, with white and violet flowers, and compact habit; and *Gilia liniflora*, like a white-flowered flax.

Now ferns are not numerous. *Dicksonia Sellowiana*, a noble Brazilian tree fern, has been introduced to the Belgian gardens. *Humata*, or *Davallia Tyermanii*, is a charming evergreen stove fern, from West Africa, and has a freely-creeping silvery-scaled rhizome, and small, deltoid, tripinnate fronds. *Elaphoglossum Herminieri*, the Eel-fern, though having only simple fronds, forms a good new stove fern for baskets. *Pleopeltis irioides cristata* is a well-crested form of a well-known species. *Trichomanes auriculatum* is one of the lovely creeping-stemmed Javanese Fern-forms, with long, narrow, transparent fronds. *Lycopodium dichotomum*, *L. mandicatum*, and *L. taxifolium*, are three interesting species of club-moss; while *Selaginella rubella* is a creeping-stemmed species of the same order, with reddish-tinted leaves.

Succulents have been chiefly confined to *Agaves*, of which very ornamental genus, many new, or at least unfamiliar species, have been brought forward. The best of these were *Agave Celsiana albida*, *dealbata compacta*, *imbricata*, *ixtlioides*, *Simsii*, elegantissima, *Mescal*, and some of its varieties, *Regelii macrodonta*, *rotundifolia*, and *Verschaffeltii variegata*.

Amongst bulbs are some new Lilies, a family now happily engaging the attention of cultivators. *Lilium Washingtonianum* is one of the finest of them, growing 3 feet to 5 feet high, with many large purple-tinted, white, sweet-scented flowers. The Eastern Asiatic *L. Maximowiczii tigrinum* has lovely orange-red flowers, spotted with purple; and, *L. Roezlii*, from the Rocky Mountains, is an ally of the beautiful *superbum*. In *Gastronema sanguineum flammeum* we have a lovely dwarf greenhouse bulb, with large funnel-shaped rosy-crimson flowers. *Nerine pudica*, of *Habranthus*-like aspect, also a greenhouse plant, has white flowers streaked with red. *Gladiolus Saundersii* is a very handsome South African species allied to *G. psittacinus*, but with the decurved flowers scarlet and white. Finally, *Xiphion filifolium* and *X. junceum* are two bulbous Irises of showy character, the first with rich, violet-purple, the last with golden-yellow flowers.

Two white-flowered *Bouvardias*, *B. Davisoni* and *B. Vreelandii*, both apparently sports from the variety called *Hogarth*, are choice acquisitions in this useful decorative genus, which requires warm greenhouse treatment. *Encephalartos Vroomii*, in the way of *E. villosus*, is a fine greenhouse cycad. *Tacsonia speciosa*, with carnation-coloured flowers, is a remarkably handsome greenhouse climber. These are the more important acquisitions in the greenhouse section.

New stove plants are, as usual, very abundant, and we can only glance at a few of them. In the flowering section we find the following specially worthy of note:—*Dipladenia insignis*, the finest of all the *Dipladenias*, with very high-coloured rosy-carmine flowers. *Gloneria jasmiflora*, a Brazilian evergreen shrub, with corymbose panicles of long-tubed freely-produced white flowers. *Ixora Colei*, a splendid exhibition plant, with immense heads of pure white flowers. *Ixora amabilis*, a remarkably free, deep orange-coloured variety. *Begonia Chelsoni*, a hybrid from *Boliviana*, with bright orange-tinted red-flowers. *Bomarea chontalensis*, a grand stove climber from Nicaragua, with waxy rose-coloured and yellow flowers blotched with brown, one of the last contributions of the lamented Seemann. *Aristolochia cordiflora*, another stove climber, from Mexico, with creamy purple-blotched flowers, having an immense cordiform limb. *Echmea Mariae Reginae*, *Vriesia corallina*, and *Bromelia Fernandæ*, three grand Bromeliaceæ, the first with great rosy-pink bracts, and blue flowers, the second with green flowers in the axils of distichous purplish-red bracts, the third with a great globose head of numerous recurved cinnabar-red bracts, subtending greenish-white flowers.

Stove foliage-plants again are very numerous, the best being:—*Paullinia thalictrifolia*, a woody sapindaceous climber, with triter-nately pinnate leaves, like fronds of some elegant *Adiantum*. *Sphærogyne imperialis*, a noble Melastomad from Peru. *Nepenthes Sedeni*, a pretty hybrid pitcher plant. *Maranta Mazellii*, a handsome species, with broad rotundate leaves, marked by two grey bands. Several *Dracænas*, as *D. amabilis*, with green leaves and pink and white variegations, far superior to *Guilfoylei*; *D. Wisemannii* with bronzy, red-margined leaves breaking out into white; *D. splendens*, a dwarf, dense-growing form, with short, broad, recurved bronzy leaves breaking into rosy carmine; and *D. magnifica*, a very handsome sort, with erect broad bronzy leaves, margined with red, and having a pinkish bloom. Several *Arads*, as *Dicffenbachia imperialis*, bold-leaved, dark green, with grey rib and distinct yellow spots; *D. Bausei* and *D. Bowmanni*, both of stocky habit, yellowish green blotched with dark green, the former also spotted with white; *Alocasia Marshallii*, like *Jenningsii*, but with a central silvery band added; and *Xanthosoma Lindeni*, with erect sagittate-hastate, deep green leaves, the ribs and veins of which are ivory-white.

Amongst exotic Orchids, we can only mention these:—*Phaius Marshallia*, a charming terrestrial species, with large white flowers having a lemon-tinted lip. *Sobralia macrantha albida*, a variety with creamy-white flowers and rosy lip. *Oncidium aureum*, with a crowded erect panicle of golden-yellow flowers, spotted with rich brown. *Epidendrum Frederici-Guilielmi*, a tall species, with short broad racemes of deep crimson flowers. The curious *Epidendrum Pseudopidendrum*, with bright green flowers, having a bright vermilion-orange lip. *Masdevallia Lindeni*, *M. Harryana*, and *M. ignea*, three beautiful dwarf cool-house species, the first with the flowers brilliant violet-rose, the second rich magenta, and the third bright cinnabar. Finally we may record *Cypripedium Ashburtonia*, a handsome hybrid form of *Lady's Slipper*, exactly intermediate between its parents, *C. barbatum* and *C. insignis*. *Plant and Pomologist*.

Condurango Root.—This reputed specific for cancer is becoming a subject of speculation in Ecuador and the United States. In Ecuador it has reached £17 a ton, but in New York it has been selling for tobacco prices, though its virtues are contested. The Government of Ecuador has imposed an export duty.

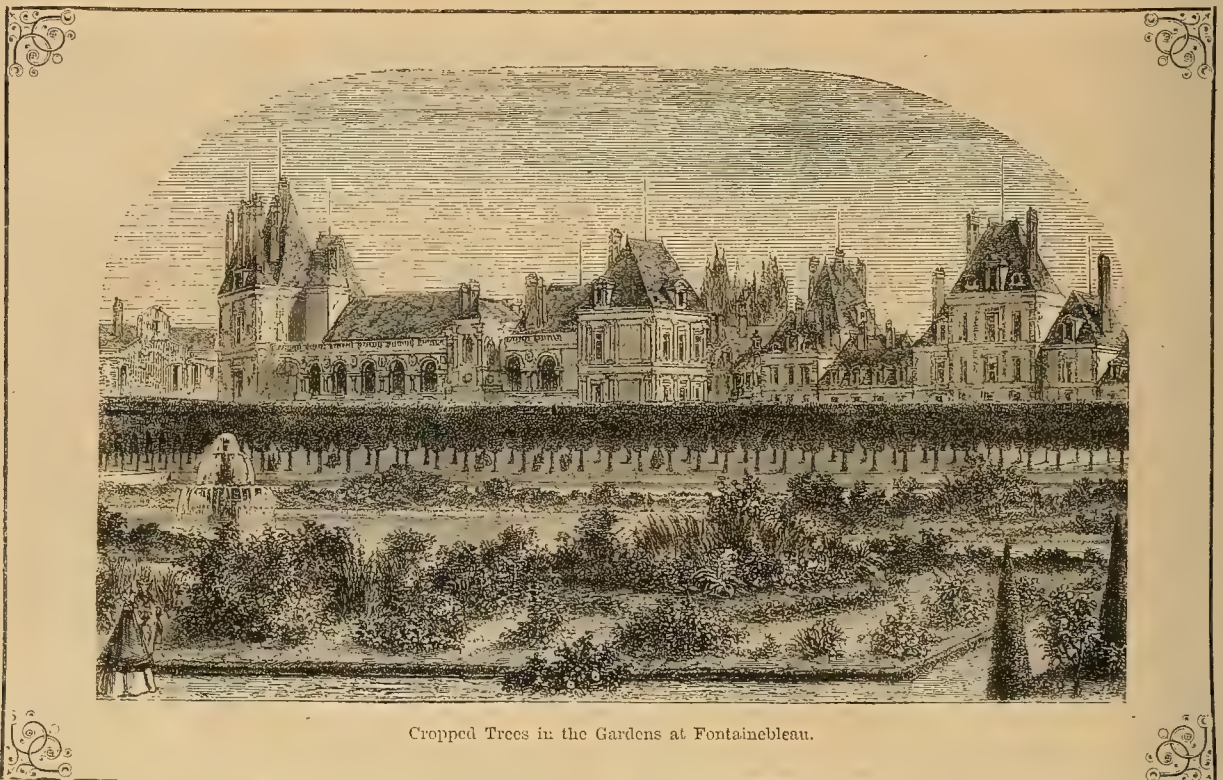
GARDEN DESIGN.

CROPPED TREES AND ARCHITECTURAL LINES.

BY NOEL HUMPHREYS.

WHEN it is considered how exquisitely the natural forms of trees contrast with the rigid lines of architectural structures, it becomes difficult to conceive how the "artist in foliage" could, by any process of æsthetic reasoning, ever have brought himself to forego the picturesque advantages of the forms he was called upon to deal with, and wilfully enter into a disadvantageous rivalry with the rule and plumb-line of the architect. That the irregular symmetry of tree form, with its softly rounded outlines, produces the most agreeable impression on the eye when placed in direct contrast with the regular lines of architecture, both horizontal and vertical, admits of no dispute; and yet, in some of the most remarkable instances

His contemporary, Le Notre, an artist of still greater and more general artistic accomplishment, fell into the same errors as regards the distortion of the natural forms of trees, with the mistaken idea, as it would seem, of making them accord with those of architecture, instead of making use of them as a natural and delightful contrast. The embellishments which he created in the splendid gardens attached to the Chateau of Veau-le-Viscompte for the celebrated Fouquet resulted in such a striking success, as it was then deemed, that contemporary writers did not hesitate to call it "a scene of enchantment." The Great King pronounced it a *spectacle merveilleux*, and appointed the triumphant artist controller-general of royal buildings and designer of gardens, with the privilege of incurring outlays of fabulous amount. While in the employ of the king he also constructed the ornamental (?) canals and designed the avenues of cropped limes which disfigure the noble architecture of the grand old Chateau of Fontainebleau, and entirely conceal some of its finest lines in the lower storeys.



Cropped Trees in the Gardens at Fontainebleau.

in Europe in which the combined effects of architecture and foliage have been sought, and that, too, upon a magnificent scale, the destruction, and not the adoption, of the charming contrasts that naturally exist between trees and architecture seems to have been the one thing specially sought after. Le Pautre, who in the middle of the seventeenth century was one of the most eminent of the great garden decorators of France, and without whose grottoes, fountains, terraces, and other embellishments, no palace or chateau was then considered *au grand complet*, persisted in creating "walls of foliage" as well as walls of stone, and so flung away one of the greatest elements of beauty in the various important works confided to his skill; for the well-squared forms of his cropped trees injured the effect of his architectural lines, and the more perfect accuracy of the last glaringly exposed the futile attempt to rival them in shaven foliage. He was, nevertheless, a man of genius and of infinite artistic resource; his works in architecture, and also in sculpture and painting, having secured his election to the Académie de Peinture et de Sculpture in 1677.

The above illustration serves to show how that ill-conceived line of straightened tree-tops (in which careful shearing still preserves the unfortunate device of Le Notre) cuts the architectural composition in two, and utterly conceals its lower half. From this example of the effect produced by a continuous line of trees running parallel with an architectural façade, may be seen the fatal effect (minus the cropping) which will eventually be produced by the uninterrupted line of trees planted along the Thames Embankment, which will at no very distant period conceal both from the river and the roadway the greater portion of the stately façade of Somerset House, and the other noble buildings destined to rise along other portions of that noble site.

The following illustration is intended to exhibit the effect of a mode of treatment in which the naturally irregular, but yet symmetrical, forms of trees are made to form a striking and most agreeable contrast with the rigid lines of architecture, rather than distorting and clipping them, in order to produce a false and ineffective attempt at an impossible concord. The example is by no means one of the best that might have been

selected, either architecturally or arboretically considered, but it possesses the great advantage of being well known. It is a view of Buckingham Palace, as obtained from the Suspension Bridge in St. James's Park. Neither the planting nor the architecture are of the highest kind, and our artist has not even made the most of them, such as they are, being only asked for a rough sketch, by way of diagram. In that sense, the sketch serves its purpose sufficiently well, and shows plainly enough the pleasing contrast which the natural forms of trees present to the well-marked lines of architecture, both vertical and horizontal. The view itself, slightly shadowed forth in our hasty sketch, is indeed a very pleasing one, the relative proportions of architecture, foliage, and water, being, as a whole, judiciously preserved. Enough is seen of the building, as the chief object, to display its importance and general character to advantage, the termination of its main façade being shrouded in uncertainty by a veil of foliage, and its lines boldly intercepted at one point by the dense mass of trees on the island, from which interruption the resumption of their accurate course on either side produces a very satisfactory and pleasing effect. An increase of height in the building itself, and a greater amount of rich and varied detail, would, perhaps, have rendered this example more conclusive as against "formalism in foliage;" but, as an illustration of the abstract principles advocated, it is an all-sufficient example.

GARDEN DESTROYERS

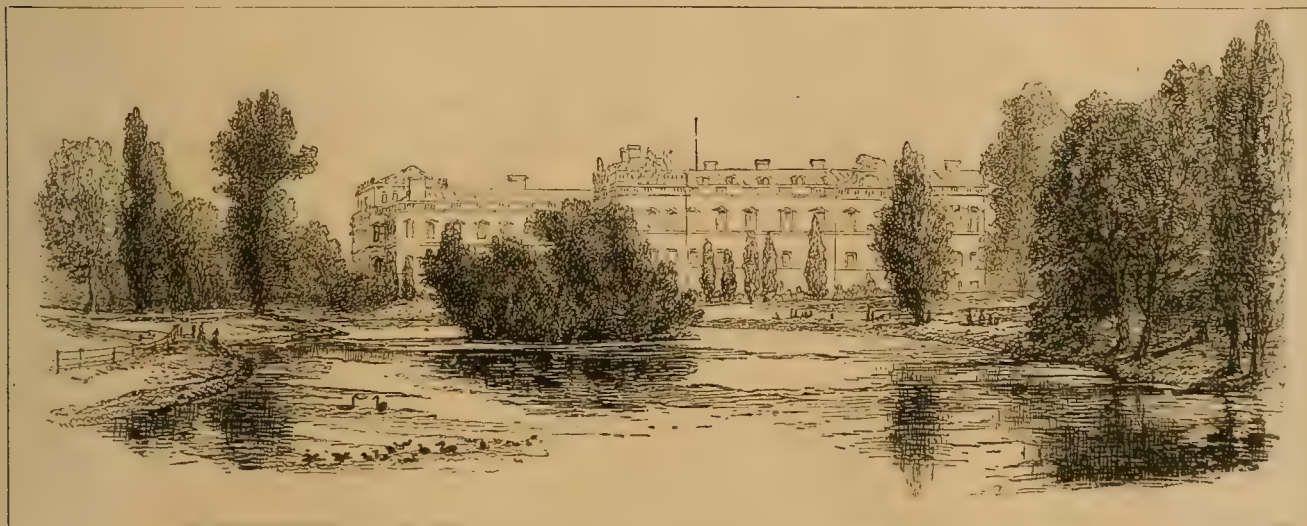


APHIDES: THEIR FRIENDS AND THEIR FOES.

BY EDWARD NEWMAN.

THAT aphides live on the sap of plants is susceptible of ocular demonstration, and equally so is the fact that ladybirds and aphidions live on aphides. The plant louse, or aphid, is familiar to every gardener, although the particular species may not be known to him. They are so numerous, and so closely packed together, that they seem to form a garment, a top-coat, to many of our common plants, for instance the rose and the broad bean.

Plants afflicted by aphid exhibit the most extraordinary vagaries, bearing blossoms where they ought to bear leaves, leaves where they ought to bear blossom—twisting into corkscrew-forms stems that ought to be straight, and making straight as sticks those which ought to be bent; sometimes, as in the peach and nectarine, they make the leaves hump up in the middle, and produce a sort of make-believe nectarine; making roots blossom, as we often see in that ornamental shrub, *Pyrus japonica*. This is a phenomenon that is sure to attract



Buckingham Palace, from the Suspension Bridge in St. James's Park.

The Gardens at Warwick Castle. The unfortunate fire at Warwick Castle has been the means of bringing to light many interesting associations connected with this fine old monument of times gone by. We have had the remarks of Nathaniel Hawthorne and Emerson's impressions of English scenes and scenery reproduced under different phases, and, lastly, a very interesting scrap from one of the lively epistles of Horace Walpole, the very emperor of English letter-writers, has found its way into the papers. It is a nice little bit of criticism concerning gardens and landscape gardeners, for which we are glad to find room. It appears that Walpole visited Warwick in the summer of 1751, and writing of his visit, to his friend George Montague, he says:—"On my return from (Umber-slade) Lord Archer's, an odious place, I saw Warwick, a pretty old town in the form of a cross, small and thinly inhabited. The castle is enchanting; the view pleased me more than I can express. The river Avon tumbles down a cascade at its foot. It is well laid out by one Brown, who has set up on a few ideas of Kent and Mr. Southcote. One sees what the prevalence of taste does. Little Brooke, who would have chuckled to have been born in an age of clipped hedges and cockleshell avenues, has submitted to let his garden and park be natural. Where he has attempted Gothics in the castle he has failed, and has indulged himself with an apartment which is paltry. The chapel is very pretty and smuggled up with tiny pews." Walpole, however, though he often preaches so wittily about "naturalness" in park and garden scenery, did not always practise it—for in his gardens at Strawberry Hill were worked up nearly all the vagaries of the worst formalism of his time.—H. N. H.

the attention of the most unobservant; the roots of the *Pyrus* are very near the surface, and of course liable to be uncovered by every operation of the gardener. So sure as this uncovering takes place, a colony of aphides take up their abode on the exposed part, and soon compel the roots to make this strange exhibition.

One or two other effects of the attacks of aphides are also very peculiar. *Aphis bursaria*, by the influence of its sap-sucking propensity, causes the leaf-stalk of the Lombardy poplar to expand into a bladder-like swelling, which constitutes a home for its progeny. These bladders or purses I find very commonly on the poplars on Nun Green and Peckham Rye, and I am still in doubt how the species is preserved; for, the purse falling with the leaf, one would suppose its inhabitants would perish. It is probable that a few of the winged females escape, and lay their eggs on the twigs of poplar, to remain there during the winter, and in the spring the young ones probably find their way to the newly-formed leaf-stalks, puncture them, and thus originate the purses, which are such conspicuous objects when the summer is advanced. A second species—I think it is *Bursocrypta Ulmi*—produces on the common elms strange hollow cysts, which so exactly resemble figs in size and shape that they may easily deceive the superficial examiner. Of these figs I have had a good supply from young elms near Cambridge; on being opened they were found to contain a good deal of saccharine fluid and a great many earwigs, in addition to numbers of aphides and larvae of *Syrphid*. A third species produces a most beautiful green gall on the spruce fir, very closely resembling the cones of that tree, but much smaller. The insect which produces these galls was called *Chermes Abietis* by

Linnaeus, but Ratzebourg, the author of a beautiful work on Forest Insects, thinks there are two species engaged in this manufacture of artificial fir cones, in one of which the cone is formed in the middle of a twig, and the other at the very tip. A fourth species invariably fixes its residence on the roots of the creeping plume thistle (*Carduus arvensis*), and, so far as I am aware, never ventures above ground, but resides continuously on the subterranean stolons of this troublesome weed. In this situation it lives in perpetual darkness, in company with the ants, which appear to take special interest in its welfare. This connection of ants and aphides has long been known to naturalists, and has given rise to very diverse opinions as to the nature and object of the connection; but it has been clearly shown by competent observers that the sap of a plant extracted by means of the rostrum or sucker of the aphid passes through its system, and is discharged through two minute tubes, one situated on each side of the aphid near the extremity of the body. "When no ants attend them," say Kirby and Spence, "by a certain jerk of the body, which takes place at regular intervals, they ejaculate this honey to a distance; but when ants are at hand, watching the moment when the aphides emit their fluid, they seize and suck it down immediately. This, however, is the least of their talents, for they absolutely possess the art of making them yield the honey at pleasure, or, in other words, of milking them. On this occasion their antennae are their fingers; with these they pat the abdomen of the aphid on each side alternately, moving them very briskly: a little drop of fluid immediately appears which the ant takes into its mouth, one species (*Myrmica rubra*) conducting it with its antennae, which are somewhat swollen at the tips. When it has thus milked one it proceeds to another, and so on, until being satisfied it returns to its nest." The illustrious Linnaeus, a century earlier, was equally acquainted with this astonishing fact, for he says, "The ant ascends the tree that it may milk the aphides, not kill them."

This connection between ants and aphides comes nearer to our idea of personal property among mankind than any other phenomenon exhibited in the animal kingdom. All aphides seem to be the property of certain ants, or rather colonies of ants—not of individual ants, but certain companies or establishments of ants; they possess a prescriptive right, as the late Sir Robert Peel would have called it, to the aphides settled on a branch, or a tree, or a rose bush; and, when once this right or interest in these miniature cattle, so to speak, is obtained, by what process I know not, it is maintained with the utmost jealousy, and no ants from a neighbouring colony are allowed to interfere or infringe on the manorial rights of those in possession. It will, however, occasionally happen that there is a stronger colony of ants in the neighbourhood than those actually in possession; then the same process takes place as in Christian nations—the stronger and more numerous invade the weaker, and possess themselves of the twigs or trees laden with these lilliputian cattle, and a curious process is to be observed. After the possession of the disputed territory has been obtained by the invaders, the conquered may be seen carrying off their cattle, each ant with an aphid in its mouth, to some place of fancied security; the unresisting aphid submits to this process with the most perfect nonchalance, takes it as a matter of course, and forcibly reminds one of a puppy or a kitten being conveyed by its parent to a place of greater safety. Sometimes when the ants think that their treasures, these herds of kine, are in too close proximity to stronger colonies or settlements of ants, they resort to a really wonderful expedient for their protection; they bring grains of earth from a distance, and construct a casing or sheath of earth-works, a kind of tubular casemate or rampart, round a twig or branch on which a peculiarly valuable and productive herd of aphides are grazing. I have never seen the robber ants invade these casemates; probably this is a kind of property which they hold sacred.

We may conclude that ants are the best if not the only friends of the aphides; they never forsake them; they are equally attentive and unremitting in their attention day and night; I have often visited my colonies with candle and lantern, and always found the aphides constant to their task of sap-sucking, and the ants equally constant in theirs of milking them.—*Field.*

Bean aphid (*Aphis Fabae*).—The following remedy for this pest is said to be practised with success on the Continent:—As soon as the young heads are seen to be affected, they are cut off, and of course destroyed, and the effect of the amputation is to harden the plant, so that the aphid cannot pierce the skin.

English Sparrows in New York Squares.—For some unaccountable reason, the little English sparrows which have filled the parks and trees for several years have disappeared this season by thousands. It is suggested that, inasmuch as they were regarded as city property, they entertained fears of being stolen by the "Ring," and so flew off to some honest region.

THE PROPAGATOR.

THE ART OF GRAFTING.

(Continued from page 201.)

KEEPING THE TOOLS.—They should always be in a serviceable and clean condition. In the course of repeated operations, especially when the sap is flowing freely, it thickens and accumulates on the blade. It should be constantly removed by the application of water or moist earth. The dirt interferes with the proper management of the tool, and injures the internal layers of the bark and wood which come into contact with the blade. Frequent sharpening of the cutting implements should not be neglected, as wounds heal much more readily when the cuts are clean. When the tool gets blunt, it should be ground down on a grindstone, and afterwards rubbed on a finer stone to remove the wire-edge. In long-continued operations the tool should be rubbed on the fine stone frequently during the day. The Turkey, or any other fine-grained stone, is the best for sharpening pruning-knives. The slate-stone is suitable for the grafting-knife and the sécateur. There is also the fine stone used for razors and penknives; on this, with a drop or two of oil, fine blades for delicate operations are sharpened. In nurseries, after passing the tools over the stone, they are stropped on the leather of the boot or shoe, or on the palm of the hand. The mode of sharpening depends on the skill or the practice of the operator. The object should be to sharpen the cutting parts without weakening them; otherwise, in rough work, the edge will soon become blunt, and is easily notched. The saw is sharpened with a file made for the purpose. Delicate tools, and even the sécateur, should be sent to the cutler.

LIGATURES.—Almost all the modes of grafting require a ligature to fasten up separated tissues or raised bark, to tie clefts together, and to keep the graft firmly on the stock. If any considerable interval should be allowed to occur between the insertion of the scion and the application of the ligature, the action of the atmosphere would not fail to have an injurious effect on the graft. The best ligatures are those which can neither expand nor contract under hygrometric influences, and which possess a certain amount of elasticity permitting them to accommodate themselves to the increasing diameter of the stock without cramping it. The thicker the stock is, the firmer should the ligature be; for in this case the healing of the wound is naturally more tedious, and everything should be done to accelerate it. In cases of grafting where the bark only has been raised, it is sufficient to bring the cortical layers together, and to tie up the graft without compressing it. The ligature is applied with both hands. It is rolled in a spiral manner around the grafted part, drawing it tight at every turn, especially at the beginning and the end, where it is most liable to become loose. It does not matter whether the turns are made very close to each other or not, the essential point is that the ligature should keep the graft firm. Should it yield on passing the finger over it, it is not sufficiently tight, and must be done over again. Woollen thread combines all the qualities to be wished for in a good ligature; it adapts itself to the growth of the tree, and is not affected by moisture, as it has been passed through oil in its manufacture. It is very much used in bud-grafting on small branches and medium-sized fruit-trees and shrubs, conifers, and rose-trees, or small stocks grafted in the open air or under glass. Two or three threads of it are put together, (without twisting them) in lengths proportioned to the thickness of the stocks, and the depth of the clefts to be covered. For large stocks this thread would not be sufficiently strong. Cotton-thread is not affected by hygrometric changes, but it does not possess the elasticity of the woollen material. We recommend it for bud-grafting on strong stems, or such as are of slow increase in bulk, and also for grafts under glass. In applying it as a ligature it is best to fasten it with a knot so that it can be easily untied, when it

becomes too tight, as cotton is difficult to cut across, and the same ligature can then be used another season. The expense of purchasing cotton and woollen materials for ligatures in nurseries has led to an inquiry for cheaper substitutes. After trying various species of carex and bulrushes, two aquatic plants were found which supply an excellent material for ligatures. These are the Reed Mace (*Typha latifolia*) and the Bur Reed (*Sparganium ramosum*), both of which grow in abundance on the banks of rivers and ditches, in ponds and marshes and belong to the natural family of Typhaceæ. The plants are gathered when full-grown, either about the end of summer for the following season's use, or in spring to be used the same year. The leaves, which are thickly crowded at the base, are separated, and put to dry in the shade or in a loft; where they are hung up in bundles formed by tying the ends together. When the time for using them arrives they are cut into the lengths required, usually from one foot to twenty inches. A short time before grafting, these ligatures tied in a bundle are plunged into water, where they are left for a few hours; they are then taken out and wrung dry in the same way that linen is wrung. Very often they are merely put into a cellar to keep them cool and moist, and in places where water cannot be conveniently employed, they are placed under the soil with the same object. This kind of ligature requires a proper medium of dryness and moisture. If too dry, the leaf of the Reed Mace or of the Bur Reed will not have sufficient resisting power, and will break; if too moist, it will cause the graft to



Reed Mace.

Bur Reed.

rot, in addition to being just as brittle as in the other case. The leaf is generally broad enough to be divided lengthways, and fastens better when it is put on edgewise, and not laid flat, and when it is slightly twisted in winding it round the graft. With the exception of those modes of grafting which require the woody tissues of the stock to be cleft, and for which the leaf of the Reed Mace or the Bur Reed is not sufficiently tough, we recommend this ligature for the greater number of grafting processes. The soft leaves of the common flag (*Iris pseud-acorus*), which do not cut like the leaves of the carex, will furnish a pliant and firm ligature, but not so strong as the preceding. The bark of the lime-tree, as it is prepared for the manufacture of well-ropes, furnishes a good ligature for cleft-grafting or crown-grafting, or grafting by approach, and in all cases where it is necessary to oppose a certain amount of resistance to large stocks or broken tissues. Dipped in water, then dried and divided, this kind of ligature possesses a suitable amount of elasticity, and does not tighten on the stock, as pack-thread or hamper-twine would. Packing-mats, which come as coverings of colonial imports, offer the same

advantages, and the ligatures which they furnish will not injure the tender bark of the young wood in various kinds of grafts. Pack-thread, single or doubled, or old twine unravelled, are very often used because they are easily procured. They should, however, not be twisted, and must be carefully looked after when the graft begins to swell. Split osiers are hardly ever used except in country places, where anything better is not always to be had. They may be employed as ligatures for old trees, whose diameter does not increase so rapidly as to cause injury in any form to result from over-tight compression. The bark of the elm and the willow, dried and afterwards moistened, are neither better nor worse than the split osiers. Their defect is that they contract too speedily, unless they have been prepared a year before-hand. The office of the ligature is a temporary one; it ceases when the union of the parts is sufficiently advanced for the development of the graft. We shall see further on, when we come to discuss the subject more at length, what additional attention is required by the ligature, and at what time it is considered to be proper to dispense with it.

GRAFTING-WAX.—In grafting it is necessary to cover the wounds and cuts with an unctuous composition, which will not have the defect of drying-up or burning the wound, nor of running or cracking under the action of the air or from being badly made. This must be applied copiously and without stint to the wounds and clefts of both stock and scion when the graft is fixed in position. A well-executed graft may fail in consequence of the bad quality of the wax. Those modes of grafting in which no cut surface is exposed to the air, bud-grafting for instance, do not require any application of this kind. In spite of numerous new inventions, good compositions are still few, but those which we possess are sufficient.

GRAFTING-CLAY, OR UNGUENT DE SAINT-FIACRE OF THE FRENCH. This primitive composition consists of two parts of clay and one part of cow-dung. It is held on the graft by means of pack-thread or a piece of rag, and presents the form of an oblong ball. Some persons put a strip of bark between the cut and the composition, to prevent the latter from penetrating into the clefts. Others mix finely-chopped hay or grass with it, to give it more consistency. Two thousand years ago, authors recommended the covering of the "kneaded luting and glue of the graft" either with a borage leaf or with moss. Grafting clay is much used in many country places, and is an economical composition, especially for the grafting of all sorts of old trees.

WARM MASTIC. For a long time, nurserymen have manufactured their own mastic. The composition of it varies; the base being usually Burgundy pitch, black pitch, bees-wax, suet, and resin. To these ingredients some add ochre, hog's lard, flowers of sulphur, Venice turpentine, or sifted cinders. All are melted together over the fire in an iron pot, and the composition should be allowed to cool before it is used. Practice makes it easy to judge of the proper proportions of the ingredients; the pitch tends to thicken the composition, the suet to make it lighter, the resin imparts dryness to it, and the bees-wax gives it oiliness. The following mixture is in high repute at the establishments of MM. André Leroy, of Angers, and Baltet Frères, of Troyes:—First, melt together, resin 2 lbs. 12 ounces, Burgundy pitch 1 lb. 11 ounces; at the same time melt separately, suet 9 ounces. Pour the suet, when thoroughly melted, into the first mixture, stirring it well while doing so. Then add 18 ounces of red ochre, dropping it in gradually in small portions, and stirring the whole up for a good while. Whatever composition may be used, it should always be unctuous, easily worked, and free from acidity, and is best applied lukewarm, rather cool than hot, and when of a consistency approaching the liquid rather than the solid. It is brought into this condition with the help of a small portable stove, heated like a warm bath, or with a spirit-lamp, or by any of the common methods. It is applied with a small paint-brush, or a stick with a rag wrapped round the end, or, better still, with a wooden spatula. The warm mastic is an economical kind for large operations, and is preferable to the cold mastic for autumn grafting, as the frost has been found to have less effect upon it. *Charles Baltet, Troyes, France.*

(To be continued.)

THE PROVIDENT WOODPECKER.

(MELANERPES FORMICIVORUS.—BONAP.)

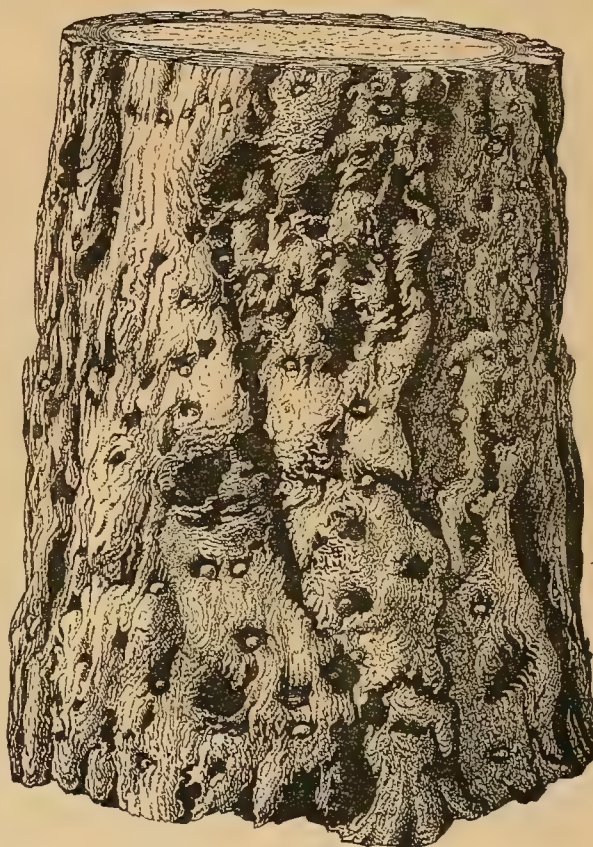
The accompanying woodcut represents a feature which may occasionally be seen in the bark of the Yellow Pine (*Pinus ponderosa*) in California. It is pitted with holes, and if the observer takes the trouble to inquire what has caused them, he will learn that they are the work of a bird—a woodpecker, which makes the holes and stores up acorns in them for future food. The following particulars regarding this bird are taken from a communication made to the Royal Physical Society in 1854 by Mr. Andrew Murray, who was the first to direct attention to this peculiar habit, he having received specimens of the perforated bark and an account of the proceedings of these birds from his brother in California, who had seen them bore the holes, store the acorns, and hammer them in so tightly that you can hardly pick them out. He had also seen the birds take them out again in spring, and then eat either them or something that was within the shell. He had seen six or eight of them at work on a tree, in which there was a squirrel which had made its house in a hollow at the root of a branch. This squirrel seemed to take great interest in these storing operations. He would pop out his head, and the moment the coast was clear he would run out and scratch away at the bark to get at the acorns deposited. As soon as the birds saw him, they would all attack him, and he would run like lightning down one side of the tree and up the other, and into his hole again; then peep out and watch another chance to do the same.

When these facts were first communicated, nothing more was known of the bird than that it was a black woodpecker with a red head and yellow throat, and Sir W. Jardine provisionally proposed for it the very appropriate name of *Picus providus*. Unfortunately, when specimens came (which they did soon afterwards), it was found that the species was known, having already been described by Prince Bonaparte under the name of *Melanerpes formicivorus*, in ignorance of its most remarkable distinguishing character.

Subsequently, Mr. C. J. Jackson, in the *Proceedings of the Boston Natural History Society* (vol. x., p. 227), states that it selects in the autumn, for stowing away, acorns only which are infested with maggots to serve as food for its young next spring, and that the acorns are driven into the holes prepared for them, so as to prevent the escape of the maggot when it comes to maturity and imprison it until wanted in the following spring. Mr. J. K. Lord, on the other hand ("The Naturalist in Vancouver's Island" (vol. i., p. 289), doubts its provident habits.

The method in which it stows its store of acorns is illustrated by Mr. Sumichrast by a figure in the *Memoirs of the Boston Natural History Society* (vol. i., p. 562), and the *Ibis*, in 1868 (p. 106), gives an account of the matter; but the whole seems to stand very much where it was put by Mr. Murray in 1854. Although it may be that the woodpecker makes the store for future food either as acorn or enclosed grub (for there are plenty of woodpeckers that are vegetable feeders as well as insect feeders), its doing so cannot be regarded as providence on its own behalf, either for itself or its offspring; for it is impossible that it can recognize which acorns it stowed away and which its neighbour stowed. However this may be, acorns keep better so stowed than they usually do if they are still sound, either for the woodpecker's eating or the grub's

eating next spring after laying up. We should imagine, however, that they would be in fine condition for new grubs, especially if the shell is broken a little in hammering them in, which seems to us a more reasonable supposition than Mr. Jackson's, that only acorns already stricken are selected. A sight of the grubs, if there be grubs, would soon settle that point; but until some qualified entomologist has reported on them, we must be content with the information which we now possess in the matter. C.



Trunk of the Yellow Pine packed with Acorns by Woodpeckers.

THE GREAT GARDENS OF EUROPE.

VERSAILLES.

BY NOEL HUMPHREYS.

The gardens and park of Versailles are so celebrated and, from a certain stand-point of art, so magnificent, that a critical observer at once sets himself to inquire how it was that such a vast outlay of money, and so huge an amount of labour, should have been lavished upon a site so entirely unpropitious. The explanation is simple enough, for the fact is, the spot

was not a specially selected one. It was partly from accident, and partly from the influence of conflicting circumstances, that the nearly flat, and in every way uninteresting, country about Versailles became the site of by far the most splendid of European palaces. The land was so poor, that the scanty crops formerly raised upon it were scarcely worth harvesting; and they were so exposed to cold and violent currents of wind blowing up the two great damp valleys in summer, that the grain was often *versé*, that is, laid, even before it attained its full growth; and so the crops, if gathered at all, were gathered as laid crops, or *versailles*—from which, it is said, that the place took its uninviting name.

The only attractions it held out to royalty were the woods with which it was surrounded, parts of which were fragments of very ancient forests. It is on record that some of the

ancient Frankish kings had a manorial residence near the site of the present vast chateau, at a spot still known as Franconville; but Louis XIII. was the first of the Bourbon kings who established a hunting seat in that neighbourhood, where he generally resided during the autumnal months. He purchased the site from the Archbishop of Paris (into whose hands the land had passed) in 1627, and the erection of the *rendezvous de chasse*, which still forms that portion of the grand palace that faces the Avenue de Paris, was commenced in that year.

The sites of most of the great chateaux of the French kings, like that at Versailles, were, indeed, selected on account of the immediate proximity of woods and forests which afforded good hunting ground, as St. Germain, Compiègne, Fontainebleau, Amboise, Chambord, and others; none of them, except St. Germain, having any other attractions of situation. St. Germain, possibly from the magnificence of its site, became the more favourite of the royal residences after the time of Francis I. Henry IV. took up his permanent residence there; and Louis XIII. was born within its walls, and a great pile

to become beautiful. The first sculptors of the day were employed, not only upon detached statues, groups, and the crowds of allegorical figures attached to fountains, but the chisels of men of great eminence were engaged even upon the marble vases to ornament the more salient points of the Perrons and balustraded parapets of the grand terraces. In 1682, the designs of the king and his architects being nearly complete, the Court was established at Versailles, and the renown of the great palace of the Great King spread far and wide all over the world, ranking as an eighth wonder.

Le Notre had been the presiding genius, not only of the gardens, but of the principal features of the palace itself, as director-in-chief of all the royal buildings. He laboured incessantly, and, with the full command of various arts, of which he possessed both an instinctive and cultivated knowledge in a very high degree, achieved a brilliant conquest over the seemingly impracticable nature of the site. In the estimation of his contemporaries, his triumph was complete.

He opened spacious and stately avenues through the extensive woods, and in these openings caused the gleaming waters



View of the Chateau and Garden Terrace of Versailles.

of new buildings was added to the more ancient part of the castle during his reign. Anne of Austria, with her young son, Louis XIV., disgusted with the troubles of the Fronde, quitted Paris to take up their residence there; and, as the story goes, eventually abandoned it in consequence of one of its greatest charms, namely, its noble terrace, which commands a far-stretching view over the whole of Paris, and enables the spectator to see even the distant spires of St. Denis pointing heavenward above the ancient sepulchre of the kings of France. The vainglorious king, it was whispered, could not bear the daily view of an object which continually reminded him that he was not immortal; and, actuated by that feeling, caused great additions to be made to his father's *rendezvous de chasse* at Versailles, and in 1661 went to reside there, though the vast plans were not at that time half completed.

Further additions were continuously made during the next twenty years with a lavish outlay, which was thought all-sufficient to overcome even the stubbornness of the unsuggestive natural features that had to be dealt with, and force them

of vast canals to sparkle in the far perspective; and broad expanses of turf were made to extend as far as the eye could reach, even from the commanding position of the terrace, which was made some fifty feet higher than the general level of the gardens and park, being the only rising ground available, and previously known by the name of the Butte de Versailles.

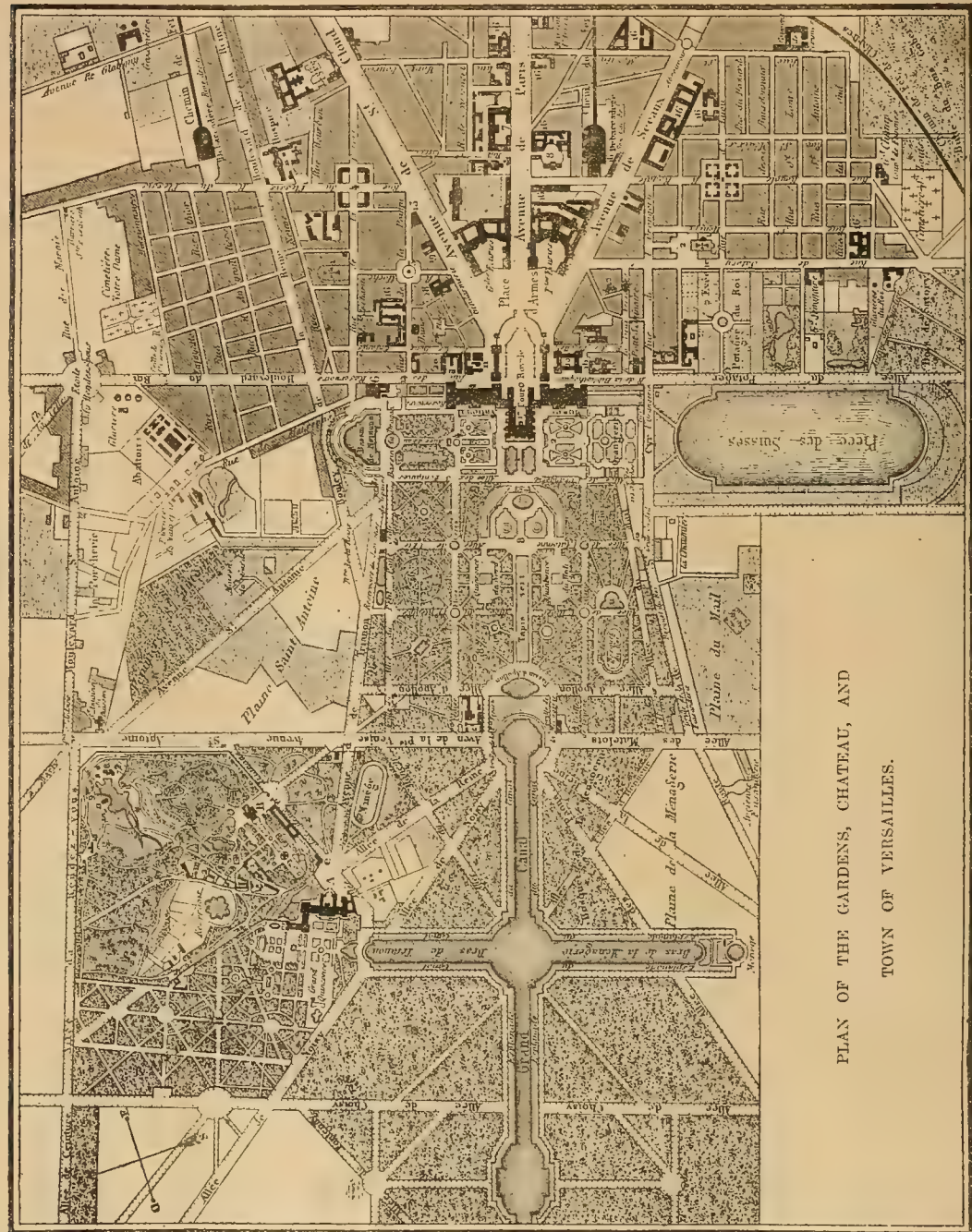
The engraving above shows a bird's-eye view of the Cour Royale, which extends in front of the two detached buildings forming the chateau of Louis XIII., and which were eventually joined together by the vast body of the newer palace, the façade of which looks upon the gardens. Over the back of the parapet of that façade, the gardens are seen, with the fountains playing, the commencement of the long turf plot known as the Tapis Vert being visible beyond. This glimpse, however, can convey but a slight idea of the splendour of the fountains, with their crowds of marble or bronze statuary and costly decorations of every conceivable kind; and cannot for a moment suggest to the imagination the immense profusion of glistening water which is being tumbled wildly into the

TOWN OF VERSAILLES.

1. Church of Notre Dame.
2. Church and Place of St. Louis.
3. Place and Statue of General Hocche.
4. The Market of Notre Dame.
5. The Market of St. Louis and the Statue of the Abbé de l'Épée.
6. The Theatre.
7. The Prefecture.
8. The Maréchal.
9. The Palais de Justice.
10. The Public Library.
11. The Chateau d'Eau.
12. The Celebrated Tennis Court.
13. The Royal Pavilion.
14. Hotel du Reservoir (celebrated during the late Prussian occupation).
15. The Military Hospital.
16. Barracks.
17. The Marble Court.
18. The Protestant Church.
19. The Jewish Synagogue.
20. The Military Sons Intendance.

THE PARK AND GARDENS OF VERSAILLES.

1. The Water Parterre.
2. The Southern Parterre.
3. The Northern Parterre.
4. The Pyramid.
5. The Fountain called "Du Point de Jour."
6. The Fountain of Diana.
7. The Basin of Latona.



PLAN OF THE GARDENS, CHATEAU, AND
TOWN OF VERSAILLES.

8. The Parterre of Latona.
9. The Salle de Bal.
10. The Queen's Bosquet.
11. The Basin of the Mirror.
12. The Saloon of Chestnut Trees.
13. The Colonnade.
14. The Bath of Apollo.
15. The Green Circle.
16. The Follies.
17. The Domes.
18. The Eucalyptus.
19. The Obelisk.

THE TRIANONS.

- A. The Chateau of the Great Trianon.
- B. The Chateau of the Little Trianon.
- C. The Lesser Entrance of Little Trianon.
- D. The Principal Entrance.
- E. The Carriage House.
1. The Theatre and its attached buildings.
2. The Head Gardener's House.
3. The Orangery.
4. The Music Saloon.
5. The Temple of Cupid.

THE VILLAGE IN THE GARDEN OF THE LITTLE TRIANON.

6. The Mill.
7. The Boudoir.
8. The Bailiff's House.
9. The Presbytery.
10. The Dairy.
11. The Marlborough Tower.
12. The Farm House.
13. The Gate of the Village.
14. The Old Castle.

marble-bound basins, or cast into the air to extraordinary heights from countless single jets. Nor is it possible, on so small a scale, to convey any just idea of the quaint devices of the more complicated fountain-work. Neither can any representation whatever, let it be as picturesque and artistic as it may, suggest and explain the marvels of engineering skill with which that vast water supply was procured from such an unfavourable country as the district which surrounds Versailles. The celebrated Labyrinth is but a minor feature in this enormous horticultural and picturesque composition (for picturesque it is, with all its formalism), but it is very remarkable for the amount of invention and labour displayed in its decoration; the results being at that time deemed so interesting that a special volume, entitled "*Le Labyrinthe de Versailles*," was published in French, English, and German, describing the endless variety of the inventions lavished upon it; many of which most certainly require that their absurdity should at all events be explained. At the entrance, for instance, is seen, on one side Cupid holding the guiding-thread of the maze; while on the other side is *Æsop*, the fabulist, the moral of whose fables is intended to suggest the idea of wisdom; while Cupid is supposed to be declaring to those whom he has led into the Labyrinth of Love that he will, if they are wise (that is if they study *Æsop's* fables), help them out of the scrape he has led them into. The fountains in this famous Labyrinth illustrate the fables in question. There are the singing birds attacking the owl for the harshness of his nightly screech, each and all squirting water upon him with fury. Next come "the monkey, the cat, and the chestnuts"; cat, monkey, and chestnuts squirting water fiercely at each other; and so on with a score of other illustrative devices of singular puerility; so low could the genius of the *Siecle de Louis XIV.* sink in the midst of all its grandeur.

The costly residence in the park known as the Greater Trianon, and built by the Great King for his celebrated mistress, was called Trianon from a village of that name which was swept away when that portion of the park was enclosed. This "Trianon" had but little to distinguish it in style from the vast neighbouring palace except its smaller scale. To the Lesser Trianon, built in the time of Louis XV., who wished occasionally for still greater retirement than the Greater Trianon afforded, a botanic garden was attached, on the suggestion of the Duc d'Ayen; an addition which would scarcely have called for a passing remark but that the admirable Jussieu became the curator, and there worked out the theories of his new system of botany, now so well known as "the natural system," which has nearly superseded the more artificial one of Linnaeus.

In the early and tranquil portion of the reign of Louis XVI. the Petit Trianon was assigned as a private residence to Marie Antoinette, and under her directions the grounds were converted (as we now see them) into a *jardin paysage*, which included in its features a rustic village, with its farm, its mill, its dairy, its streamlet, its rustic bridge, and even its old castle. Here it was that those triflers, the Comte de Provence and the Comte d'Artois, with the beautiful young queen and others, pleased themselves sometimes in performing the rustic occupations of shepherds, millers, or dairymaids. The toy *jardin paysage* proved a fascinating one; and rivals were soon created in many other places than the Petit Trianon. It was thought delightfully natural and picturesque; and those who admired it as a natural garden, with its winding stream and rustic bridge, natural cottages and imitation mill, did not guess that it was almost as unnatural as the formalism of the straight avenues and marble basins and sculptured fountains of the great palace garden itself.

The annexed plan will show the situations of the principal features of the gardens and woods of Versailles; of the crossing canals, called *Le Petit Venise*, with its village of gondoliers, spoken of by Rousseau; of the great basin, excavated by a regiment of Swiss Guards, and known as the *Pièce des Suisses*; and also of the orangery, the pheasantry, the menagerie; the aviary, the Fountains of the Dragon, of the Falls of Apollo, of Diana, of Latona, and a number of other points of interest.

(To be continued.)

PUBLIC GARDENS.

THE ROYAL GARDENS, KEW.

I HAVE been a frequent visitor to these gardens for more than forty years, and I must certainly say that, taking them as a whole, I have always admired them; it is, therefore, with reluctance that I put myself in the position of a fault-finder. But I should like to ask why the Deodar vista, between the Great Palm House and the Pagoda, has been blocked up—a vista in which, I know personally, the late Sir W. Hooker took much interest. In this the rows of Deodars stand about 150 feet apart, and about 50 feet asunder in the row; and to create interest and present effect, a row of scarlet thorns was planted inside the avenue on each side, which, as a temporary matter, was well enough. Now, however, within the Deodar lines, about 25 feet apart from them and about 45 feet asunder, in the row, are planted in *threes, four to five feet apart*, oaks, beech, birch, ash, elms, chestnuts, hornbeams, maples, hickory, willows, alders, elders. If allowed to grow, they will ultimately destroy the effect of the groups of Deodars; and if not allowed to grow, why plant them at all? Can any reason be given for planting trees in such a manner? If the reader who has not seen what I allude to will imagine three Lime trees placed like these dots ° ° °, with four feet between each tree, he will understand me. It is hardly necessary to say that the Deodar is second to none as a foreground tree, when its graceful and weeping habit is not interfered with. Again, Cedars of Lebanon are planted within twenty-five feet of the Pagoda! Look at those at Chiswick House, and see what shifts Mr. Edmonds has to make to save the mansion, and then judge whether it is advisable to plant cedars within twenty-five feet of a temple such as is the Pagoda at Kew. Near here, also, may be seen hedges of common laurels surrounding fine clumps of rhododendrons, the branches of which are sweeping the grass. Deodars have been planted in the Sion vista alternately with limes. The Deodars are about 160 feet apart, by 100 feet in the row, which is an excellent distance, permitting their distinguishing characteristics to be seen to full advantage; for though it is not to be expected that they will reach 200 feet in height, still they may 100 feet. It is, therefore, high time the limes were removed; they have already done their duty, having been, of course, planted at the time only for present effect. But, in place of this, the authorities have planted a row of *Abies Douglasii* within the line of Deodars on each side, about twenty-five feet from the broad walk, and 150 feet apart in the row, introducing two evergreen oaks betwixt. Now, a clump of silver or Douglas firs, flanked with evergreen oaks, has a good effect in large places; but, in this case, if these trees are allowed to grow and assume their natural habits, they will assuredly close up this fine vista altogether. Had these Douglas firs been planted 100 feet back from where the limes are now, they would have formed fine background to the Deodars. Surely, it is wrong to plant *Abies Douglasii* in front of the Deodars, even had there been room, which there is not. But, strange to say, the planters in question are not even satisfied with blocking up this vista with oaks and firs—they have planted a part of the distance with *Cupressus Lawsoniana* within from four to five feet of the broad walk, and about twenty feet asunder in the row. Where there is so much capability, and so much power, as there is at Kew, one cannot help feeling sorry to see any misdirection of them. As far as sweeping, cleaning, &c., are concerned, the place, is well enough; but it is here one ought to have an example of tree planting and of landscape gardening worthy of the country.

H. R. ASHLEY.

D. FRASER.

[The influence of our public gardens is so great that it would be unwise to repress discussion on their merits and arrangements in this, a journal in which the subject of public gardens is regularly treated of for the first time in gardening literature. Therefore, reasonable and inoffensive expression of opinion, having for its manifest object the improvement of our public gardens, will be permitted in our pages. No communication, however, criticising the management, will be inserted without the writer's name in full. We are not responsible for the opinions of our correspondents.—CONDUCTOR.]

Now Cemetery at Edinburgh. Arrangements are in progress for providing a new cemetery for Edinburgh. We trust it may prove as well arranged and as beautiful as a garden as the Dean Cemetery, than which we know none more creditable.

THE IN-DOOR GARDEN.

PALMS FOR THE GARDEN.

(Continued from page 134.)

CALYPTROCALYX SPICATUS (MOLUCCA).—A noble palm, with the habit of an Areca, but denser. Not a fast grower. Where a large plant is required to stand over a tank this would be very useful. When it is eight feet high it spreads from ten to fourteen feet, the points of the fronds nearly reaching the ground.

CALYPTROGYNE SARAPIGENSIS (TROPICAL AMERICA).—Fronds spreading; pinnæ regular, from two to four inches wide; stem smooth, two inches thick; stoloniferous. A distinct palm, but not one of the most ornamental, being rather coarse and formal.

CATOBLASTUS PRÆMORSUS (VENEZUELA).—Fronds spreading; pinnæ flat, three inches wide, abrupt. A tall-growing plant, with lax habit; foliage dark-green; stem three inches thick; not a good decorative plant.

CARYOTA CUMMINGHII (PHILIPPINES).—The leaf stalks clothed with dark scales; they have the appearance of gigantic *Adiantums*, and contrast well with other palms or fine-foliaged plants. They are very ornamental plants at all stages. Fronds spreading; underside of petiole round; pinnæ increasing in width from base upwards, producing the appearance of having been bitten off at the end; grows from sixteen to twenty feet high, when it begins to flower from the top downwards. When the last flowers have faded, it dies, and one of the suckers takes its place. The whole of this genus are bipinnate.

C. MITIS (COCHIN CHINA).—A dwarf plant, with triangular pinnæ; fronds somewhat lax.

C. FURFURACEA (JAVA).—Fronds pendent, ten to fourteen feet in fully-developed plant; pinnæ triangular; top cut irregular; where they join the petiole they are swollen. Young plants good for vase decoration or as table plants. Young shoots produced from base.

C. CAUDATA.—A very elegant variety of *furfuracea*, having the half of the terminal pinnæ of each set lengthened, which gives grace to the plant.

C. RUMPHIANA (CELEBES).—Fronds spreading, six feet long and four feet wide in developed plants; pinnæ rhomboid, regular. A noble plant, differing from the others in density and compactness of growth.

C. SOBOLIFERA (MALACCA).—Fronds erect; pinnæ irregular. A smooth-looking plant of dwarf habit, producing shoots from base when quite young. A good table plant.

C. URENS (THE WINE PALM OF INDIA).—A tall-growing plant with clear stem; the best of all the species for a large house, and the gem of the Palm House at Kew. Fronds spreading; pinnæ, wedge-shaped, pendent. The lower side deeply gaged, giving it an elegant and airy aspect. In a young state it is a good table plant. In general appearance *Caryotas* resemble one another very much, and where one is required for a dwarf plant, *Cumminghii* is the best, but where space is no object, *urens* should be selected.

The Wine Palm of India. (*Caryota urens*.)

CEROXYLON ANDICOLA (SYN., *NIVEUM*: WAX PALM OF BRAZIL).—Fronds, erect, fourteen to sixteen feet; pinnæ, channeled on under side, white; upper side, bright green. An elegant palm tree for the central position in a conservatory; not good, however, even in a young state for house decoration. Might be mistaken for *Diplothemium* when not fully developed; but it is more erect, and not so dense.

CHAMÆDOREAS.—These are the most elegant of palms, for small houses, as, indeed, for any situation. They may be grown under the shade of other plants, or used as canopies for ferns, so as to furnish diversity and contrast. Having so slight a stem, crowned with an elegant head of foliage, they make fine table plants, and, not being

fast growers, they remain suitable for such purposes for a considerable length of time. They enjoy a moist atmosphere, and as regards arrangement, their foliage should always stand clear of anything with which it may be associated, not only on account of effect, but because some of the species have a beautiful flower spathe, which, when developed, is scarlet and orange, and exceedingly beautiful, forming a fine contrast with the dark-green foliage.

C. LUNATA (MEXICO).—Fronds, irregularly pinnate, two feet long; pinnæ, in sets of from two to three, eight inches long, three inches wide; acuminate, point bent downwards, caused by the undulation of the margin. A plant of good appearance.

C. MICROPHYLLA (BRAZIL).—Fronds, irregularly pinnate; pinnæ, convex. A dwarf and not very elegant plant.

C. MARTIANA (S. AMERICA). Fronds, regularly pinnate, four feet long; pinnæ, acuminate, one inch wide. The most charming of the group; on account of the fronds overarching the pot, and also on account of the plant itself being dwarf, it is very useful as undergrowth, or for the decoration of vases, or as a specimen on a pedestal.

C. PYGMEÆ (MEXICO).—A dwarf species, with pinnate fronds. Rather stiff in habit, and requires a large pot.

C. SARTORII (MEXICO).—Fronds, pinnate; pinnæ, oblique, ten to twelve inches long, two inches wide, rather

dense; allied to *Ernesti-Augusti*, but not so stiff; fronds, slightly recurved, two feet long. A very good palm for mixing with ferns.

C. WENDLANDII (MEXICO).—Fronds, regularly pinnate. A fine plant, but very like *Lindeniana*, from which it differs in the pinnæ being slightly broader.

C. AMAZONICA (TROP. AMERICA).—Fronds, four feet; one foot to first set of pinnæ, short and oblique. A good plant for mixing with ferns.

C. ARENBERGIANA (GUATEMALA).—Fronds, regularly pinnate; pinnæ, long, acuminate. A fine, bold looking species, and a free grower.

C. ERNESTI-AUGUSTI (NEW GRANADA).—Fronds, simple twenty-two inches long, bifid; veins prominent, petiole short, white line, on the under side; female flower-spike, coral red, and very handsome; plant, rather stiff in habit, but worth growing for the sake of contrast.

(To be continued.)

J. CROUCHER.

CONSERVATORIES IN THE NATURAL STYLE.

No one can be more alive than I am to the absence of taste in the generality of conservatories in this country, but I am sure that they are infinitely more satisfactory than they possibly could be made by M. André's arrangement, which, if carried out, would, in some two years or so, reduce them to a much worse plight than the Palm House at Kew, to which he alludes by way of illustration. Let anyone possessing a moderate knowledge of vegetable physiology, and fair cultural skill, go to see the Palm House at Kew, and after studying it fairly the conclusion he will inevitably come to, must be, that for the object for which Kew is intended—namely, the bringing together of as many members of the vegetable kingdom as possible, more with a view to their individual well-being than for general effect—more could not have been done. Kew must be looked upon as an educational establishment where all who take an interest in the vegetable kingdom can make an acquaintance with thousands of plants they would not otherwise have an opportunity of seeing. Consequently, the first consideration has been to make the collection as comprehensive as possible, whereas if the plants had been arranged for effect, space would have been sacrificed that could not possibly have been spared.

In a south-westerly direction from the Palm House is another house, of far less imposing appearance externally, containing a selection of plants, which for individual interest and general effect as a whole—in fact, seen from every point of view that it is possible to judge them from—leave little room for complaint.

M. André's scheme resolves itself into three propositions: the preparation of the ground, the selection of the plants, and the planting. Bottom heat is unnecessary for any plant he named, and worse than useless in such a situation, as it would entail no end of annoyance in upsetting the ground to get at leakages, which are certain to occur in the pipes. The temperature he proposes, 65° to 68°, is nearly twenty degrees too high; he must have a reduction of ten degrees in the night, necessitating a day temperature of nearly 80°, which would kill two-thirds of the plants the first winter. But it is the selection of the plants which renders the whole thing impracticable. Plants in all respects so different from one another as those he proposes to plant can never thrive in the same temperature. If M. André will reduce his mean temperature to 50°, and ascend the Chilian Andes a few thousand feet, go to the temperate regions of China, and the warmer parts of Japan, he will find abundance of plants in every way suited for the situation he proposes. For the roof, care should be taken to select such climbers as will not, by their rampant growth, effectually smother everything under them, or necessitate their being made continually unsightly by cutting-in. The plants that are intended to occupy the body of the house should be such as will rather receive benefit from the shade of those overhead than otherwise. From the countries I have just named and others, a selection can be made which will not only satisfy the requirements of good gardening from a cultural point of view, but will also please the eye of good taste. T. BAINES, *Southgate*.

[In justice to M. André it may be necessary to remind the reader that he did not find fault with the arrangements at Kew, but simply mentioned the large house there incidentally with others of a similar class, as suitable for such dispositions as he proposed. Whether the natural system of arrangement would be desirable for a botanic, as distinguished from a private, collection, is a question entirely apart from the general one. Our own opinion is that it is not a mere question of taste between conservatories arranged in the ordinary way and in the natural manner; one is right and the other wrong. It matters little whether the natural manner be carried out after M. André's or Mr. Baines's fashion. The natural method is the true and satisfying one, and moreover, the one best suited to the gardener, inasmuch as it saves much time, and enables him to produce a ravishing effect in winter, and indeed at all seasons, with a comparatively small number of flowering plants. The common way of exhibiting red pots, stages, and comparatively small plants in conservatories, simply makes the infinite grace of vegetation impossible therein. And this in the very house which we place near the mansion to show the choicest treasures of our collections! Surely, it is no wonder that many persons refuse to have any kind of conservatory near the house, so long as there is a chance of its presenting the paltry aspect so commonly seen. Happily, however, the decided improvement made in many of our ferneries, is making numerous converts to the cause of true gardening among us. These will soon carry the same principle to our conservatories, and we shall, at no distant day, see these as satisfactory from the point of view of arrangement, as they are at present for rich collections of admirably grown plants. It is, of course, quite possible to arrange a hot as well as a cool house on this principle; and, on the whole, the cool house would be most desirable for us.]

SOILS, MANURES, &c.

FOOD FOR THE GARDEN.

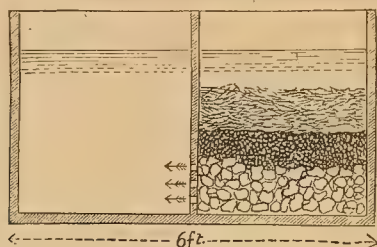
THIS is the season to get a stock of land food together. Hungry land—and most of it, whether garden or farm, is hungry—will eat almost anything. Cannibal-like, it would not refuse even a slice of other land, if nothing better came to hand, and sometimes a change or mixture of fresh earth is as stimulating as a coat of the best manure; in fact, it is manure, that is, it adds to the hungry ground what it lacked before, and it is by such additions that the strength or productive force of the earth is preserved intact. Our crops have, as it were, two strings to their bow. One points skyward, and draws in elements of nutrition from the atmosphere; another draws up from the deep cellars of the earth the mineral or inorganic constituents of plants. But these are not sufficiently abundant in earth that has been exhausted by hard cropping. Hence the necessity of manuring. Where most has been taken, more must be given back. As reasonably expect a profitable day's work from a starving man as a good crop from hungry ground.

If you would reap bountifully, sow plentifully of manure. An obvious truism, some will say, but it is one which is forgotten every day nevertheless. Certain it is that almost every garden or field is cruelly underfed. But where is the food to come from? Wherever there is a road to clean, a ditch to scour, a farmyard or closet to empty, leaves or stems to gather together; these are the natural food of the earth. When we waste them, we rob the ground, and consequently lighten its produce. Treasured and wisely applied, they keep it in training for full fertility. Very much, however, depends on their application. Like ourselves, the earth thrives best on mixed diet, and needs bulk to fill it, as much as quality to enrich it. Hence the immense value of such *omnium gatherum* in the form of manure as can now be collected. As water forms the bulk of nearly all liquid medicines, so earth of various kinds forms the fittest foundations for all manures. It is the mixing medium and more, for turfy loam, in so far as it is turfy, is the sweetest food for plants. Every cultivator should instantly set to work to concoct a season's supply of food for the earth, if he has not got it ready before. Choose an out-of-the-way place for a huge heap of rubbish of all kinds. If possible, put enough hot dung and leaves with it to cause a gentle warmth. This is the cooking process which kills weeds, stews down the grossness of solids, and mellows the entire mass. If any sticks or stems are too hard for this mode of cooking, put fire through them, not to consume but to char them. This is easily done by smothering the fire with turves and a layer of earth. These charred remains form capital food for the earth, either given neat or mixed with other condiments. When the cooking is completed, saturate the whole mass with house sewage or liquid-manure either from stable or cow-house. Thus treated, a heap of manure of the most nutritious kind may soon be provided and of sufficient size to satisfy the wants of most gardens. D. T. FISH.

LIQUID-MANURE SUPPLY FOR THE GARDEN.

A SMALL but regular supply of liquid-manure is indispensable to the well-managed garden, and though its use is often recommended for many things that good culture, soil, and water grow as well as we could desire, and its over-use is often a nuisance in the garden, yet, for all soft-wooded pot plants and for many a little crop or specimen in the open garden, the cultivator finds it a great aid. To induce a flowering habit in some plants, notably Pelargoniums, it is requisite that they should be grown with contracted pot room and a not over rich soil; then you induce that firm, stubby, and flowery habit so much the characteristic of good plant culture; whereas if you give a Pelargonium (or "show" geranium, as it is commonly called) free pot room in a rich soil it "runs to leaf" and ragged coarseness of habit instead of flowering abundantly. But when we keep our show geraniums over the winter in that ripe and concise condition, so to speak, and the flower buds are all "set" and made sure of, then, if we have a clear supply of mild liquid-manure at hand, we add a deeper verdure to the foliage, and furnish a fund of acceptable nutriment to the flowers, by giving them a diluted dose of it twice a week. It is unwise and unusual to disroot, re-pot, or disturb plants shortly before their flowering; but very often just before they arrive at that stage the pots get full of hungry roots, and the supply of food is curtailed just when it is much wanted. The Cineraria, Fuchsia, Calceolaria, and soft-wooded plants generally illustrate this every year. Left to the well-nigh exhausted supply of their pots the flowering is free enough, but very often too short; whereas a few good soakings of liquid-manure, given when the soil is not too dry, strengthens the flowering in a very perceptible degree. Without doubt sheep droppings form the best material from which to draw

our supply of liquid-manure; they are also convenient, and may be had at hand in most country places. Liquid-manure so made we have always noticed to be the mildest, safest, and most grateful to the plants. It is generally procured by throwing a lot of manure at the bottom of a small tank, sunken barrel, or similar article, and filling it with water. When made and settled it is fit for use for a little while, but then the supply falls towards the dregs at the bottom, and the dregs are accordingly fished up; and thus it is that you so often see the pots where liquid-manure is used covered with a sediment alike nasty and detrimental to the health of the plants. This, and the fact that the tank requires to be cleaned out frequently and waited for till it is settled again, throw a few little awkwardnesses in the way of its use which renders liquid-manure an aid rarely resorted to even in many gardens which have been specially prepared for its use. All this would be obviated by making a little tank proper for it in the following way:—Let the tank be of slate—it is the best, most lasting, and neatest material—oblong in outline, and divided into two equal parts with a partition of slate also. Of course



Garden Liquid Manure Tank.

it may be made of other material if you choose. The lower foot or so of this partition should be perforated with holes a few inches apart, and eighteen inches of rough gravel thrown in on one side. On that place an inch or two of fine gravel, and then the couple of barrowfuls of sheep's droppings, or whatever manure you may use, and finally over that pour the water. Thus the liquid will be nicely filtered at all times. The supply need not be cut short when you are putting in fresh droppings; it will be always free from sediment and clear. Place the tank in some handy position near the houses, or in the frames and pits; surround it with a slight brick wall, and cover it with a hinged wooden shutter, to keep out falling leaves, &c.; and liquid-manure will ever afterwards be at your convenience at all times.

One word more: always dilute it well. We once saw a fine batch of *Chrysanthemums* killed by getting a dose of strong and but slightly diluted liquid from the farmyard. The leaves were black next day, and the plants dead the following. Let it act as a caution. The manure should be as near the colour and clearness of bitter ale as possible.—*Field.*

THE ARBORETUM



THE MONTEREY CYPRESS.

(*CUPRESSUS MACROCARPA*.)

I OBSERVE that Mr. Barron, of Sketty, criticises my remarks respecting this lovely evergreen tree, and cautions planters, because he himself had induced a gentleman to plant a thousand of it, of which 999 died, and one only is left, which is doing pretty well. This, however, is no reason why others should not be induced to try again, as something might be learnt from so great a failure in an exposed situation. Mr. Barron does not inform us whether or not they were young, free-growing plants from the seed bed, or plants transplanted and well hardened, or plants that had been in pots a year; or if they had been well staked, mulched, and well protected by thickly-planted nurses; or whether or not they had the protection of a rough cage with a few stakes and evergreen boughs surrounding them till well established, or any other kind of simple defence against the cold blast, without which failure would be pretty sure to take place.

Mr. Barron states that there are some fine specimens of this cypress near the sea, which he himself planted. I have observed some fine plants of it myself not far from Sketty. That this cypress will

thrive in an exposed situation I could adduce proofs by the hundred. A gentleman who built a nice house near the sea a few years ago in a most exposed situation, said I wish you could give me a list of plants which I could place about my house that would withstand the driving and cutting winds to which we are subjected. I made out a list of such things as I had observed would live and get established, at the same time I cautioned him not to plant a tree or shrub, without well securing them immediately with stakes, mulching them, and sheltering them with plenty of common things planted thickly all round them as nurses, to be pruned in at first, to give room for the principal plants. Then I recommended him from year to year to thin gradually till all the nurses could be dispensed with. In such situations if people would stick in round about and between such plants as they wish to stand, plenty of large branches of furze, evergreen boughs, or any comatable materials, using thatched hurdles or open rough scantling nailed together as protections, they would succeed. Do not attempt to plant without some such defences, and do not choose luxuriant, free-growing plants, but rather such as have been a good deal exposed, once or twice transplanted, and from poor soil. My instructions in the case just alluded to were fully carried out, and complete success was the result, so much so that a brother of the gentleman just adverted to built a house and asked me to give him a list, as he wished to establish some good things, and, as much as possible, of an evergreen character. I gave him the names of all the things, and more, that I mentioned in my little statement on seaside planting, which Mr. Barron criticises, and amongst them *Cupressus macrocarpa*, a great favourite with most people; this succeeded perfectly, but without protection for a time it would not have thriven. My motto has always been—what you do, do well; you then get satisfaction. Indeed, without much care in the way of early protection, it is of little use planting good things near the sea. In November last, a gentleman, conversing with me, said he was pretty nearly tired of planting. He possessed a large extent of rough, uncultivated land, and wished to plant a portion yearly, but his losses were so extensive in dead plants that out of 100,000 of Scotch firs, many thousands of larch, chestnut, ash, and oak, which he planted last year, not a thousand were then alive, and those were stunted and made no growth. Surely, there must be something radically wrong somewhere in such a disastrous case as this. But there is besides, I have observed, a large extent of what may be termed sticking in of plants, not planting them; how can it be wondered at, therefore, that failures take place?

JAMES BARNES.

THE PINE.

OF the many marked adaptations of nature to the mind of man, it seems one of the most singular, that trees intended especially for the adornment of the wildest mountains should be, in broad outline, the most formal of trees. The pine, which is to be the companion of man, is waywardly docile in its growth, falling into festoons beside his cornfields, or roofing his garden walks, or casting its shadow all summer upon his door. Associated always with the trimness of cultivation, it introduces all possible elements of sweet wildness. The pine, placed nearly always among scenes disordered and desolate, brings into them all possible elements of order and precision. Lowland trees may lean to this side and that, though it is but a meadow breeze that bends them, or a bank of cowslips from which their trunks lean aslope. But let storm and avalanche do their worst, and let the pine find only a ledge of vertical precipice to cling to, it will nevertheless grow straight. Thrust a rod from its last shoot down the stem; it shall point to the centre of the earth as long as the tree lives. . . .

I wish the reader to fix his attention for a moment on these two great characters of the pine, its straightness and rounded perfectness; both wonderful, and in their issue lovely, though they have hitherto prevented the tree from being drawn. I say, first, its straightness. Because we constantly see it in the wildest scenery, we are apt to remember only as characteristic examples of it those which have been disturbed by violent accident or disease. Of course, such instances are frequent. The soil of the pine is subject to continual change; perhaps the rock in which it is rooted splits in frost and falls forward, throwing the young stems aslope, or the whole mass of earth round it is undermined by rain, or a huge boulder falls on its stem from above, and forces it for twenty years to grow with weight of a couple of tons growing on its side. Hence, especially at edges of loose cliffs, about waterfalls, or at glacier banks, and in other places liable to disturbance, the pine may be seen distorted and oblique.

Other trees, tufting crag or hill, yield to the form and sway of the ground, clothe it with soft compliance, are partly its subjects, partly its flatterers, partly its comforters. But the pine rises in serene resistance, self-contained; nor can I ever without awe stay long under a great Alpine cliff, far from all house or work of men,

looking up to its companies of pine, as they stand on the inaccessible juts and perilous ledges of the enormous wall, in quiet multitudes, each like the shadow of the one beside it—upright, fixed, spectral, as troops of ghosts standing on the walls of Hades, not knowing each other—dumb for ever. You cannot reach them, cannot cry to them; those trees never heard human voice; they are far above all sound but of the winds. No foot ever stirred fallen leaf of theirs. All comfortless they stand, between the two eternities of the Vacancy and the Rock: yet with such iron will, that the rock itself looks bent and shattered beside them—fragile, weak, inconsistent, compared with their dark energy of delicate life, and monotony of enchanted pride:—annumbered, unconquerable.

Then note, farther, their perfectness. The impression on most people's minds must have been received more from pictures than reality, so far as I can judge; so ragged they think the pine; whereas its chief character in health is green and full roundness. It stands compact, like one of its own cones, slightly curved on its sides, finished and quaint as a carved tree in some Elizabethan garden; and instead of being wild in expression, forms the softest of all forest scenery; for other trees show their trunks and twisting boughs; but the pine, growing either in luxuriant mass or in happy isolation, allows no branch to be seen. Summit behind summit rise its pyramidal ranges, or down to the very grass sweep the circlets of its boughs; so that there is nothing but green cone and green carpet. Nor is it only softer, but in one sense more cheerful than other foliage; for it casts only a pyramidal shadow. Lowland forest arches overhead, and choquers the ground with darkness; but the pine, growing in scattered groups, leaves the glades between emerald-bright. Its gloom is all its own; narrowing into the sky, it lets the sunshine strike down to the dew. . . .

And then the third character which I want you to notice in the pine is its exquisite fineness. Other trees rise against the sky in dots and knots, but this in fringes. You never see the edges of it, so subtle are they; and for this reason—it alone of trees, as far as I know, is capable of the fiery change which we saw before had been noticed by Shakspeare. When the sun rises behind a ridge crested with pine, provided the ridge be at a distance of about two miles, and seen clear, all the trees, for about three or four degrees on each side of the sun, become trees of light, seen in clear flame against the darker sky, and dazzling as the sun itself. I thought at first this was owing to the actual lustre of the leaves; but I believe now it is caused by the cloud-dew upon them,—every minutest leaf carrying its diamond. It seems as if these trees, living almost among the clouds, had caught part of their glory from them; and themselves the darkest of vegetation, could yet add splendour to the sun itself. — John Ruskin.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Replanting Forest Trees.—I have this winter cut down a plantation of about ten acres, which I want to replant as soon as possible, and I should be obliged if you would inform me what trees would be most suitable. The plantation originally consisted of Scotch and larch firs, with a few spruce and oak. All the Scotch and spruce and most of the oaks have at different periods been thinned out; of the remainder, the oak is decidedly healthier than the larch. The land is about 600 feet above the sea, north of the Forth, and the soil is light and not very deep. Shelter is much needed, and I am fond of game. Will the ground be sick of firs, and will it be necessary to wait some years before replanting, or can I do so next autumn? — J. M. — The ten acres of ground alluded to, which has been cleared of trees, should, if possible, be pastured during the coming summer. All loose branches, roots, and long herbage, now upon the surface should be burnt during dry weather in March or April, taking care to keep the fire away from the existing oaks or other trees worth being preserved. The ground may be planted next fall or winter; allowing the trees to be four feet apart, including the present trees, 2,500 plants will be required for each acre:—500 Scotch fir, 250 Austrian pine, 250 Corsican pine, 300 larch, 100 spruce, 100 silver fir, 250 sycamore, 100 Norway maple, 100 beech, 50 elm, 50 ash, 100 Italian poplar—total, 2,150. And for under-wood and cover for game:—100 *Pinus montana*, 50 bay laurels, 50 privets, 50 red dogwood, 50 *Rhamnus Frangula*, 30 snowberry—Total, 350. As the surface of the ten acres will in all probability be somewhat undulated, and portions being more or less dry or damp, it will therefore be necessary that the planter use his discretion in fixing on suitable places for each variety. All the firs may be what is termed "slit" planted, the plants varying from ten to fourteen inches in height. The hardwood and cover plants should all be "pitted," and to be three and a half to four feet in height when planted, as shelter and cover is speedily required. The land must be pretty good, judging from the fact stated that oaks thrive so well upon it.

The Woods Alive.—The woods are all alive to one who walks through them with his mind in an excited state, and his eyes and ears wide open. The trees are always talking, not merely whispering with their leaves (for every tree talks to itself in that way, even when it stands alone in the middle of a pasture), but grating their boughs against each other, as old horny-handed farmers press their dry,

rustling palms together, dropping a nut or a leaf or a twig, clicking to the tap of a woodpecker, or rustling as a squirrel flashes along a branch. It was now the season of singing-birds, and the woods were haunted with mysterious, tender music. The voices of the birds which love the deeper shades of the forest are sadder than those of the open fields: these are the nuns who have taken the veil, the hermits that have hidden themselves away from the world and tell their griefs to the infinite listening Silences of the wilderness—for the one deep inner silence that Nature breaks with her fitful superficial sounds becomes multiplied as the image of a star in ruffled waters. Strange! The woods at first convey the impression of profound repose, and yet, if you watch their ways with open ear, you find the life which is in them is restless and nervous as that of a woman: the little twigs are crossing and twining and separating like slender fingers that cannot be still; the stray leaf is to be flattened into its place like a truant curl; the limbs sway and twist, impatient of their constrained attitude; and the rounded masses of foliage swell upward and subside from time to time with long soft sighs, and, it may be, the falling of a few rain-drops which had lain hidden among the deeper shadows. I pray you, notice, in the sweet summer days which will soon see you among the mountains, this inward tranquillity that belongs to the heart of the woodland, with this nervousness, for I do not know what else to call it, of outer movement. One would say, that Nature, like untrained persons, could not sit still without nestling about or doing something with her limbs or features, and that high breeding was only to be looked for in trim gardens, where the soul of the trees is ill at ease perhaps, but their manners are unexceptionable, and a rustling branch or leaf falling out of season is an indecorum. The real forest is hardly still except in the Indian summer; then there is death in the house, and they are waiting for the sharp shrunken months to come with white raiment for the summer's burial.

SOCIETIES, EXHIBITIONS, ETC.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.

We have great pleasure in announcing that the Rev. Mr. Hole will take the chair at the next anniversary dinner of this institution. Mr. Hole is the very best man that could be selected, and we are glad to record that the managers of the Institution have for once thought fit to select a chairman who is not a stranger to the art, and who has his whole heart in the cause. We think the result will prove the wisdom of the course pursued, and look forward for one of 'the most successful anniversaries ever held by the Gardener's Royal Benevolent Institution.

At the general meeting of this excellent charity, on the 11th inst., six new pensioners were added to the list, one polling the extraordinary number of 1,106 votes. The managing committee recommended the alteration of the objectionable figure £20 to £30, in rule 10, which was agreed to, and seems a step in the right direction. It would have delighted many if an alteration had taken place in rule 8. During the evening it, however, transpired that when the funded property amounted to £10,000 (it is now upwards of £8,000) the present managers will be ready to recommend that £20, instead of as at present £16, a-year should be given to each male pensioner. I was agreeably surprised to see a much greater number of gardeners at this meeting than on former occasions; and, from remarks that came from a good source, gardeners from certain parts of Middlesex and Herts show great interest in, and warm sympathy towards the association, the best evidence of which is, that many of them have joined it. This indicates a healthy, social tone, and I would say to gardeners generally who are not members of this charity, "Go and do likewise"—take part in alleviating the distress of indigent gardeners and their widows. I ask you, on behalf of such as are unable to help themselves, and if you are in a position to spare a guinea a-year, I am sure it will be well bestowed. Those, too, who, by the favour of a kind Providence, are in easy or affluent circumstances, I would remind that for all which they derive in the way of enjoyment in their gardens, that which is beautiful to the sight, fragrant to the smell—in short, whatever ministers to their luxury, their comfort, or their pleasure, they are, in a great measure, indebted to the skill and industry of the gardener. But the result of this is often a shattered constitution; therefore, I would say, give out of your abundance a donation to this deserving charity. In the words of the poet, let me say,

"Grudge not, ye rich, ye little know the cares,
The vigilance, the labour, and the skil,
That day and night are exercised, and lane
Upon the treckish balance of suspense,
That ye may garrish your protuse regales
With summer fruits, brought forth by waterspouts."

A MEMBER OF THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.

THE ROYAL HORTICULTURAL SOCIETY'S SHOW AT BIRMINGHAM.

A PUBLIC MEETING was held in the committee room of the Birmingham Town Hall the other day, for the appointment of a local committee, and for making other arrangements for promoting the exhibition of the Royal Horticultural Society in Birmingham in June next. Mr. Alderman G. B. Lloyd (ex-mayor), who occupied the chair, said that, in selecting Birmingham, the Society had paid a compliment to the town, and he hoped the inhabitants would appreciate it by making the exhibition a complete success.—Mr. T. B. Wright had much pleasure in moving that, "The meeting having heard with satisfaction that the Council of the Society had accepted the invitation to hold their next country meeting in Birmingham on the 25th, 26th, 27th, 28th, and 29th June next, pledged itself to co-operate in all the arrangements which might be necessary to promote the success of this its first visit to the district." One duty which the local committee would have to discharge would be to raise a fund for providing special prizes, to supplement those offered by the Society. In other places where exhibitions of this kind had been held, a large sum had to be raised, in order to put the grounds in proper order. Nothing of the kind would be required in the present instance, for that would be undertaken by Mr. Quilter; and he hoped the railway companies would be as liberal on this as they had been on other occasions.—Mr. Councillor E. Tonks moved that, with a view to carry out the foregoing resolution, a local committee be appointed, consisting of noblemen and gentlemen, whose names are given, with power to add to its number if necessary.—On the motion of Mr. C. J. Perry, seconded by Mr. J. E. Mapplebeck, it was resolved that the Earl of Bradford be respectfully requested to accept the office of president, and his worship the Mayor of Birmingham that of vice-president of the committee.—Other officers were also chosen, when Mr. Hallam said that, notwithstanding the very excellent appointments just made, there would be much work to be done, which would require the services of a paid secretary, and he therefore begged to propose the appointment of Mr. Alexander Forrest. That gentleman had had considerable experience in connection with horticultural exhibitions, and a better selection, therefore, could not probably be made.—Mr. Councillor Lowe moved that a subscription be entered into for the purpose of raising a special fund to supplement the prizes offered by the Society. He trusted that a leading prize of £50 or £100, which had a decided Birmingham character, and which would be a novelty, might be given. Birmingham was noted for successfully carrying out great exhibitions of a national character, and he believed if the town and neighbourhood acceded to the proposal contained in the resolution they would have a thoroughly good prize list, and a successful meeting.—Mr. E. W. Badger said, they ought at least to raise in Birmingham as much as was contributed by the Nottingham people. There £700 was raised.—Mr. Marshall, one of the deputation from London, said himself and Mr. Richards had attended that day, in order to hear the views of those present. He said, the local prize fund should not be given, if possible, for any particular object, as that would interfere with the arrangements of the show. If a certain sum of money was placed in the hands of a responsible committee, they would be better able to divide it into prizes than if it was given by individuals for any particular hobby.—Mr. Richards stated that the council had had a preliminary meeting at South Kensington, to decide upon the question of admission to the show, and they thought of fixing 10s. 6d. as the charge for the first day; half-a-crown for the second day; a shilling for the third and fourth days; and sixpence for the fifth. There would be a reduction of three shillings on tickets purchased beforehand for the first day, which would make the admission 7s. 6d. The subscriptions for the entire show it was thought should be a guinea. Subscribers of one guinea, it was suggested, should have three single tickets for the first day, and four for the second day; but he thought they would have to discuss that hereafter, as the privilege contemplated seemed rather too large. For a subscription of 10s. 6d. a single ticket of admission, available on all days, but not transferable, would be given. Tickets for the third and fourth days should be sold to manufacturers for their work people, in packets of not less than fifty, at a reduction of thirty per cent.—In reply to a question, Mr. Richards said the proposal as to admissions which he had read was merely a sketch, and at present in embryo only.—Mr. Wright next moved a resolution to the effect that every encouragement be given for the exhibition of horticultural implements and appliances, garden ornaments, and articles generally which are applicable for use in the several branches of rural economy. He said that at previous shows this department had not always been successful.—All the above resolutions were unanimously carried.—The directors of the London and North-Western Railway were to be asked to erect a temporary station at Witton Bridge for the accommodation of the show. At the close of the meeting it was stated that upwards of £130 had been subscribed towards the special prize fund.

Not all at once.—It is a mistake, therefore, I think, to aim at the completion of a country home in a season, or in two, or some half a dozen. Its attractiveness lies, or should lie, in its prospective growth of charms. Your city home—when once the architect, and plumber, and upholsterer have done their work—is in a sense complete, and the added charms must lie in the gentler socialities and hospitalities with which you can invest it; but with a country home, the fields, the flowers, the paths, the hundred rural embellishments, may be made to develop a constantly recurring succession of attractive features. This year, a new thicket of shrubbery, or a new gateway on some foot-path; next year, the investment of some out-lying ledge with floral wonders; the season after may come the establishment of a meadow (by judicious drainage) where some ugly marsh has offended the eye; and the succeeding summer may show the redemption of the harsh briary up-land that you have scourged into fertility and greenness.—D. G. Mitchell.

THE GARDEN IN THE HOUSE.

ROSE-BUDS IN AMERICA.

FLOWERS, or designs in flowers, says Mr. Peter Henderson, like numerous other articles of luxury, unmistakably have their fashions, which originate in large cities, and have their run there for a year or two until the particular design or particular flower is supplanted by others. Ten years ago graceful hanging-baskets were the fashion in New York, but after a year or two they were as common in the tenement of the mechanic as in the palaces on Fifth Avenue, the difference only being in the expense of the materials. Under these circumstances they could no longer be fashionable, and rapidly gave way to the more expensive rustic stand or Wardian case, which, being less readily imitated by people of limited means, is likely to continue longer fashionable. But the vagaries of fashion as to particular kinds of flowers are more singular. Twenty years ago camellia flowers were retailed at from fifty cents to a dollar each, and no piece of flower-work was thought complete without them. Now they are at a discount, and do not throughout the season average half the just named price. Now, Rose-buds, that then were not worth as much by the dozen as a single camellia, are now nearly of equal value, and some particular kinds even more so. One of the leading florists in the Broadway informed me that in the week ending December 2nd he sold one hundred buds of *Maréchal Niel* for as many dollars, for which he paid the grower fifty dollars. Tea Roses are required this season in every basket or bunch of flowers, and the bouquet-makers are nearly driven to their wits' end to get them. The fashion for Tea Roses has already spread to the country towns, and hardly a day passes that orders are not sent to us that we cannot fulfil. Church fairs, which did not formerly invest in expensive and perishable commodities, now find that the Tea Rose-bud for the button-hole is sought after by hundreds of purchasers. I was waited on, the other day, by the "flower committee" for a church fair in one of our suburban towns. The first item on their list was three hundred Tea Rose-buds. The wholesale price was twelve dollars per hundred, yet they were much disappointed that only one hundred, instead of three hundred, could be spared. The number of glass structures for growing rose-buds in the vicinity of Boston and New York, has probably been doubled during the past year, yet the price has advanced one-third. The kinds mainly grown are *Céline* (carmine-purple) and *Safranot* (orange-yellow). The *Maréchal Niel* (golden-yellow) and *Lamarque* (white) are grown, but not so extensively as the Tea varieties, as they require greater age before they begin to flower, and, being climbers, flower best when trained to trellis-work. The large price paid for the buds of the former, however, will no doubt stimulate to its more general cultivation.

Natural Wreaths for Ladies' Hair.—Those who recommend the old but useful *Euphorbia jacquiniiflora* for dressing hair are quite right, for it is one of the best subjects that could be grown for that purpose, provided a brilliant scarlet is required. We grow it by the dozen, especially for furnishing out flowers for the dinner table, and so suitable is it for such purposes that it is really a matter for wonder it is not grown very extensively, instead of being met with in a few places only. There is another plant to which attention may be profitably directed in common with natural wreaths, and that is *Astilbe japonica*, more commonly known as *Spiræa* or *Hoteia japonica*. The feathery spikes of flowers of this, notwithstanding their light fragile appearance, stand well, and remain fresh for a very considerable period when placed under the most adverse influences, such as a gas-lighted and overheated room. They may, at all events, be depended upon for remaining perfectly fresh during the continuance of any ordinary ball or entertainment. The colour and character of the flowers admit of their being employed in conjunction with those of a large number of winter-flowering subjects. The flowers of the *Euphorbia* and *Astilbe* form most effective combinations either in the hair or upon the dinner-table. The two combined, with the addition of a few double Russian violets, are most popular here for the little glasses placed by the side of each guest. To make the most of the *Euphorbia*, the spike is cut up into lengths of about an inch each, and secured to thin strips of wood to keep them steady in the glasses. By this means one good spike will serve for filling five or six glasses. We of course contrive to place the bottom of the stem so that it touches the water; but if it does not the leaves should be removed and replaced with a fern-frond or a leaf or two of the *Astilbe*, as they show signs of exhaustion first.—A Head Gardener, in "Gardeners' Magazine."

THE TOWN GARDEN.

WALLS VERSUS WIRE FENCES.

THE backs and fronts of third-rate houses in many of our recently-built streets generally present several kinds of objectionable excrescences which need not be. There is, it is true, no necessity for introducing at the back the stucco balustrading and plaster porticoes, which in the fronts speculative builders consider absolutely necessary in order to make



Back Gardens as they are.

the rapidly run-up structures attractive to the kind of tenants they expect to secure. But, on the other hand, there can be no necessity whatever for making the backs hideously ugly, and, for want of a little architectural skill and discretion, thrusting into prominence certain features which ought to be made as inconspicuous as possible. Neither can there be any justifiable pretence for converting the little back gardens into a series of wells, by closing them in with nine-inch brick walls six or seven feet high, as is shown in the annexed representation, which embraces a view of the back of one row of houses and the front of another row just like it. These exhibit want of taste far more than did ever our old-fashioned houses, which were at least as good at the back as in front, and which pretended to be nothing more than plain houses. Times have, however, changed, and now crowded, unhealthy piles of bricks and mortar, covered with plaster, are made to assume the character of rows of palaces, and have to do duty for the beloved old structures; but what shall we say when we see that just as the new times call for stucco and balustrading on the front, they also call for, or, at least, allow, and that without protest or murmur, proportionate degradation of the backs? This must be evident to anyone approaching London by rail, from which untidy little yards and tottering walls, zigzag roofs, and accumulated absurdities are everywhere apparent. People don't care for back gardens, it is said; and why not? simply because, do what one will with them, it is impossible to make them interesting while their surroundings are so uninviting.

Now, "look on that picture and on this." What is the difference? In the first place, the latter shows back premises some-



Back Gardens as they ought to be.

thing like what they ought to be, with gardens which no one need be ashamed to enter. The stifling walls which hemmed them in have been removed, and light wire fences put up in their place, admitting of a better circulation of air, and, consequently, of better plant-growth. Occupants seeing that Nature steps in to their aid, take courage, and

thus, instead of flooded water-barrels and similar drawbacks, we get trim beds edged with tiles and with flowers, issuing from among a warm, fresh-looking mulching of cocoa-nut refuse. The withered shrub from the room-window has grown bright again when stuck into the ground. In Victoria-street, Westminster, last spring, were two patches of ground, each destined to bear half-a-dozen houses; they were wild and open, as such plots generally are, and were covered with a vegetation that astonished me, being much more robust than that usually met with in London gardens. It is evident, therefore, that if air and sunlight are freely admitted, good results will speedily follow. Even *Cupressus Lawsoniana* grows up like that in our illustration, and the tuft of New Zealand flax, which was wintered in the entrance hall, now attracts more eyes than those of the unlucky wight who once looked into his garden for fresh air. Presently up springs a little portable greenhouse, more trees and shrubs are planted, ivy begins to creep over the houses, and in time the whole character of the place becomes changed for the better. Here we have a chance of inspecting some twenty gardens on each side of us, all furnishing matter for emulation, which the close-wall system never could have done.

Backs of houses, treated in this way, would soon become as interesting as the fronts, and even more so—but when will builders help us in this matter? They ought to understand that making houses more healthy, by being more open at the back, will not only attract tenants, but will save the cost of the ugly walls, which do harm instead of good. They will find that open iron fences between the gardens will be much more ornamental than brick walls, and that at a mere fraction of the cost.

A. DAWSON.

MEMORIAL TO OUR GARDEN-LOVING POET.

THE ever charming and genuine poetry of Cowper teems with delightful passages that always seem freshly perfumed with the delicate odours of the garden, and rich with the various hues of its flowers. We have only to turn to the immortal "Task" to find floral portraits touched off with an ease and truth that has never been surpassed, if indeed equalled. Who ever painted the spring glories of our favourite garden with such accurate and yet poetic touches as those in which he describes the laburnum, the syringa, the Guelder rose, the lilac? Take first the laburnum,—

"—— Laburnum, rich
In streaming gold. Syringa, ivory pure."

Then comes the Guelder rose, an exquisite picture, dashed off with a few touches brilliant as the pen-strokes of Byron. He is contemplating with loving rapture its flower-charged upper branches,—

"—— throwing up into the darkest gloom
Of neighbouring Cypress, or more sable yew
Her silver globes, light as the flying snail,
That the wind severs from the broken wave."

Assuredly the true spirit of the nature painter is there. It is the genuine poetry of the garden.

Such happy dashes of the poet's brush occur continually in "The Task," and are ever redolent of the rich shapes and perfumes they describe. Southey says, in his admirable life of the poet, "the best didactic poems, when compared with 'The Task,' are like formal garçons in comparison with woodland scenery." Lovers of gardens ought to take an especial interest in Cowper, to whose memory it is intended to erect a memorial in his native place, Berkhamstead. It is to take the form of a noble stained glass window, which, if appropriately designed, will be a suitable tribute to his worth and genius, and could not be better placed than in the fine old church of the parish of which his father was for many years the worthy rector. Cowper himself was born at the Rectory House, Berkhamstead, and both his father and mother are buried in the chancel of the church. The cost of the memorial is estimated at about £300. Earl Brownlow, the Rev. J. W. Cobb, rector of Berkhamstead, and Mr. William Longman, of Ashlyns and Pater-noster Row, have formed themselves into a committee for carrying out this proposal, and they trust that public generosity will enable them to erect a memorial worthy of its position in the east window of the newly-restored church. Contributions will be received by any of the committee, or may be paid to the account of the treasurer of the Cowper Memorial Fund, at Messrs. Praed's, 189, Fleet Street, London. The following amounts are already promised:—

Earl Brownlow, £10; Earl Cowper, £10; J. Robinson, Esq., £10; Rev. J. W. Cobb, £5; W. Cooper, Esq., £5; Hon. Mrs. Finch, £5; Admiral G. Gambier, £5; Miss Gambier, £5; J. Havers, Esq., £5; W. Longman, Esq., £5; Capt. Robinson, £5; Miss Robinson, £5; Dean of Westminster, £2 2s.; Rev. J. and Mrs. Hutchinson, £2; Mr. Catherall, £1; Miss Harey, £1.

THE SIX OF SPADES.

[We exhumed the following charming but, unhappily, unfinished story by Mr. Reynolds Hole, from the pages of the old *Florist*: as a tale of gardening and gardeners it is unique, and well deserves to be more widely known than it is.]

Mr Lord Dufferin, in his "Letters from High Latitudes," tells the affecting story of a conscientious cock, who, perplexed by the perpetual sunshine, and unable to discharge the vocal duties which seemed to ensue therefrom, eventually crowed himself mad, and put an end to his existence with his own wings, by abruptly flying into the sea. "As we proceeded north," he writes (the nobleman, not the fowl), "and the nights became shorter, the cock we had shipped at Stornaway became quite bewildered on the subject of that meteorological phenomenon, the dawn of day. In fact, I doubt whether he ever slept for more than five minutes at a stretch, without waking up in a state of nervous excitement lest it should be cockcrow. At last, when night ceased altogether, his constitution could no longer stand the shock. He crowed once or twice sarcastically; then went melancholy mad; finally, taking a calenture, he cackled lowly (probably of green fields), and leaping overboard, drowned himself!"

It is, I say, a sorrowful story, especially when we reflect that under happier circumstances, this cock might have reached a good old age, and seen his daughters laying peacefully around him, and his sons a fighting one another like anything.

Analogously, I go on to consider whatever would become of us gardeners and florists if we were sentenced to an everlasting summer, if our conservatories within and our gardens without were, day after day, and week upon week, to glow with undiminished splendour, and make the air heavy with exhaustless odours. Would not our eyes be dazzled into weariness, aching and winking, as when in our early youth we overdid them with our new kaleidoscope? Would not our nostrils finally be enforced to entreat the intervention of our forefingers and thumbs, to supplicate the presence of our pocket-handkerchief, lest we should die of aromatic pain?

Our powers of appreciating the beautiful are finite, soon tire, and need repose. What appetites we bring home from the loveliest scenery! How thirsty we were at Tintern! How we rush from the pre-Raphaelite glories of the exhibition to our strawberries and iced cream at Grange's! How palatable the oysters, how creamy the stout, how delightfully appropriate the bread and butter, when we have attended a *spectacle* at the Princess's!

Hence, horticulturally, I can welcome winter with gladness, and can thoroughly enjoy its calm repose. I can, with perfect equanimity, bid farewell to my chrysanthemums (though they are four feet in diameter), and can pleasantly drink to our next merry meeting in the silver cup which they have won. I want no conservatory, gay with camellias, with the *Epacris*, the *primula*, and the rose; I desire to rest and think. I can bide my time, patiently and thankfully, until the spring-light wakes my *cinerarias* to bloom, and bids my *hyacinths* yield their poesy of fragrance. My appetite craves for no stimulants, and asks no artificial food. It desires to say grace, and to rest, that it may be hungry again and healthful, when nature shall prepare the feast.

If ever I grow awearry, awearry of my leaflessness and clayitude, good winter hath two ministers, hope and memory, who never fail to cheer. I have but to close my eyes, and memory displays once more before me those brilliant banks of azaleas and *rhododendrons* which glowed last spring at Sydenham and "the Park;" I gaze again upon the grand *geraniums* of Slough; I scent the roses which brightened up the square of Hanover, and made the admiring Londoner forget his Thames. Or hope speaks musically of the future; points to those dear little cuttings, so bravely upright in their tiny thumb pots, so charmingly conceited at having roots of their own, and tells of their growth and glory.

And I never realise more pleasantly, or appreciate more gratefully, this welcome rest and happy thoughtfulness of winter, than at the meetings of our little society, which we call "The Six of Spades." Come with me, reader, into our club-room, and let me introduce you to the members.

That club-room on this occasion (for we vary our place of meeting) is my garden-house, a warm and cosy chamber, I can tell you, or what would happen to those seed-bags hanging around, or to those tubers of the dahlia, piled, dry and dormant, in the background? The adjuncts of the apartment might not, perhaps, impress any but a floral mind with an idea of beauty. There is a potting-bench beneath the closely-shuttered window, with a trowel protruding from such well-matured and mellow soil, that I have heard my gardener declare it to be "as rich as a plum-pudding." Hard by, two bulky bags of sand from Reigate lean lazily against each other, like two aldermen of extra corpulence going home after a Lord Mayor's feast. Beyond is a pyramid of boxes, with many a railway label on their green exteriors, to tell of the anxious miles they have travelled with pansies, and carnations, and cut verbenas, and roses, and dahlias, in the sunny days that are past. Then comes a solid quadrupedal desk, full of catalogues and secretaries' letters, and "Chronicles" and "Florists" good store. Next to it the painter's studio—a table with pots of green and white paint, and neat "tallies," and slim training sticks, and circular wirework, balloons, and baskets of a dozen fanciful designs. Upon the whitewashed walls a pair of bellows appear to be discoursing with a "Brown's fumigator" on the best method of getting rid of aphides. A wrathful canary, roused from its slumbers, twitters expostulations from its cage, and wishes "The Six of Spades" at Jericho. Above the fireplace is a piece of broken looking-glass, before which I once saw an under-gardener attempting to shave himself with a new budding-knife, and making such grimaces of direful but unconscious ugliness, as would have established the reputation of a clown for life! On either side of this mirror, but deserving a better place, are some of Mr. Andrews's charming delineations of flowers and fruit—among the latter a bunch of grapes, once so lifelike and luscious to look upon, that they might have been the identical bunch which the American artist painted for his mother with such extraordinary power, that the old lady was enabled to manufacture from it three bottles and a half of most delicious wine; but now sadly disfigured by dust and smoke, and rapidly changing their complexion from pale Muscadines to Black Hamburgs.

And now all is in readiness for our conclave, and the members of our small society arrive. Before our blazing fire, which roars a hearty bass to the mirthful tenor of the kettle, is a table for our pipe and glass, behind that table a roomy garden seat, which will accommodate four of our party, and on either side the fireplace a spacious comfortable chair, the one allotted to myself as president, and the other to Mr. Oldacres.

Mr. Oldacres is the gardener at the castle, and a "grand old gardener," too, you will admit, as he takes off his overcoat (he has walked two miles through the park this winter's evening), and shows you six feet of humanity, so handsome and so hale that you feel proud of belonging to the genus man generally, and to the species Englishman particularly. Six feet high and straight as a Guardsman, though he has seen the chestnut trees of his great avenue in flower for seventy springs, Mr. Oldacres is a model of manly beauty, from his neat drab gaiters (our ancestors had calves to their legs, and knew it) to the crown of his "frosty pow." Was ever hair so silvery? Was ever neckerchief so snowy white? Was ever face (what a razor must he have!) so bright, so smooth, so roscate? If the French should ever take possession of this country, and compel us to adopt their unpleasant custom of osculating our male friends, I should first endeavour to overcome my repugnance by kissing Mr. Oldacres on both cheeks. There is a perpetual smile and sunshine on them, and in his clear blue eyes, as though he had lived always among things beautiful, and their exceeding loveliness had made his heart glad. What pyramids of pine-apples, what tons of grapes and figs and peaches, what acres of flowers, tender and hardy, those hands have tended! The duke, his master, denies him nothing, and horticultural novelties and floral rarities (things which you and I, my friends, sigh for, and save up for, and speak of with "bated breath," and possess only in our Midsummer Nights' Dreams), these come to the castle by the boat-load, or travel by the rail on trucks! When you see his soil-yard you imagine that sappers and miners have been at work for weeks, and that an army is about to entrench itself within those

multitudinous earthworks. As for his "houses;" houses with enormous tanks, wherein the Royal Lily, Victoria, is waited on by the beautiful Nymphaeas; houses for orchids, for New Holland plants, for ferns, for fruit, and forcing; his houses of every size and style, from the dingy old lean-to, with its heavy timbers and its tiny, discoloured panes, to the grand conservatory, with its spacious dome, transepts, aisles, broad walks, and sparkling fountain; of these there is no time to tell. Less need, inasmuch as he, whom I now introduce to you, derives not his happiness from his vast material, his unlimited privileges and rare resources, but from his own good and grateful heart, which recognizes God's love and power in all the glorious works around him, and sings

"Non nobis, Domine, sed Nomini tuo,"

for all the sweetness and joys of life.

Give the worthy gentleman, for gentleman he is in mind and mien, one of those long clean Brosely pipes. "My dear young Marquis," he remarks, as he fills and lights it, and the pretty little rings of silvery smoke rise upwards from the ample bowl, "My dear young Marquis brought me years ago, from Germany, a meerschäum, beautifully carved, in which you might almost boil an egg; and my lord in the Guards, and my lord at Oxford make me presents from time to time of such cigars as I don't suppose are to be bought for money; but my meerschäum goes out, when I begin to talk, unless I suck at its amber mouthpiece like a greedy child at a piece of barley-sugar; and the fire of those huge regalias draws so near to my nose, that I grow quite afraid of it; and, in short, I never enjoy tobacco so much as when it comes to my lips, coolly yet quickly, through these long cleanly tubes, and waits for me patiently, as now, through my tedious old man's sentences."

You would like to hear him respond, I am sure, when we drink his health as our "King of Spades," rapping the table with such strong and sudden earnestness as to bring the canary, just hoping to renew his slumbers, very summarily off his perch. "Sixty years ago," he said in the course of his little speech at our last meeting, "I was weeding the castle walks. Many and pleasant and prosperous have been my days since then; and if I were constrained to begin life anew I would ask that it might pass as heretofore. But I have no yearnings, though much thankfulness, for the past. There is mildew among our roses here, my friends, and bitter frosts, and dreary sorrowful storms. I hope that I do not deceive myself in thinking" (and here he spoke with such a sweet humility as filled mine eyes with tears) "I trust that I cannot be wrong in believing that, year by year, as I grow older, I draw nearer to a garden of perfect beauty and eternal rest, a garden more glorious than that which Adam lost, the Eden and the Paradise of God."

There was an interval of thoughtful, healthful silence, after Mr. Oldacres had spoken; and we too, my readers, will pause here, if you please, before I introduce to you another member of our club, whom I hope you may like as much as I do,—my young friend, Mr. Chiswick, from the hall. S. R. H.

(To be continued.)

French Peasant Fund.—M. Drouyn de Lhuys, in reference to our aid to the French Peasants, says: "I mention England first. Her neighbourhood, her many relations with us, her liberal and intelligent practice of collective assistance, all mark her place in the first rank. Two great societies formed in London took the direction of this propaganda, which soon extended over the three kingdoms. Numerous meetings resounded with the warmest expressions, which found an echo in the whole Press. How greatly I regret, gentlemen, that I cannot here enter into the details of all the ingenious combinations and persevering efforts of which I was the witness or the coadjutor. Subscriptions flowed in from all parts, and testified both to the wealth and to the munificence of this opulent country. What was to be done with these abundant resources? An equitable distribution must be made, and personal services completed the work of liberality. Delegates offered themselves to visit the ruins of our villages, and to distribute assistance to our impoverished agricultural population. Brave as soldiers, zealous as missionaries, punctual as accountants, on their return they drew up with wonderful accuracy the balance-sheet of this new class of commercial transactions, which consists in always giving and never receiving back. You all unite with me, gentlemen, in the solemn expression of gratitude which I offer in the name of French agriculture to so much and such generous devotion. As our husbandmen and our fields have been its principal object, it is for us to act as the interpreters of their gratitude."

HIDDEN WEALTH.

WHILE many go to great expense in allowing certain artists in plaster to embellish their grounds with huge masses of artificial rock, made of old bricks and cement, and while many more are satisfied with the old bricks themselves, accompanied by clinkers and a great variety of offensive rubbish, very few trouble themselves about the rock treasures that often lie beneath the sod. Considering the large sums that are spent in sham rocks, &c., and the vast superiority in every way of natural rock, masses of it are as valuable as golden treasures to those who care for the picturesque in garden or park scenery. The accompanying illustration gives a feeble notion of one of the rocks that a friend of ours has succeeded in unearthing. The place originally was somewhat liberally embellished with rock on the surface; but our friend is not easily satisfied with rocks; in fact, he is like those "boys" out West who hunt for gold mines for years at a time. What tool he does his "prospecting" with, we are not certain; but by some means he ascertains the presence of ten feet of sand by the side of one huge mass of treasure. Then, by digging



Unearthed Rocks in a Sussex Garden.

out a mass of earth, he can form a beautiful gorge between two flanks of rock that would reduce the cement-rock artist to despair. And by clearing away the earth from the flanks of that nose of rock that just projects above a grassy knoll, he will discover beautiful wrinkles and other charms in it. Thus by a little persevering poking and digging has been produced a scene as striking and interesting as many in an alpine country, and one which offers such a variety of aspects and positions that every kind of hardy plant may be grown on it in the best manner, and arranged on it with the happiest effect. The subject is of the highest importance to the many who have places on a rocky base, who should be glad that this most precious stonework may be brought to light, unlike the treasures

"The dark unfathomed caves of ocean bear."

Soluble Sulphur and Gishurst Compound.—In a recent number of the *Illustration Horticole*, it is stated that M. Dirieq, conductor of the manufactory of jet, at St. Pierre, near Brussels, is offering for sale a new product of special interest to horticulturists, namely, sulphur rendered soluble in water: a solution which is said to have been hitherto thought an impossibility. In this shape it is recommended as a sovereign application for the destruction of moulds, *Oidium*, *Puccinia*, *Ecidium*, and the whole host of microscopic fungi; nor are insects and their larvae less subject to its power; and it is truly added that if its effect is at all equal to that of sulphur in powder, it must be regarded as a valuable discovery. It has been said, "things that are impossible rarely come to pass." Here we are fortunate enough to have the exception, not once but twice—once, the product M. Dirieq has discovered; and already years ago, by the compound with which all horticulturists are now familiar under the name of Gishurst Compound; the discovery of our own talented countryman, Mr. Wison, which is neither more nor less than sulphur-soap.—A. M.

THE AMATEURS' REMEMBRANCER.*

Flower Garden and Shrubberies.—While the weather continues open and mild, commence pruning and thinning roses, such as the different varieties of Provence, moss, hybrid Chinas, and others, leaving perpetuals till later in the season. Climbing roses on poles, or against the walls of buildings, may also have their shoots thinned out, and if the poles are in any way decayed let them be replaced by fresh ones. Get all hardy roses planted as soon now as possible, taking care that the situations in which they are to be placed, are in good condition to receive them. Standards, as soon as planted, should be tied to neat stakes, and their roots should be well mulched with rough stable manure.

Hardy Fruit and Kitchen Garden.—Wall trees, prune and nail and free standards from moss, by scraping it off their stems, afterwards painting them with thick lime-wash, the unsightly colour of which may be toned down by means of soot mixed with it. Where apple trees are infested with American blight, the limbs and trunk should be carefully divested of their loose bark, and all places where the insects have formed excrescences round knots, or where they have otherwise secreted themselves, should be pared off smooth with a sharp knife, and dressed with a wash, consisting of quicklime, flour of sulphur, and lamp-black. It should be applied with a strong painters' brush.—Fruit trees of all kinds still plant where necessary, keeping the roots near the surface and mulching with rough dung. Let the pits in which the trees are placed be sufficiently large to allow the roots to be spread out in all directions to their fullest extent.—Currants and gooseberries prune now, and dig, or rather fork, the ground over between the rows, giving it a good dressing of well-rotted manure, and drawing a little of the surface soil from under the bushes, and burying it in the middle.—Raspberries prune and tie.—When the weather is wet, prepare pea-sticks, and other kitchen garden requisites. Dig up or trench all ground, as it gets free from crops. Stir the surface between cabbage plants and other winter and spring greens.—Forward a few ash-leaved kidney potatoes in boxes to be planted out hereafter in borders, and, where there is convenience, a few peas might also now be sown on strips of turf, under glass, to be hereafter placed in a row along the bottom of some south wall, protecting them a little at first by means of spruce fir branches.

In-door Plant Department.—Climbers in conservatories, prune, cutting back freely all that obstructs light.—Plants in bloom must be well attended to with water; use fire-heat as sparingly as possible, but do not allow the temperature to fall below 40°. In-door plants generally, except such as are in flower, should be kept rather on the side of dryness at the root; but when water is really required, give sufficient to thoroughly moisten the ball, applying it in a tepid state, and at this season always in the morning.—Introduce into the forcing pit at intervals of about three weeks or so, successions of hyacinths and other bulbs, Azaleas, *Deutzia gracilis*, *Daphnes*, roses, and other things of which there may be a stock.—If aphides attack cinerarias or calceolarias, fumigate with tobacco; and examine heaths and similar plants to see that they are not suffering from mildew; if so, dust immediately with flour of sulphur.—Pelargoniums, tie out, and give them air on all favourable occasions. Re-pot such as require it in a compost consisting of good, friable, turfy loam, two parts, and thoroughly rotted manure and leaf soil one part each, adding silver sand, and well draining the pots.—Plants in cold pits should be kept as dry as possible, as wet and damp are even more injurious to them than frost. Air should be given them by tilting or drawing off the lights every mild day, between, say, ten and three o'clock; but they should not be open later than the last-named hour, and they should be covered with mats or something of a similar character every evening between four and five o'clock, if there are any symptoms of freezing. Frequently examine the plants, and keep them free from decayed leaves; the surface of the soil in the pots should also be kept clear of moss. Watering is a very important point; at this season scarcely any is required, as the moisture of the pit is generally sufficient. What is absolutely needed must be given in the morning; such pots as show indications of damping, surface with dry earth.

In-door Fruit Department.—Pine-apples intended for starting next month, should be kept rather dry, and in a temperature of 65° to 70°. Keep successions growing on without check.—Peaches and nectarines in bloom must have air whenever it can be given, and the temperature should not exceed 55°. Disbud sparingly, and fumigate on the first appearance of green fly.—Strawberries, keep near the glass, and endeavour to have their flower-stalks a little in advance of the foliage by keeping the plants at first starting rather on the side of dryness; let them have air on all favourable opportunities.—Early vinery, keep about 60°, with a moist atmosphere, until the vines come into flower, when syringing should cease for a time, and the temperature should be increased some ten degrees or so. Ventilate every day when the weather will allow the sashes to be opened. Pot vines should be liberally supplied with clear manure water as soon as the fruit is set.

The Danger of Gas.—George Johnson, gardener to Mr. Hermitage, of West Hill, Wandsworth, has died from the effects of a gas explosion which took place in his employer's house. It was suspected that there was a leakage of gas somewhere in one of the rooms, and, in order to discover it, Johnson applied a lighted candle to the gaselier, when a terrific explosion took place, rendering him insensible, and burning him so much that his case from the first was pronounced hopeless. He died on Thursday week in St. George's Hospital.

* Complete monthly calendars, written by some of our ablest gardeners are published in *THE GARDEN* in the first issue for each month.

COVENT GARDEN MARKET.—January 27th.

Flowers.—Prominent among these Azaleas may be named, both in pots and as cut blooms; *Acacias*; *Astilbe* (*Spiraea*) *japonica*; *Begonias*; *Calla aethiopica*, cut and in pots; *Camellias*, cut blooms and in pots; *Christmas Roses*; *Cinerarias*; *Hyacinths*; *Tulips*; *Narcissus*; *Snowdrops*; and *Crocuses*; charming examples of *Cyclamen*; *Deutzia gracilis*, one of the best of our little shrubs for forcing; *Echeveria retusa*; *Eranthis hyemalis*; several kinds of *Heaths*; *Lily of the Valley*; *Mignonette*; *Pelargoniums*, both zonale and show varieties in pots and cut; *Poinsettias*, with wonderfully fine scarlet bracts; *Primroses*, both common and Chinese; cut *Roses*; cut flowers of *Tropaeolum*; *Violets*; and *Wallflower*. Among berry-bearing plants we noticed *Solanum* and *Ardisia*, both in excellent condition.

Prices of Fruit.—Apples, Dessert, 1s. to 3s. per dozen.—Cobs, per 100 lbs., 60s. to 65s.—Filberts, per lb., 8d. to 10d.—Grapes, per lb., 3s. to 8s.—Lemons, per 100, 7s. to 10s.—Spanish Water Melons, each, 2s. to 5s.—Oranges, per 100, 6s. to 10s.—Pears, per dozen, 3s. to 6s.—Pine-apples, per lb., 4s. to 8s.—Pomegranates, each, 4d. to 8d.

Prices of Vegetables.—Artichokes, green, each, 6d. to 8d.—Asparagus, per 100, 8s. to 10s.—Beet, per dozen, 1s. to 2s.—Broccoli, purple, per bundle, 10d. to 1s. 3d.—Brussels Sprouts, per half sieve, 2s. to 3s.—Cabbages, per dozen, 10d. to 1s. 3d.—Capsicums, per 100, 1s. 6d. to 2s.—Carrots, per bunch, 5d. to 7d.—Cauliflowers, per dozen, 2s. to 6s.—Celery, per bundle, 1s. to 2s.—Chilies, per 100, 1s. 6d. to 2s.—Cucumbers, each, 1s. to 2s.—French Beans, new, per 100, 3s. to 4s.—Herbs, per bunch, 2d. to 4d.—Horse Radish, per bunch, 3s. to 5s.—Leeks, per bunch, 2d. to 4d.—Lettuces, per score, 1s. 6d. to 2s.—Mushrooms, per pottle, 1s. to 2s. 6d.—Onions, per bunch, 4d. to 9d.—Parsley, per bunch, 2d. to 4d.—Radishes, per bunch, 2d.—Rhubarb, per bundle, 1s. 6d. to 2s.—Salsify, per bundle, 9d. to 1s. 3d.—Scorzoneria, per bundle, 9d. to 1s. 3d.—Seakale, per punnet, 1s. 6d. to 2s.—Shallots, per lb., 8d.—Spinach, per bushel, 3s. to 4s.—Tomatoes, per small punnet, 3d. to 6d.—Turnips, per bunch, 3d. to 6d.

Honolulu.—This is one of the most charming spots in the world, and seems destined by nature for a watering-place. It is not big enough for great mountains, broad rivers, or waterfalls. But the curious volcanic craters that partly girdle it give it a weirdness of aspect that makes the outline of the coast very striking; the thickly-wooded hills of the interior throw out green spurs toward the sea or descend upon dark gorges, and the level land is in part a garden already, and only wants culture to become one everywhere. Nowhere except in Ceylon have I seen such luxuriant vegetation, and the skill of the gardener has done more here than in the Indian islands. Every fruit that grows in the warmer parts of Asia finds a home in Honolulu; and many glorious Japanese flowers, waxen-leaved lilies of every hue, and delicate-textured ferns, have already been naturalized. Then the climate is delicious. I had expected a moist, stifling atmosphere, like that of a hot-house; but the prevailing wind gets dried in blowing over the hot volcanic rocks, and the air is as buoyant and bracing as in the hill-ranges of Australia. I can imagine Anglo-Indians coming here to recruit, though the thermometer never falls below 65°, and is at times twenty degrees higher.

Ivy Edgings.—The walls in the kitchen garden here are edged with dwarf ivy, which is very much admired by people who come to see our place. When first planted, the edgings were only nine inches wide, but now they are from twelve inches to eighteen inches. Twice a year they require "clipping" with a pair of shears, just as we do grass edgings, and the top should be kept level, sometimes with a pair of shears, and sometimes with a pocket-knife. I am of opinion that ivy stands the tear and wear of a large garden better than box; at any rate, I have found it so. Neither do I find that it harbours anything like the amount of slugs which box does; and, added to that, it requires much less labour to keep it in order when once it is fairly established. For garden walks I have a great abhorrence of dead edgings, no matter of what design or material they are made. They might possibly be tolerated in neighbourhoods like that of Wolverhampton, or other "black countries," where it is difficult to get vegetation of any sort to thrive; but dead edgings in a garden, where there is a pleasant atmosphere, are really too bad.—*W. Miller, Coombe Abbey.*

Part I. of *THE GARDEN*, containing 6 Numbers and upwards of 80 Illustrations and Plans, is now ready, price 2s., and may be had through all booksellers and newsagents, and at the railway stalls. Post free from the Office, sent flat between boards, 2s. 6d.

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All communications for the Editorial Department should be addressed to WILLIAM ROBINSON, "THE GARDEN" OFFICE, 37, Southampton Street, Covent Garden, London, W.C. All letters referring to Subscriptions, Advertisements, and other business matters, should be addressed to THE PUBLISHER, at the same Address.



"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE FRUIT GARDEN.

RE-GRAFTING WORTHLESS FRUIT TREES.

THE accompanying woodcut clearly illustrates a very excellent practice which we would highly recommend. Fruits—pears in particular—are strangely affected by different soils, localities, aspects, &c. A fruit may be found to be extremely good in one locality, and worthless in others. Thus, sometimes after taking great care in planting fruit trees, and after growing them and training them for many years, until they have become good specimen trees, so far as fruit is concerned, they have turned out to be but vile cumberers of the ground. Many, doubtless, have proved the truth of this assertion, and yet have hesitated to destroy their trees because of the beauty of their appearance and the blank occasioned by so doing, years being required to again refill the space thus left bare. The plan now recommended, however, obviates all disappointment; and all that is necessary to be done is to re-graft as our illustration indicates. Nothing is simpler or more easily accomplished, and it is astonishing how soon a tree is thus refurnished and in full bearing condition after being grafted. Some forty or fifty handsome pyramidal pear trees about twelve feet high were thus cleverly manipulated by Mr. Barron, in the gardens of the Royal Horticultural Society at Chiswick in the spring of 1870. The success attending the operation has been so great, that in two years many of these trees presented as handsome an appearance as they did before they were grafted.

The advantages of the process may therefore be summed up thus:—

1. It enables us within two years, or little more, to obtain a full sized fruitful tree of a new variety, which otherwise could only have been done at the expense of planting and training a young one for ten or twelve years.

2. Double grafting on a well-seasoned stock assists the fruiting properties of many shy bearers.

The method of procedure is simple, and now is the time to set about it. First select sufficient grafts—say, one three inches long for each branch of the tree to be operated upon—

and lay them in, in gardening phrase, "by the heels" in some border until required. Selecting the scions now will retard them and allow the stock to get a little in advance of the graft, which is desirable. The stock itself may now be cut back, *i.e.*, the branches to where it is intended to re-graft them, as shown in the representation—the bottom branches—at, say, one foot from the stem, and the top ones shorter, so as to gradually taper to two or three inches. Cut off all spurs in the ordinary way, to prevent confusion.

In the beginning of March the grafting may be commenced; common cleft or whip grafting being the best. Tie the grafts and clay up in the ordinary way. As soon as they seem to have fairly "taken," pay particular attention to their ties, in order to see that they do not compress the graft too tightly. Furnish each shoot with a firm stake to prevent its being blown off, for being exposed to so much wind it is apt to be displaced. If the scions push away very vigorously it is advisable to stop them, so as to enable them to gain strength at the point of union. Train and prune afterwards as on ordinary occasions.

We will, in a future number, give a list of pears very commonly to be found which ought in this country to be re-grafted. In numerous gardens much good may be effected by re-grafting old trees. In fact, there is no process more needed in our fruit gardens. *PYRUS.*

THE FRUIT GARDEN FOR FEBRUARY.

By WILLIAM TILLERY, WELBECK.

Outdoor Fruits.—The pruning and nailing of wall-trees should now be attended to, and finished as soon as possible, as the blossom-buds of apricots, peaches, and nectarines will be swelling fast, should the present open weather continue. The retarding system, where it can be carried out on these varieties of fruits, often saves the blossoms in severe frosts in February or March, and from the open nature of the winter up till this date (January 30) we can hardly expect a genial spring. After the very intense frosts in December 1860, the winter following was very open and wet, but sharp frosts occurred in the spring months, and the fruit-tree blossoms were much injured. Weather in season will, therefore, always be found the best in our climate, for there is generally a reaction from all temporary excesses in temperature or moisture. All protecting materials should now be got ready for covering apricots, peaches, and nectarines on the walls, as soon as the blossom-buds of these trees are in danger. The crops of these fruits on the open walls were generally light last year, the trees will therefore be stronger in the wood, but I



Pyramidal Pear Tree Re-grafted.

am afraid not ripened well, owing to the cold, wet autumn. Finish the pruning and tying of raspberries, if not already done; the ground should only be lightly dug between the rows, but they will flourish with a good amount of rotten manure as a top-dressing.

Early Vinery.—As soon as the grapes in the early-house are set, thinning must commence before the berries get to the size of small peas. A night temperature from 60 to 65, with an increase in the

daytime by sunheat to 75°, will have to be maintained. The giving air to early vineries in February is an operation that must be carefully performed, for in frosty, windy weather, the sun often comes out hot, and the foliage gets scorched, or injured by cold draughts if the air is not given with discrimination. Other late vineries must now be prepared for starting to keep up the rotation. The late grapes, such as Alicantes, West St. Peter's, Trebbiano, and Lady Downes's Seedling, will, if cut off and put into bottles of water, keep nearly as well as on the vines. The best way to keep them is in a room fitted up for the purpose, with wooden racks to place the bottoms of the bottles on. Iron rods are stretched on the racks, with a small bend every ten inches, in this way, ———, for the necks of the bottles to rest in, and the angle must be enough for all the bunches to hang clear when they are put in the bottles.

The Early Peach House.—The fruit will now be set in the earliest house, and syringings morning and evening will be required in favourable weather. Attention should likewise be bestowed on the thinning of the fruit where they are set thickly, but this rarely happens when forcing commences so early. The dis-budding of the shoots is a process best performed by taking off only a few of the strongest at different times, so as not to give a check to the roots. The temperature at night may be maintained at about 60°, with a rise to 70° by day, and by sunheat 6° or 8° higher. Green-fly will begin to make its appearance, and the infected shoots must be picked off; but fumigation with tobacco will have to be resorted to at the last. The old system of fumigating hot-houses with the operator inside the house is now exploded, and it was a cruel infliction on young gardeners and others, who could not stand tobacco smoke. When a youngster, I was myself, on one particular occasion, engaged in the operation, and having stood the smoke as long as nature would permit, I shut the door and "bolted," but was sent back again by my master with the consoling remark, that I might "gang yet to a waur place." Some of the new patented fumigators are very efficient for the purpose, for by making a hole in each door of the house for introducing their nozzles in from the outside, the house can be soon quite filled with smoke, and kept so for any time required.

Fig House.—Figs should be kept well watered and syringed, with the night temperature at about 60°. When the young shoots have grown to the length of four or five joints, the terminal buds must be picked out, to encourage the formation of a second crop.

Cherry House.—The temperature must be kept low, from 40° to 50°, with plenty of air given on favourable occasions, until the fruit is set. After that they will bear more heat, with frequent syringings overhead till the fruit colours.

Strawberries.—Occasional batches will want to be introduced into the pits or forcing-houses according to the consumption required. When sufficient fruit has been set on a truss, the rest of the blossoms should be picked off to strengthen the fruit left on. Liquid manure, if used twice a week, will help the fruit to swell, but it must be discontinued before the fruit begins to colour.

Cucumber and Melon House or Pit.—The sun will now be more powerful, and therefore more favourable for forcing cucumbers and melons. A night temperature of from 60° to 65° is not too much, and the day temperature, by sunheat, may range to 80°. Maintain plenty of moisture on the pathways and plants, but beware of scalding draughts of steam by dashing water on the pipes or flues. Another sowing of seed may be made to supply the general stock of plants, for gardeners always find a good many friends begging cucumber plants in March and April to plant in their frames.

Tomatoes.—This excellent fruit, if sown in the beginning of February and pushed on in heat, will ripen good crops in pots as early as May or June. I find the dwarf Orangefield the best for this purpose. The new sorts, the Trophy or General Grant, do not fruit so freely, and are later in bearing.

THE PINERY FOR FEBRUARY.

BY JAMES BARNES.

At no time throughout the year must there be any standstill work in the cultivation and production of this noble fruit, if it is intended to have it well finished and in perfection. Succession plants should have a little more heat as light increases. A portion of the finest plants should be shifted into the pots in which they are intended to be fruited; the bottom heat should be seen to, turned, and new materials added, in order to maintain a kindly growing root-temperature from 80° to 90°, and the atmospheric heat should be raised to 65° by the middle of this month, still gradually increasing the temperature as March approaches; syringe moderately only on very fine, mild, quiet days; and shut up soon in the afternoon, charging the atmosphere moderately with humidity. Suckers should be taken off old fruiting stools with a

piece of the old stem attached to them, and potted at once. This keeps them firm in the pot, and affords some nourishment. Never allow suckers to lie about to dry and harden for weeks, a practice which gives a six months' check in their progress. If succession plants are well cultivated, a few months' luxuriant growth will produce large and strong suckers, which should be cut off, and potted directly the fruit is cut, no matter what time of the season that may be. Old and long-producing plants will never ripen off good, well-swelled fruit. Of course, suckers taken off throughout the winter months do not make so luxuriant, quick growth as those taken off from June till October. As to potting or shifting, pines do not require such operations being performed so often as old growers used to recommend. Large, strong suckers, of course, require to be placed in pretty good-sized pots—say, from seven to nine inches—and then they only need one more shift, and that at once, into their fruiting pots. The best fruiting plants should at no season of the year be more than from ten to fourteen months of age, or they will not produce noble fruit, or swell it to perfection. If any favourite variety is wanted to be much increased, pot the old stools, place them in a very strong heat, and they will afford abundance of suckers; at the same time, when the old stalk or stem is pretty ripe and firm, as there is at the base of every leaf a bud, those buds may be scooped out with a piece of the stem attached, and placed in pans, in the same way as potatoe sets are treated, covering lightly with loamy, sandy soil, and charcoal dust. Set them on a kindly bottom heat, and any quantity of plants may be thus obtained. Fruiting pine plants require more attention the first three months of the year than during the whole year afterwards. Fruit now finishing swelling should have water entirely withheld at top, and, if possible, be lifted out into a light, airy situation, close to the glass, on to a dry shelf or end pipes, &c. They should not be allowed to get dry; neither must they be permitted to get in the least degree soddened. Systematically apply tepid, clear manure water to the roots, and syringe gently the pots and base of the plants; and charge the atmosphere with genial humidity, increasing it as the days and light get longer and stronger at night to 70°, or a little more. Of course, by sunlight and on light days the temperature may be allowed to run up to from 80° to 90°, admitting air, but by all means avoiding draughts. Pine-apples now in bloom require particular care in maintaining a kindly and rather dry, warm atmosphere; but they must not be allowed to get dry at the roots, or else abortion in some shape or other will be the result. After the blossom is set—a process which takes but a few days—treat in all respects as for fruit swelling, as stated above. Fruiting plants just started, or about starting, require nice attention. They should not be allowed to get dry at the root, or diminutive growth will take place; syringe their base moderately on fine days, charge the atmosphere with a reasonable amount of humidity; use a moderate amount of heat, and they will show up, bold, strong, and perfect in shape, and in their turn will require the treatment recommended for plants swelling fruit, as before described. The next batch of fruiting plants should now be collected together, if not already done; the bottom heat should be renewed, and other requirements attended to, with an increase of heat and humidity; giving air freely, to give them time to start into fruit strongly and boldly. A man who can produce good and desirable fruit from January to June in abundance is a real pine grower. As is well known, strict, persevering attention must be fully carried out without check or lack, in order to achieve that desideratum. Early spring and early summer production is always of greater value than that of autumn and winter, when pines should be produced only in moderate quantities.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Madresfield Court Grape.—I have to-day cut my last bunch of this variety, and from what I now see it has fully borne out the character given to it by the Royal Horticultural Society. Mr. S. Simpson, of Manchester, a very good judge of grapes, assured me a few days ago that a bunch of this sort, which I gave him, after hanging in a dry place, but still moderate in temperature, kept for five or six weeks amongst other thin-skinned varieties, and at the end could not be surpassed in flavour. I have it very fine in colour and large in the berry. I am sorry I have not more of it, on account of its excellent quality. I am devoting a house about forty feet by eighteen feet to its cultivation. It has a good constitution, and I have no hesitation in stating it to be a very desirable variety to grow.—JOSEPH MEREDITH, *The Vineyard, Garston, Liverpool.*

A New Way to "Make" Fruit-Trees.—A passage in Darwin's "Naturalist's Voyage" (1831), which we met with the other evening, shows that the practice for which Mr. Hutchinson, of New Hampton, U. S., has lately taken out a patent, or a system very near it, is common in some parts of South America:—"In Chiloe," says Mr. Darwin, "the inhabitants possess a marvellously short method of making an

orchard. At the lower part of almost every branch, small, conical, brown, wrinkled points project: these are always ready to change into roots, as may sometimes be seen, where any mud has been accidentally splashed against a tree. A branch as thick as a man's thigh is chosen in the early spring, and is cut off just beneath a group of these points; all the smaller branches are lopped off, and it is then placed about two feet deep in the ground. During the ensuing summer the stump throws out long shoots, and sometimes even bears fruit. I was shown one which had produced as many as twenty-three apples, but this was thought very unusual. In the third season the stump is changed (as I have myself seen) into a well-wooded tree, loaded with fruit. An old man near Valdivia illustrated his motto, 'Necesidad es la mandre del invencion,' by giving an account of the several useful things he manufactured from his apples. After making cider, and likewise wine, he extracted from the refuse a white and finely-flavoured spirit; by another process he procured a sweet treacle, or, as he called it, honey. His children and pigs seemed almost to live, during this season of the year, in his orchard."

The Inexhaustible Strawberry.—M. Mabile, of Limoges (Haute-Vienne), has just made a discovery which we consider very important, if its results at all correspond to its promises. He has obtained from the seed of the strawberry, *Ananas du Chili*, crossed with the fine English variety, *Victoria* (Trollop's), a large continuously-bearing strawberry, which produces fruit as large as the English or American kinds, and continues to bear up to the first frosts. A large variety, said to be continuously-bearing, had been already raised (by M. Gloede, I think) but of this the leaves alone were "continuously" produced. That of M. Mabile, which we have ourselves seen and tasted, is quite a different thing. We do not hesitate to strongly recommend it, not only for its intrinsic value, but because it will, without doubt, prove the parent of large fruited and really continuously-bearing varieties, superior to itself. The general consumption of this excellent fruit is so desirable that we must commend every effort to increase it, and render it accessible to all. In connection with this subject we have just read the following in the *Echo du Parlement Belge*:—"Within the last few days an exhibition of strawberries has been opened at Boskoop (Holland). One lot, containing fourteen strawberries, weighed over a pound." This comes very near the "twelve to the pound" of M. Mabile. We hope that it may become as excellent and productive as the Caprons of the marshes of St. Land, at Angers, which we used to purchase at the rate of twopence halfpenny the basket of five pounds.—*Ed. André, in L'Illustration Horticole.*

Apples and Pears in Orchard Houses.—What does your correspondent "W." (see p. 188) grow apples for? Does he do so simply for their appearance in the orchard house? or are they cultivated there for what they are worth? If for pleasure only, I have nothing to say to those who choose to spend their money in that way; if for profit, does not "W." very lamely support his advice, to grow them in orchard houses when telling us that such delicious apples as the Newtown Pippin may be bought for half-a-crown the stone of fourteen pounds? In short, I feel certain that if his orchard house apples even exceeded his most sanguine expectations, and he was able to sell them at four times that price, he would be a loser, after deducting interest for outlay, repairs, and deterioration, to say nothing about labour. I am, however, ready to admit that the larger trees which "W." proposes are a step in the right direction. As regards the culture of pears and apples under glass, may I recommend your correspondent who advises us gardeners to grow them in that way to pay a little attention to the stupid and benighted market gardeners and fruit growers who supply our markets. They are not perplexed with a hundred duties, like the gardener in a private place; working on a large scale, and with perhaps not more than half-a-dozen subjects to deal with, they can at once test the merit of a system. Yet, we see no sign of them adopting the wonderful orchard-house plan for the production of our commonest hardy fruits. Nevertheless, gentlemen are sometimes led by such statements as those of "W." to adopt these fanciful systems of culture, which, however successfully carried out, fall short of their sanguine expectations. Then, unless the gardener happens to be a man whose abilities are known to be equal to anything that it is possible to attain, he is at once set down as incompetent. The fact is, it would be absurd to devote any of our precious glass-house space to these fruits while other tenderer ones are badly in want of it. So long as apples are grown to perfection in many parts of this country, and so long as the superb apples of the orchards of the vast American continent can be so easily and cheaply brought here, it will never pay anybody to grow these fruits under glass.—*T. BAYNES, Southgate.*

Why not cut Grapes when Ripe, and "Bottle" Them?—Having suffered this last damp autumn through not cutting all our grapes when they were ripe, I intend to show your readers how a good house of muscats was nearly all lost. We have two fine muscat houses standing on a very high hill, two hundred yards away from the main range of houses. On one very wet day the men were sent to give the vines in these two houses a few cans of water, but, instead of giving the quantity ordered, they poured water on the inside border for six hours; and owing to the long level length to which the flue runs, the fire does not draw at times. The consequence was, with two or three wet days in succession, and the fire almost out, nearly 200 bunches of finely-coloured muscats were almost all spoiled. I am glad to say, the border was not watered with my consent; but, nevertheless, the water was applied, and

the house was filled with cold, damp moisture. Now, if I had cut every bunch from the vines the first week in October, with about eight inches of the stem attached to each bunch, carried them into a dry room, had a number of bottles ready filled with clean spring water, and with a little charcoal in each bottle to receive the bunches, I feel certain we should have had fine muscat grapes until March, and thus have saved all the trouble and expense of firing and air giving. Last year we cut the last bunch of Mrs. Pince in fine condition on Good Friday, and the last bunch of Lady Downes the last week in March. If these two kinds of grapes were cut at Christmas, and the stems put in bottles of water, as just described, I have no doubt that a great deal of trouble would be saved, and the vineries could be filled with plants. The inside border might then receive some water, instead of being kept dry all through the winter, as most of the inside borders are kept until the soil in two or three years time loses all its strength. If, however, such growers as Messrs. Fowler and Meredith would give us their experience as to the best way of keeping late grapes, it would be a boon to many. But, until I hear of a better plan, we shall in future cut all grapes when ripe, put their stems in bottles of water, and place them on a shelf in a dry room.—*T. S.*

Fruit Trees for Cottagers.—Many who have the means delight to improve the gardens belonging to labourers' cottages. I am about to build several cottages for my workmen, and to give half an acre to each; can you, therefore, kindly tell me where fruit trees, dwarf and suitable for such gardens, can be obtained at a cheap rate? [Are the dwarf trees which I see advertised in pots, such as apples, pears, peaches, plums, &c., suitable to transplant in open gardens for cottagers' use?—*JAS. SPROTT.*] [Dwarf apples on the paradise stock, and dwarf trees suited for forming neat pyramids of almost every kind of hardy fruit, may now be had in most nurseries throughout Europe. Those raised in pots are too expensive for any but indoor work.]

Reverting to the Original Form.—Those who believe wheat will turn into "chess," have had much to aid them of late. A wonderful instance of vegetable transmutation is mentioned by a correspondent of the *John Homestead*. A farmer purchased of a tree pedlar fifty different varieties of apples for a large orchard. In a few years these apples resolved themselves into a single kind, neither rare nor of good repute.

THE SIX OF SPADES.

CHAPTER II.

WHEN young Mr. Chiswick, the gardener at the Hall, made his first appearance in our village, he was generally supposed to be an officer of cavalry on leave, or a foreigner of distinction on his travels. Great was the surprise accordingly, when, coming to church the Sunday after his arrival, he took his place with the domestics, and not with the Squire. Nevertheless, though he fell in the social scale, he rose in the estimation of our villagers. Here was a handsome young fellow, with the neatest of moustaches and the trimmest of beards, not come to marry Squire Granville's daughter, and, therefore, no longer a fascinating impossibility to the more humble maidens around. Mademoiselle, Lady Constance's maid, at the Castle, immediately traced in Mr. Chiswick's lineaments a striking resemblance to the old French *noblesse*: the damsel who assisted at Lady Isabel's toilette, was sure that he had been accustomed to the best society; Miss Granville's attendant was forcibly reminded of Lord Byron's "delightful Corsair;" and all our unmarried beauties expressed their true commiseration, "that such a pleasant young man should be buried alive in that lonely cottage, belonging to the gardens at the Hall."

There were dissentient voices, of course. Our young men spoke slightly of "Jews" and "barbers' blocks." Mrs. Verjuice, the housekeeper at the Grange, declared his "manners was 'igh, and his appearance 'airy." And even the mild, kind-hearted Mr. Oldacres was reported to have murmured something about "a Pomological Puppy," to have spoken disparagingly of Mr. Chiswick's "foliage, to wit, his moustaches and beard, and to have told the Duke's huntsman, that "he would find some excellent covert at the Hall, when he wanted a fox, next season." I think that a little breeze of apprehensive jealousy stirred the tranquil waters of that grand old heart. Mr. Chiswick had won medals at the London shows; there was to be a new orchard house at the Hall (poor Mr. Oldacres had only four, well-stocked with fruit-bearing trees); and our King of Spades looked sternly (it was but for a moment) from his palace upon the modest vinery of Naboth.

Now what do you think that the King's daughter, at this crisis of our history, the Princess Mary of Oldacres, went and did? Exactly so; for I know that you have guessed it; she did, indeed. As you, my subtle reader, have well inferred, she did *not* wear her second best bonnet, much less did she distort

her very lovely face with unnecessary sniffs and sneers when she met the bearded knight, whom the King her father was disinclined to honour. The knight fell head over beard (his ears were planted out by extensive shrubberies, and so I vary the old expression that they may preserve their position of retirement)—head over beard in love with the Princess, and “Jill” (if I may apply such a term to royalty)—“Jill came tumbling after.” When Mr. Chiswick got sixty-eight runs from his own bat in our annual match with the Slawmey Slashers (it is only fair towards our neighbours at Slawmey to remark that their best bowler was unable to attend, in consequence of a very pressing engagement at the treadmill of our county jail), and was carried from the wickets upon the shoulders of his rejoicing and victorious friends, I saw the bright colour rise on Mary’s cheek as vivid as the Poinsettia; and again, when in our contest with the picked eleven from Moughboro’ some clumsy ruffian, shying in widely, hit our pet batsman on the head, and

“round he spun, and down he fell,”

I saw poor Mary—indeed I went to tell her that there was no serious hurt, having an earnest sympathy with lovers—vainly endeavouring to conceal her sore distress, and as white as Azalea candidissima. And so it came to pass, on a moonlit January night, when, in spite of the Under-whip’s protestations, that “he never could see the use of them frosses,” the Castle Lake had been covered with skaters and spectators; it came to pass that Mr. Chiswick, after astonishing every one with his “eagles,” and figures, and “outside edge,” and turning about and wheeling about on his skates, as comfortably as the celebrated Mr. Crow without them, walked home with Mary Oldacres. And he told her, as they walked, his Winter’s Tale. He spoke of his loneliness in his cottage-home with so much bitter plaint, that you would imagine the Moated Grange of Mariana, or the Haunted House, so wondrously described by Hood, to have been quite festive residences, halls of dazzling light, and abodes of the fairies, when compared with his Den of Despair. He described in harrowing terms “the fearful sense of desolation which oppressed him, and would, he knew, oppress him that very evening, when, alone and dolorous in his dreary cave”—(Oh fie, Mr. Chiswick, Mr. Chiswick! how can you thus defame your cozy parlour, with its cheerful fire and singing kettle? how can you thus ignore your horticultural books, your cornet-a-piston, upon which I heard you playing but two nights ago, in your divine despair, the melancholy air of “Old Dan Tucker?”)—“where no sound was to be heard save the sorrowful sighing of the wind” (he said nothing about the snoring of his small servant asleep in the contiguous kitchen) “and the dismal drip of the rain” (here Miss Oldacres looked up into the cloudless shining heavens, as if wondering wherever the rain was to come from), “he should sit, like patience on a monument, smiling at grief”—the monument consisting of a very easy chair, and grief being represented by a plump little pipe of Bristol bird’s-eye, and a glass of gin and water, “hot with.” Finally, this unhappy plaintiff, whom you could not have identified with the smiling skater shooting over the lake only half-an-hour ago as though he had backed himself to catch an express train, after glancing briefly at the delightful privileges of self-destruction, the repose to be found in Yellow Fever, and the unspeakable consolation of being killed in battle, in cases of severe disappointment, asked Mary Oldacres to be his wife; and I am quite sure that the bright moon, in all her great experience, never looked upon a happier couple as they came home, hand in hand, and heart in heart, that night, through the silvered grass. Mr. Chiswick returned to his “dreary cave,” and evoked unjust suspicions of his sobriety in the small servant by informing her that “life was ecstasy, and he should raise her wages;” and subsequently proceeded to evoke the sparrows resident in the creeping roses outside, with “Love’s Young Dream” from the cornet.

You ask, perhaps, at this crisis, with the fast Oxonian in the song, “but what will the Old Governor say?” and I must tell you, in answer, that the primary chilliness to which I alluded, soon thawed in the warm bosom of Mr. Oldacres, that he made an acquaintance, and then a friendship with Mr. Chiswick, and that Romeo knew, when he astonished the sparrows, that he had little to fear from Capulet. And this

was so, because the younger man ever tendered to his senior that due respect and deference which is not quite so common in these days as it certainly is just and seemly. Mr. Oldacres had expected to meet a supercilious dandy, who would sneer at his superannuated notions, and would expatiate, in a language, half Latin and half science, upon the Metaphysics of Botany, or some pleasant little theme of that sort. He found, on the contrary, a quiet, unassuming, well-informed man, clever, and highly educated in his art, but more anxious to listen than to speak, as one to whom knowledge was teaching her noblest lesson to be aware how little he knew. “Mr. Oldacres,” he thought, “had not the great advantages which were given to me in those dear old gardens of the Horticultural Society under the wise supervision of ‘the Doctor,’ and yet how much have I to learn from one who has spent a long life at work, at work upon the best material, and with the most costly tools.” And the old man, seeing himself appreciated, was prompt on his part to acknowledge the acquirements of his new neighbour, to exchange information, and to compare old things with new. I met him one morning returning from the Hall gardens, and he informed me that “Chiswick was a regular conjuror.” He had just seen him “tie out” a young Pimelea, recently received from the nurseries, and he had made it look worth a guinea! And the best of it was,” he went on to say, “that the fellow had no more pride about him than a Dahlia after a hard frost,” and when he praised his handiwork, he only said, “I wish you saw William May’s.”

And thus there arose between these two men, so dissimilar in aspect yet so congenial in mind, a sincere regard and amity, which deepened into a most true affection, when “the Gardener’s daughter,” quite as loveable as Mr. Tennyson’s, went over from the Castle to the Hall, and precocious Chiswicks, as time went on, began to drive miniature wheelbarrows between Mr. Oldacre’s legs. For the clergyman who made the true lovers one was a true prophet when he said, “Thy wife shall be the fruitful vine upon the walls of thine house;” and whoever enters that pleasant home, once called the Den of Despair, and sees the bright young mother among her laughing little ones, beholds the realization of those other gracious words, preceding the words which I have quoted, “O, well is thee, and happy shalt thou be!”

And while the pretty Mrs. Chiswick conducts the nursery department, and every year some “striking novelty” is added to her “hardy annuals,” “quite distinct,” and a “decided acquisition” in the happy mother’s eyes, her husband is making admirable improvements in the spacious gardens of the Hall. His predecessor, old Mr. Woodhead, had been a hard-working man, and a good gardener as far as he went, but he was, metaphorically, a slow horse, more adapted for harness than for hunting, and when he had reached a certain point in horticulture, there he stopped in hopeless immobility, and no spurs could induce him to charge another fence. I remember, year after year, the same plants in the conservatory (ah, those were merry-times for the aphids, “days of strength and glory” for the red spider!) the same designs in the flower garden, the same bouquets in the drawing-room, and the same fruits and flowers upon the table. I think I see his Cinerarias now, with their pointed petals (number unknown) widely separated, as though they hated one another. The ladies of the Hall were delighted indeed when such flowers as “Lord Stamford” and the “Scottish Chieftain” (I am speaking of favourites in request some sixteen years ago) displaced these dingy specimens; and yet more gratified were they, when the summer came, and, sitting upon the pretty garden chairs of Mr. Chiswick’s design, they saw the beautiful contrasts of modern taste, Flora’s bright jewels set in gold and silver (“Golden Chain” and “Mangle’s Silver”), and set so skilfully that, while each separate gem shone in its distinct and glowing beauty, the collective whole charmed the eye with a perfect unity. “Scarlet and goold, scarlet and goold, Tom Thumb and Rugosa Calcy,” had been old Mr. Woodhead’s motto; and of those he “bedded out” many thousands, making his garden so gorgeous that strange carriage horses, emerging from the sombre shrubberies through which you approach the house, would actually shy at their sudden splendour; and the vivid brilliancy was so painfully unrelieved and monotonous that it seemed almost to burn one’s eyes.

Mr. Chiswick made a hundred other improvements, of which I have no time to tell. That damp shaded corner, under the trees of the "Long Walk," where nothing seemed to flourish but obnoxious fungi (they may have been delicious esculents according to the discoveries of modern mycology, but they had not an appetizing aspect), became a picturesque fernery; the banks of the lake, which had always looked so drear and reedy, are now planted with rhododendrons, which reflect their glories in the admiring waters when the time of flowering comes, and are always beautiful in their glossy sheen; a few trees were felled, and from all the front rooms you can see through the opening our village church in the distance, most striking upon a summer's eve, when its fine old western window blazes and bickers in the setting sun; here is a statue of "Contemplation" admirably posed, with some dark Yews, high and dense, for a background, and giving you at once the idea of a place "where ever-musing Melancholy dwells;" there, passing through an arched stone doorway, you find yourself suddenly in Switzerland, where you may spend a day in admiring those charming little alpine plants nestling in the crevices and crannies of the rockwork, and may taste the alpine strawberries, if you please, though I warn you that this *Arbutus* is "Unedo," and that you will not desire to repeat the experiment; and, in brief, you will find, wherever you go, some pleasant proof of a refined taste and an untiring industry.

I must mention just one more instance, perhaps the most decided, of his improvements—the transformation which he achieved in "the stove." It was an awful place, that stove, in the reign of King Woodhead; and Mr. Chiswick pretended, when in merry mood, that, on his first visit, "a mealy bug, of gigantic stature and ferocious dimensions, had lashed out at him like a horse." Certainly there was more to interest the entomologist than the florist in this remarkable collection. I suppose that the Orchids must have flowered at night, for I never saw them emerge by day from their residences of rotten wood and moss, where they seemed to exercise unbounded hospitality, and to keep open house for the lower orders of vermin. There were creepers which declined to creep; sticks trained to enormous globes, but showing no inclination to start upon their travels round them; and plants, on the other hand, which grew like the fairy's bean-stalk, *Allamandas*, for instance, stretching their arms all over the place, but of flowers "devil a taste;" there were tall thorny *Euphorbias* about as full of bloom as a hedgehog; there were *Begonias* with great cracks in their giant "ears," and places which looked as though bitten out by "elephants;" there were *Hoyas* and *Stephanotis*, whose every leaf called out, in dying pain, for "Gishurst;" and all the time these helpless, hopeless invalids were insulted and mocked by dirty little "tallies," who persisted with bitter irony in calling them "Bellas," and "Splendidissimas," "Magnificas," "Grandifloras" and "Elegantissimas."

When I see the place now, I cannot recall its former appearance. The Orchids bloom, the *Allamandas*, the *Ipomœas*, the *Dipladenias*, the *Gloxinias* bloom, in all their delicate loveliness; the *Hibiscus* and *Passifloras* flower, as they rise in profusion; and the plants of variegated foliage, the *Alocasia*, the *Cissus*, the *Croton*, are models, both in the healthfulness of their growth, and in the symmetrical arrangement thereof. Here let us leave Mr. Chiswick, happily admiring a beautiful *Caladium argyrites*, and pass on to another member of our brotherhood.

Ah, mine old acquaintance, the terror of my childhood, the enemy of my boyhood, the friend and faithful servant of my manhood, are you the next to sit for your portrait? I must have a new piece of canvas, and grind some fresh paints, for you.

S. R. H.

(To be continued.)

TO THE EDITOR OF "THE GARDEN."—I want to tell you how much obliged I am by your exhumation of "The Six of Spades." I read portions of it when it came out in the old *Florist*, and often have I wondered how and when I might be able to read all the papers entire. I felt a peculiar interest in them, because I have been in the garden-house at Causton, the place of meeting of the Six of Spades; nay, I have been at one of their meetings, and I can say that the heartiness and good fellowship described by Mr. Reynolds Hole was

not in imagination but in living reality. The description of the garden-house is literal, and the good cheer provided and dispensed so freely by the host was not so in name only, but in solid and enjoyable reality. His old gardener (Mr. Evan Hirst), whom he describes so well under the name of Mr. Evan, was a friend of mine. I showed chrysanthemums against him at the Nottingham exhibition in the same year in which these papers were written, and the silver cup that Mr. Reynolds Hole describes that his chrysanthemums had won was the cup he and I and a few others tried for at that exhibition, but which he most honourably and honestly won from us. All things considered, you may understand my joy to see that you have determined to give us these charming papers again through the medium of THE GARDEN.—N. H. POWNALL, *Radcliffe-on-Trent, Notts.*

THE INDOOR GARDEN.

THE INDOOR GARDEN FOR FEBRUARY.

BY T. BAINES, SOUTHGATE.

Conservatory.—Keep up a succession of blooming plants for this structure, by regularly introducing to the forcing-pit or stove such plants as are required. Nothing is more useful than the better kinds of Ghent Azaleas and hybrid Rhododendrons; but as regards the latter, care should be taken to select the earliest kinds, such as *Caucasicum pictum*, Cunningham's White, and similar varieties. A few bushy *Laurustinus* will be found useful. Some also of the greenhouse Azaleas ought now to be brought in, using the smaller sized plants, or such as it is desirable to grow on to a larger size, which, by being started now, will have a much longer season of growth than if allowed to come later. *Genistas* and *Acacias*, especially the old *A. armata* and *Drummondii*, are most useful flowering plants for spring, for they stand cutting well. For scarlet flowers during winter and early spring, nothing is more useful than the bedding *Geranium Vesuvius*; it is one of the few that will produce its flowers freely in heat, if the plants have been properly prepared in autumn. Re-arrange the plants in conservatories or other show-houses occasionally; a great deal may be done even with the same materials, to avoid that monotony which exists if plants similar in size and otherways alike are always to be found in the same positions. Place the plants so as to break that regular graduating surface which is so objectionable in stages of the old construction. There is no plant that stands heading down better than the *Camellia*; where, therefore, the plants are at all leggy, a portion should be headed down each year. The operation should be done at once, and the plants allowed to stand in a cool house for a month afterwards. If deferred until later in the season, or placed at once in heat, they will bleed so as to injure them very much. Herbaceous *Calceolarias* will require potting on. Sow now a little seed of *Primula* and *Cineraria* for autumn and winter blooming.

Stoves.—Most of the plants here that have not already been potted will require a shift at the end of the month. If the different potting materials required for the operation have been got under cover as previously advised, they will now be in good order for use, but on no account employ any of them—peat, loam, rotten dung, or sand—cold from the shed. Let all be placed before using them near the hot pipes, or in some other place where they will get thoroughly warmed through so as to be of the same temperature as that of the house in which the plants to be potted are grown. Let such peat and loam as are used be of the best description, containing plenty of fibre and not too much decomposed; if it has been stacked sufficiently long to allow the vegetable matter which it contains to become dead, that is enough. I would much rather use soil in which the vegetable matter which it contains is not more than half dead than employ it when too far gone. It happens sometimes that the peat and loam procurable in certain neighbourhoods are deficient in fibre, in which case it is advisable to sift a portion of the earthy matter out of them before using them. Large plants of *Allamandas*, *Clerodendrons*, *Bougainvilleas*, and *Dipladenias*, and other occupants of the stove that were dried off in the autumn, so as to lose all or the greater portion of their leaves, should have half the old soil removed and be replaced in the same pots. The plants I have just enumerated, except the *Dipladenias*, do best in loam well enriched with rotten dung. All the varieties of *Dipladenia* require good peat and sufficient sand to insure porosity. *Ixoras*, *Combretums*, *Gardenias*, and other evergreen plants of similar character, succeed best in peat, and should not have their roots too much disturbed in potting; on the contrary, simply remove a few inches of the surface soil and replace it with new material, and in the case of young, growing plants it is not advisable to remove any of the soil, but to pot on into larger pots. In all cases let the condition and quantity of roots that a plant has got determine the size of pot

that shall be used; where the roots are healthy and plentiful give a liberal shift; where the reverse is the case it is advisable to return the plant to the same or only a very little larger pot. This holds good in the case of all plants. Crotons, Dracænas, Palms, and Theophrastas do best in good strong loam, using plenty of drainage, as these are water-loving plants. Marantas, Diffenbachias, and the larger growing Anthuriums, succeed best in peat. All plants (orchids excepted), previous to potting, should receive sufficient water to moisten the whole of the ball, so as to obviate the necessity of applying water for a short time after potting; this gives any roots that have been injured time to heal. Continue to introduce into heat such plants as are likely to be required for succession-flowering, being careful not to use more warmth than is necessary, or weak, flimsy flowers will be the result.

Fern House.—The first or second week in this month is a good time to go over ferns, re-potting such as require it and top-dressing others, using good peat with a liberal admixture of coal cinders broken to the size of acorns; these are more effectual in keeping the soil open than potshreds. All tree ferns grow quickest when their stems are syringed once or twice a day during their season of growth, but if they are required for the decoration of halls or for exhibition at times, it is better not to syringe, as the roots that are encouraged by syringing receive a check, in which case they had better not have existed. Large Gleichenias may be divided, but not into small pieces; plants, say in eighteen or twenty inch pots, may be divided into two or four. Of all ferns for mixing with flowers, either in vases or in bouquets, Gleichenia Spelunca stands pre-eminent. It will last for a week in water. It is not advisable to cut small plants; but, when well managed, all the varieties are quick growers, and when the plants get large they will bear cutting in moderation with impunity. In large ferneries, where most things are planted out, the selection and planting require judgment, in order that suitable varieties may occupy the positions for which they are best adapted, studying well what proportions each individual plant is likely to attain, quite as much as present effect, otherwise, instead of a satisfactory arrangement of these most elegant of vegetable forms, a confused jumble will be the result. Another important consideration is to have the plants free from insects, such as mealy bug or scale, otherwise endless labour will be entailed. Such kinds as Adiantum Farleyense and the Gymnogrammas require more heat during the winter than the majority of the occupants of the fern house, and it is better to remove such kinds for the winter to a little warmer house. The fern house during winter ought not to be kept at more than 50° night temperature, with a rise of 5° during the day. It is a mistake to use too much heat in the fern house, as it makes its inmates so tender that such as are required for cutting flag so as to be almost useless, and if the plants are required for decoration elsewhere they suffer as well as become unsightly. As soon as growth commences supply them liberally with water.

Orchids.—Let sufficient of the best fibrous peat, sphagnum, and clean crocks of different sizes be prepared for the general potting of these plants towards the end of the month. It is bad practice to allow Orchids to remain too long in the same material, for even if it appears sweet on the surface, it may be sour underneath; in which case the roots will rot as soon as they enter it. At the same time Orchids, more than most plants, dislike moving, on account of the impossibility of doing it without breaking many of their roots; consequently the greatest care ought to be exercised to reduce the breakage as much as possible. Do not apply much water for a week or two after potting, but increase the temperature 6° or 8°, which will help root-action. Use also more atmospheric moisture. For Vandas, Saccolabiums, Aerides, Phalenopsis, and Angræcums, use sphagnum only, with a liberal admixture of crocks. Cattleyas, Lælias, Oncidiums, Epidendrums, and Odontogloss, thrive best in a mixture of peat and sphagnum in equal parts, using for these sufficient, say one-sixth, potshreds, broken moderately small. In potting, employ sufficient sticks to secure every plant firmly in its place; for if left loosely in the pots the young roots emitted suffer every time the plants are stirred in cleaning or on other occasions, which may necessitate their being moved. Finish every plant off by using about half an inch of the surface material considerably wetter than the rest; press this down evenly with the hand, and it will form a sort of crust to the whole which will not be so easily removed with the syringe, and will in some measure prevent insects, such as beetles or woodlice, from harbouring in the pots.

Hard-wooded Plants.—Bring all tiring and training to a close as soon as possible, and prepare for potting all plants that require a shift towards the end of the month. Commence first with hard-wooded Heaths; half specimens and full-grown plants that require more root-room ought to be moved into pots four inches larger than those they at present occupy, for it is not desirable to re-pot these

plants oftener than can be helped. See that the ball in all cases is sufficiently moistened before potting, so that watering may be avoided as long as possible after re-potting. All newly-potted plants should, therefore, be set at one end of the house, and do not admit more air at that end than can be avoided for three weeks or a month, keeping, at the same time, the stage damped with the syringe. Where there is not the convenience of separate houses for Heaths and for other kinds of hard-wooded plants, but where all have to be grown together, the Heaths ought as far as possible to be kept at one end; at which, except after recent potting, admit more air. After the potting of the Heaths is finished, commence with the other hard-wooded stock, using peat a little more fibrous, or what is known amongst plant-growers as softer, than that which is used for the Heaths; operating, in other respects, as recommended for the Heaths. Any additions that are intended to be made to the young stock of hard-wooded plants ought to be made forthwith, and all that require it potted on, giving to such two or three inch larger pots, according to the condition of the roots of each individual plant. All the plants, young and old, ought to have the potting completed as expeditiously as possible after it is once commenced; as then the whole can have what extra attention they require.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Early Flowers.—It may interest some to learn that I have had *Triteleia uniflora* in full bloom in my conservatory since the middle of December. It is extremely delicate and pretty, and deserves to be better known than it is. It has been figured by the late Sir Joseph Paxton, in his *Botanical Magazine*, vol. xi., tab. 101, under the name of *Leucocoryne aliacea*, but I consider it to be simply a pale-blue form of the hardy bulb just named. It has, however, altogether a slighter and more delicate habit of growth than the common form of *Triteleia*, and comes into bloom quite a month earlier than it, as pots of the latter which have been left undisturbed since last season's flowering are now just coming into flower. Another most beautiful early blooming bulb for greenhouse pot culture, but which is likewise, I believe, perfectly hardy, is the lovely purple Iris, with a bright golden lip, known to horticulturists as *I. reticulata*.—W. E. G., *Belgrove, Queenstown, Cork.*

Solomon's Seal for Forcing.—This is nearly related to the lily of the valley, and is also a native of Britain. It used to be common in old-fashioned gardens in shrubbery and herbaceous beds; but I am afraid the present bedding system has reduced the stock of this as well as of many other useful old plants. Whoever has plenty of it has a grand plant for forcing in masses for the conservatory. It does best in not less than ten or twelve inch pots. It grows about two feet high, and as it has large fleshy roots, care must be taken not to break or bruise them in potting.—E. HOBDAY, *Ramsay Abbey.*

Plants on Staircases.—In the subdued light of ordinary staircases it is only plants of bold and massive foliage that produce a suitable effect. Plants in such situations are generally, on entering the hall, seen with the light behind them streaming down from the window on the first landing; in which case, all the foliage, as seen from the hall, appears dark, and the form of the foliage, if of a bold character, defines very strikingly against the light. I have seen very fine artistic effects produced by fine plants judiciously placed about staircases and landings, where there is room, especially if the space admits of the distribution of the large plants of American aloe being so distributed during the winter months, when they are taken in for protection, after having done duty during the summer months about the lawns and terraces. The stiff and finely formed leaves of plants of this, and some other classes which might be named, harmonise well with the architectural features, which, in ordinary houses are generally somewhat more developed in the hall and staircase than in the other parts.—H. N. H.

Rose Rendatler Pelargonium.—It may not be generally known what a useful plant this is for winter flowering; its bright pink flowers are brighter now and of a better shape than they are in summer, and they are also produced very abundantly. I have a house half full of it, that has been a mass of flowers for the last three months. The cuttings were struck late in spring, and grown in the open air in six and eight inch pots; not plunged, but placed on bricks, and in September were removed to a light, airy house, where the temperature is not allowed to fall below 40°. The plants are now many of them perfect little specimens, fit for a dinner-table, with five or six fully developed trusses on each. I have given many other kinds a trial for winter flowering, but never found another half so good as Rose Rendatler. This I have grown and watched five or six winters, and it has never failed.—Wm. Taylor.

Line a Foe to the Camellia.—One fact connected with the cultivation of the camellia must not be omitted, and it is this: it will not grow in soil from the limestone formation; like the rhododendron and other American plants, it seems to abhor lime. In tough fibrous loam from the sandstone formation, taking the fine soil out, using it rough and making it as firm as possible in the pots, it will grow like a willow; and the same may be said of it in such upland peat—poor as it is—as may be procured upon most parts of Sherwood Forest. This laid up for a few months to rot, and then broken up to the size of pigeons' eggs, and the fine soil taken away, is as good a soil as need be used for the plant.—Notts.

Dielytra spectabilis.—This beautiful hardy plant, introduced by Mr. Fortune some twenty-five years ago, is not only one of the most brilliant plants for the herbaceous or mixed border, but it is a grand subject for forcing for conservatory decoration. All plants that are forced early are better for being established in pots some time before they are subjected to heat; therefore, if not potted till late in the autumn, do not push them on too eagerly the first season, and after they have done flowering place them in a cold pit to finish and mature their growth. The following winter they may be had in bloom easily by Christmas. After two or three years' forcing, if any of the plants look weak or spindling, divide the roots and plant them out in the reserve border to increase stock, and to gain strength for future use. It is a good plan to divide and plant out half the stock every year, reserving the strongest for the earliest bloom the following season, and potting a like number from the reserve bed to force in succession. When blooming is over let them have the same attention with watering, &c., till the growth is matured; then plunge them in a coal-ash bed for the summer; neglect in this particular may injure their blooming capabilities for the following winter.—E. HODGKIN, *Rushmore Abbey*.

Climbers for a Cool Fernery.—Will you kindly give me the names of free-growing evergreen climbers, to plant in a fernery not artificially heated?—C. P.—[If the fernery be not much shaded, and there is no reason why it should be, any admired kind of greenhouse climber would do in it, from the splendid *Tecoma Van Volxemi* to the *Lapagerias*. The hardiest of the passion flowers would do well; so would fuchsias trained against the roof, and allowed to hang down. Indeed, a good plan would be to use no shading material except that afforded by the climbers, which might be allowed to cover the whole of the roof. The climbing ferns *Lyg. ams* should not be forgotten, nor the creeping fig, so useful in the fernery. A very small Japanese form of the creeping fig—a gem-like miniature of the common *Ficus repens*—will prove a great addition to our ferneries. We saw it in Mr. Hogg's garden at New York last year.]

Lily of the Valley.—Having read the article on the treatment of Lily of the valley in pots, at page 168 of THE GARDEN, I beg to ask any of your readers whether they experience any difficulty with plants treated as recommended there coming into bloom in autumn? My reason for presuming to inquire is because I have seen plants that had been forced about Christmas, and treated in a similar manner, throw up flower spikes from a few of the plumpest crowns in each pot during autumn, without being removed from their summer quarters. Now, without saying whether the flowers so thrown up are useful or not, I may just remark, what is no doubt well known, that it renders them more or less unsuitable for winter flowering.—AN INQUIRER.

Plants for a Greenhouse with a North Aspect.—I am very desirous to grow a few plants to make a small greenhouse gay during the year. The drawback is the aspect—it faces the north. Would you kindly favour me with a list of plants which will thrive in the shade in a greenhouse?—F. S.—[Aspect alone should not defeat you, if the light is not much shut out from other causes. Perhaps some of our correspondents will kindly help you.]

THE PROPAGATOR.

THE ART OF GRAFTING.

(Continued from p. 213.)

GRAFTING under glass requires certain accessories, such as pots, composts, mats, screens, canvas, coverings, &c., although the stocks grafted are intended for future culture in the open air. When the young grafts begin to vegetate, stakes, osiers, and rushes, are indispensable auxiliaries. The stakes are made of small branches or twigs of resinous trees, or of willow, poplar, chestnut, &c., cut in different lengths. These are more manageable than stakes made of split wood. They will last for a long time if plunged, when fresh cut and prepared, into a bath of dissolved sulphate of copper (bluestone), made in the proportion of about one pound of the sulphate to four gallons of water. Saplings more or less branched will answer for staking young grafts on strong, well-grown stocks. These should be treated with sulphate of copper like the others. The solution may also be applied with advantage to mats, canvas, hot-bed frames, &c., as anything so treated will be secured from the attacks of insects, snails, or other vermin.

OSIERS (*Salix purpurea* or *S. vitellina*) are cut in winter from pollards. They are used, either fresh or dried, for fastening stocks or branches to the stakes. They are sorted in sizes, tied in bundles, and put in a shady, dry place. They should be soaked in water for at least twenty-four hours before using.

RUSHES (*Juncus diffusus* and *J. glomeratus*) are used for tying up young herbaceous scions to the stakes. When the scion becomes woody, the rushes will not be sufficiently strong, and must be replaced by osier twigs, strips of lime bark or willow, bast mat, or the leaves of the reed mace and bur

reed. Rushes are gathered in summer, dried moderately, and laid by in a loft. They require to be steeped in water for only a few hours before using.

STOCKS AND SCIONS.

RAISING THE STOCK.

FIRST STAGE.—The plants intended for stocks are obtained either from seed, layering, or grafting. A sucker does not answer so well, as the operation of grafting and its consequences have a tendency to excite it to produce suckers.

SOWING.—Seeds should be sown as soon as they are ripe:—1st, from April to June; 2nd, from August to October. If it is not convenient to sow them immediately, they should be placed in a shallow vessel, in alternate layers of seed and sandy soil, and laid by in a cellar. When they begin to germinate, they may be sown in the open air. The soil of the seed-bed should be well pulverised and carefully cleaned. The seed may be sown either broadcast or in rows, or in holes. When it is small in size, or near germinating, or when the season and the soil are cold, it should be but slightly covered. If sown too thickly, the seedlings will be puny; if too thinly, they will remain short and sprawling. The vigour of the plant and its ultimate destination, should be taken into account. If the sowing has been too thick, it should be judiciously thinned out in summer. Earthing up, watering, weeding, destroying insects, and keeping off birds, are matters requiring some attention.

LAYERING.—This is performed in spring, summer, or autumn, with woody or herbaceous branches not separated from the parent stem, around which a small trench is dug at a short distance. Into this the strong and healthy branches are pegged down, then bent abruptly, and the end turned up vertically, and cut off, so as to leave a couple of eyes above ground. The trench is then filled up with good soil. In *multiple layering*, a branch is laid down from the parent stem horizontally in a trench. This branch should form a number of young herbaceous branchlets about three or four inches long. Each of these will take root, and in autumn may be cut away as a separate plant. Kinds that are slow in sending out roots should have an incision made either lengthways or across, immediately under an eye on the part that is put under the soil. Tender kinds and evergreens should be layered in pots. In all modes of layering, the layer should be separated from the parent plant as soon as it is well rooted. It is then taken up, and planted permanently in the nursery.

HILLOCK LAYERING is used for the quince, the Paradise and Doucin apples, the plum, the fig, the hazel, &c. The stock is cut down level with the ground; in summer, a small mound is raised about it, and the ends of the young shoots are pinched, which excites them to throw out a number of rootlets. In autumn the mound is cleared away, and the young stems which have taken root are separated from the stump, and planted out. If a shoot should be badly rooted, it should be earthed up again until the following year. Stumps may be thus layered every year, or every second year.

CUTTINGS.—Pieces of branches or of roots, when placed in the soil, take root, grow, and form a new plant. These pieces, if of branches, should be from ten to sixteen inches long, and have one or more eyes. If of roots, they may be from two inches to six inches in length. Cuttings of branches are planted in spring or in autumn, and at this last season should be planted at once, as soon as they are prepared. If planted in spring, they should be prepared during the previous winter, when they should be cut, and buried vertically, upside down, in a trench deep enough to cover them completely. When spring arrives, they are planted out in their natural position, and so as to have one or two eyes above ground. Kinds that are inclined to throw out underground shoots, like the Manetti stock, should have all the eyes removed from the part of the cuttings which is buried. A cutting with two eyes should be completely buried in the earth in a vertical position. This is a good plan for subjects of a tender kind, which do not bear frost well, as the vine and the fig. Instead of a shoot, a thick branch or a stem may, in some cases, be planted as cuttings, and will take root. The poplar and willow succeed in this way. Root cuttings consist of pieces of

root from two inches to six inches long. They are planted in trenches in a shady place, in such a way that a very small portion of each cutting is exposed to the air. Short cuttings which have not more than a single bud are planted under glass in a cool place. Cuttings of evergreens succeed best in this way. Transplanting consists in taking up young plants, and replanting them in another place for a time, with the view of developing the fibrous roots and strengthening the neck of the plant. It is chiefly practised with plants raised from seed, which are transplanted after the first year's growth. Seedlings of resinous trees and evergreen shrubs should be transplanted between the middle of August and the end of September, or between March and May. Seedlings of deciduous trees should not be removed until the sap has gone to rest, and in their case only can the stems and roots be cut too long. Transplanting is done with a dibble, in rows of about eight inches apart, with a distance of four inches at least between the plants. After a couple of years, the plant will be sufficiently grown to be removed to the nursery or to a permanent position. By planting it at once where it is intended to remain, we avoid both the cost and labour of a future transplanting and the delay, as well as the chance of failure. Careful nursery treatment is almost indispensable for very young subjects, which require continual attention in culture and pruning.

THE NURSERY.—This should be in a favourable position, well aired, well drained, and having good, easily worked soil. Porous soils, which are liable to be always too dry, should be avoided if possible, as also should those that are too compact, as they retain the water on the surface. As regards the improvement of the soil in a nursery, a mixture of vegetable mould is preferable to manure off the dung heap. A tree raised in soil richly manured is better than one grown in bad soil, but inferior to one grown in good natural soil, composed of various elements. The ground is broken up before winter, and the soil and compost mixed together in the trench, and not deposited in layers. Stones, roots, and weeds are removed. When the season for planting arrives, all that has to be done is to level down the soil, giving it a second and final turning. Although we are not partial to the use of dung-heap manure in nurseries, nevertheless, soils of inferior quality must be improved by the addition of slowly-decomposing materials, which will impart to them the elements in which they are deficient, and secure a vigorous growth to the plants. Such are road scrapings, deposits of streams, stable refuse, old mortar or plaster, garden rubbish, old bones and horns, cinders, parings off meadows, sand, &c., all which are to be mixed and spread long before the time of planting.—*Charles Baltet.*

(To be continued.)

AURICULAS FROM SEED.

ONE frequently hears of want of success in raising Auriculas from seed, the fault, as a matter of course, being usually laid to the seed. It is, perhaps, not generally known, that more than ordinary care is necessary to insure success; and this being the case, a few practical hints may be useful to those who take an interest in raising seedlings. As already stated, Auricula seed is a very precarious crop to raise, and much depends on the time of sowing and the treatment given. About the middle of January is the best time for sowing. The seed should be sown in well-drained pans, using rather a light soil, making the surface quite smooth, and distributing the seed very regularly; then pass a little of the soil through a very fine sieve, but only just sufficient to cover the seed. The pans should be placed on a very gentle bottom-heat, and the soil should be kept moderately moist, taking care never to allow it to get either too wet or too dry. In about four or five weeks most of the young plants will have made their appearance. The pans should then be removed, and the young plants hardened off by degrees, very gradually, but still keeping them in rather a warm situation till the end of March. It will then be necessary to remove them into a cold frame. Whenever the weather is favourable, plenty of air should be given, and they must be kept shaded from the sun. As soon as the plants are large enough, which will be about the end of April, the largest of them should be taken and pricked out into other pans, at about two inches apart. During the summer months they should be placed in some shady situation, and kept well watered, so as to maintain them in a growing state. By the end of August

the plants will have made great progress, and many of them, especially of the alpine varieties, will again require to be removed; these should now be potted singly into middle sixty-sized pots, and most of the stronger ones will flower the following spring, a result which plainly shows the great advantage to be derived from this mode of raising the seed, which forces every live grain into vegetation in a few weeks, whereas by the method generally adopted, without the aid of bottom-heat, a great portion of the seed does not even vegetate till the second year, and the weaker seeds seldom vegetate at all.—*J. Ball, Slough, in "Florist and Pomologist."*

PUBLIC GARDENS.

THE BOTANIC GARDENS IN THE REGENT'S PARK.

Few public gardens were ever made on less favourable ground than that of the eighteen acres, the site of the Botanic Gardens in the Regent's Park; and no public garden of the same size has, notwithstanding very obvious defects, been more admired for the excellence of its design. If we cannot include it in the series of articles on the "Great Gardens of Europe," commenced in our last number, we should find it difficult to name one so efficient in preserving the taste for the true art of garden design among us. We have often before spoken of the deceiving nature of plans; but we never felt it more than on looking at this. The most charming feature of the place is its full, easy breadth, notwithstanding the numerous divisions into which, for various purposes, it is cut up; yet no sufficient idea of this is to be got from the plan. There is another feature in which this garden excels: one, however, of no importance to any but public gardens—we mean its fitness for flower shows and the reception of crowds. As many as 17,000 persons have endeavoured to find room on its pleasant little lawn; and even now, notwithstanding the many counter attractions at Kensington, the Crystal Palace, and elsewhere, it is universally admitted that, for arrangement and for securing the enjoyment of both visitors and exhibitors, no place as yet equals "The Park." It will be the Society's own fault if it loses this pre-eminence. Other gardens laid out with the same aim are models of what to avoid.

The central part of the Botanic is a graceful, free, and natural looking scene, the boundary of which is more like that of a sweet little vale than of what was once a flat circle a little larger than the round pond in Kensington Gardens, and now inclosed by a ring fence and wide road. This and other parts of these gardens help to teach what would appear to be known to but few—probably because a contrary doctrine is practically illustrated by numbers of landscape gardeners—that simplicity of treatment, ease of gradation, and a quiet green foreground, are the soul of an art on which the beauty of the country seats of England so much depends. Such sweeps of ground require only the details of the picture to be properly worked in, the planting to be as free and varied as the scene, to be delightful to everyone who seeks repose or amusement in a garden.

The broad walk down the centre of the garden, and which might be avoided in a private place, rather cuts up the scene; if the whole surface were green, we know no spot in a public garden which would so well illustrate the wisdom of preserving near the house, or chief point of view, an open verdant foreground, and working in the more ornamental details some little distance off, instead of crowding beds and colours all under the windows.

If we next turn to the east side of the gardens, where the artificial water is, equally agreeable glimpses are obtained. The water itself is well managed. The surrounding slopes and banks do not seem to be hybrids between railway banks and ditches, as is very often the case, but fall and dip into the water as they usually do in nature. The well-planted mound, which presents such an agreeable appearance from any part of the garden, but particularly from the water side, has been formed out of the soil dug from the lake, and is a good example of the best course to pursue in the not uncommon case of trying to obtain diversity of surface by using the soil from excavations. Much improvement might be made in the details of the planting, but as a whole the effect is excellent, except when the eye takes in the botanical department.



ROYAL BOTANIC SOCIETY'S GARDENS, REGENT'S PARK.

REFERENCES TO PLAN.

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| 1. South or principal entrance, Drinking Fountain. | 22. Gardener's Office, &c. |
| 2. Covered seat. | 23. Gardener's Cottage and Workmen's Gate. |
| 3. Museum and Lecture Room. | 24. British Plants, arranged according to the Linnaean System. |
| 4. Secretary's Office. | 25. Medicinal and Economic plants, arranged according to the Natural System. |
| 5. Secretary's House. | 26. House for Economic Plants. |
| 6. American Garden. | 27a. Dicotyledonous Herbaceous Plants, arranged according to the Natural System. |
| 7. Italian Garden. | 27b. Monocotyledonous Plants, arranged according to the Natural System. |
| 8. Ladies' Cloak Room. | 27c. Meteorological Instruments. |
| 9. Retiring Room for Gentlemen. | 28. Hardy Ferns. |
| 9a. Rose Garden. | 29. Choice Evergreens. |
| 10. Napoleon's Willow. | 30. Larger Mound and Anemometer. |
| 11. Exhibition Ground for Fruit. | 31. East Gate. |
| 12. Exhibition Ground for Plants and Flowers. | 32. Road leading to Chester Terrace. |
| 13. Rockwork. | 33. Road leading to York Gate and St. Marylebone Church. |
| 14. Conservatory. | 34. Footpath to Hanover Gate and St. John's Wood. |
| 15. Flagstaff. | 35. North Entrance, under cover, to Conservatory. |
| 16. Workshops. | 36. Limestone and Fossil Wood from Portland. |
| 17. Centre of Garden, 117 ft. above Thames high water. | 37. Lake. |
| 18. Victoria House and Propagating Houses. | 38. Orchestra. |
| 19. Refreshment Room. | |
| 20. Reservoir of Water. | |
| 21. Vane. | |

This, as usual with botanical departments, is not lovely, and there is a considerable portion of ground devoted to it. Such arrangements are usually supported by the State or by universities; in this case considerable expense and precious space are devoted to it by a society. There is probably no garden in existence which supplies so many specimens for lecture purposes. The greater number of botanical lecturers in London sweep down upon it for specimens. From not one of the institutions to which these belong does the Society derive a farthing of support; yet such an institution as Trinity College, Dublin, maintains at very considerable expense a botanic garden to do that for itself which the gardens in the Regent's Park do for the lecturers and students of a number of different bodies. The Society, though nominally botanical, exists solely from its horticultural attractions; and, while it is well to do as much as possible for science, the wisdom of keeping such a large area of the gardens covered with uninviting formal arrangements may well be doubted. The specimens for lecturers could be grown anywhere; and considering the large space of ground at Kew, and the fact that that great institution is supported by the State, it surely is the place to furnish the many thousand examples required for such purposes in London, and not the very small gardens of a society the finances of which are far from being in a flourishing condition. It would, without doing away with the hardy plants, be very easy to improve this part of the gardens by laying it down in turf, and in a comparatively small group of beds, preserving the finest and most characteristic only of the herbaceous plants.

The conservatory here is a type of what a conservatory in a public garden should be—curvilinear, with abundant light on all sides, and permanently and well constructed. It is on the whole much better for growing and showing plants than any large conservatory erected near or in London of late years. The plan of growing nearly all the important plants for this and like structures in pots and large tubs is a very expensive and mistaken one. The best plan is that seen occasionally on the Continent—that is, of throwing the whole surface into a miniature garden of the picturesque style. This can be done with perfect success by concealing pillars, roof, and sides with suitable climbers, and by planting out only things of graceful habit, like Palms and Dracænas. The planting-out system for the conservatory has in this country generally fallen into discredit, because Acacias and rapid-growing New Holland plants were the subjects usually tried. These soon ran up to the top of the house, sometimes lifted out the panes of glass, became very scrubby underneath, and even less graceful than the exhibition of small plants in pots which have supplanted them. If the planting-out system were well carried out here, and as far as possible in the addition that is now being made, it would prove a very beautiful winter garden. At present it, like nearly all the other great structures in the country, shows that we have not yet reached the stage in which we see the necessity of studying general effect as well as securing good plants. In connection with this subject we may refer to the remarks of Mr. Baines and M. André, and we hope soon to publish a view showing the effects of a fine house in this style.

As to the other houses here, little can be said in their favour. They are entirely unworthy of a society which should, if anything, set a good example in plant cultivation and arrangement. In London some of our most important branches of gardening are pursued under such difficulties, that it is far wiser to give them up as hopeless. But there is one branch that can be done as well in London as anywhere else—the culture of hot-house plants of every type. Our best collections of these plants are in London. This is the type of vegetation which the Society should take pains to develop. A dozen first-class roomy and well filled houses would do much to increase the popularity of the gardens. It is the more to be regretted that this branch is not attended to, when it is considered that the great nurserymen of London are always willing to present public gardens with their new plants, so that there would be no cost for these.

Building a number of roomy houses is, however, a mode of improvement depending entirely on monetary, not artistic, considerations, and therefore it is not fair to blame the Society for this want. But as much improvement is sometimes effected

by the removal of puerilities, eyesores, and absurdities, as by the creation of costly works. Examples of this truth could be pointed out in several of our public gardens. Here, for example, the small Italian garden, marked 7 in the plan, lying between the admirably designed show tent and American garden, the "rockwork" in the British garden, and a peculiar variety of succulent house in the medical garden, are among the flaws which it would be wise to put out of sight. It is almost needless to add what everybody knows that the design of the gardens is the work of Mr. Robert Marnock. He also designed the beautifully-arranged show tent which has enabled us all to see and enjoy the delightful assemblage called a "flower show" to the best advantage. The first of its kind, the influence of this admirable tent-garden is now everywhere extending, and no doubt all our great shows will one day be arranged on the same principle. There can be no question that it would be very difficult to make more of, or to vary more, such a very small space of ground as the site of the Botanic Gardens in the Regent's Park.

The Society has recently effected a very desirable improvement in making a new covered entrance to the winter garden (see 35 in plan); we trust that it may be enabled to effect every other change necessary for the continued well-being of the gardens, and that it may long remain the most charming and popular oasis in our great desert of brick.

A GOSSIP ABOUT GARDENING.*

BY ALFRED SMEE, F.R.S.

ABOUT two thousand years ago, the great poet Horace said that the height of his ambition was to have a garden with a crystal stream running through it, and also a small wood. That also is my case; and my wish, as I suppose his was, has been gratified. Every plant, as most people know, requires light and heat, more or less; and unless it has these it will not grow. It would be in vain to try to grow the sugar-cane in this climate; it would be equally vain to try to grow the geranium in Jamaica. The sugar-cane would not have enough heat here, and the geranium would have too much in Jamaica, so that in either case the plant would perish. The right temperature under which plants will grow must therefore be determined. When I was at Florence, I was told Alpine plants would not grow there, the climate was too hot. Heat and light must not only be applied to every plant, but the plant must rest, and then grow, and then rest again. Rest is as necessary to a plant as it is to man, and many of our plants are not able to be successfully grown because we are not able to give them their precise intervals of rest and growth as in their native homes. Alpine plants in summer are exposed to the full heat of the sun, and in winter they are kept warm by a thick covering of snow. But besides light and heat, there must be at certain times moisture in the air, and unless you are acquainted with the proper time to apply moisture and to withhold it, your indoor garden will be a failure. In the case of the vine, for example, when the leaves are expanding a damp atmosphere is necessary; as its fruit approaches maturity, the atmosphere is gradually dried; and when perfection is attained, we give all the air and light we can, and a much drier atmosphere than before.

Electricity was once thought to exercise considerable influence on vegetation, and experiments have been instituted to ascertain, if possible, its effects on growing crops. We see what it will do in the violent discharge which takes place in a thunderstorm; if a tree is struck, the lightning goes down it just under the bark, and then jumps to the ground where it is wet or damp so that the bark of the tree is peeled off; and this is one of the common effects of an electric discharge on a growing tree. I have the figure of one which was struck in the grounds of a friend of mine. It stood in a field where some hurdles were placed, and the electric discharge could be traced from the tree to a point where these hurdles entered the ground. This may be taken as the effect of lightning upon a tree. Those stories which we hear of trees dying because struck by lightning are merely fables; and as far as I have seen, in many instances, the effect which is produced is that the bark is thrown off and torn and loosened all round the tree. With regard to the immediate effects produced by electricity on the growth of plants; nothing is known, and in my opinion it has no important effect on vegetation at all.

We know how to grow our plants; but how are we to obtain them? In the first place, from seeds. But what do we thus obtain? A plant of a like species to that from which the seed came. Of a

* Abstract of a Lecture delivered impromptu at the London Institution.

like species vary somewhat. There are certain limits to variation, but those limits are marked. Take the wild crab, which is so acrid that you cannot eat it, compare that with the ribston pippin. There is a wide difference between them, but within the limit of variation. Take a wild pear, compare that with the delicious pear of the present day, and the variation is enormous, yet it is within the limit of variation, and horticulturists have never found that one species transforms itself into another. But how shall we propagate such improved varieties as turn up by accident or by means of high cultivation? In the first place, it may be done by layering, by which we get a part of the original plant with roots of its own, or by grafting, in which, to be successful, you must bring the new wood of the one against the new wood of the other. By this process we multiply any trees that we like upon another stock.

Again, the same individual may be propagated by cuttings, by division of bulbs, or by that of roots. In short, the point is this: When we want to preserve any particular variety, we must not resort to seed, which may give us a plant different from the parent. Now, having considered the chief points upon which horticultural operations are based, I should like, in imagination, to take you round my garden; and first, as to vegetables. You know it has been said that more people have perished from want of vegetable food than have ever perished in battle. Therefore, what vegetables should we grow? To my mind, the king of vegetables is the watercress. To have it at its best, it must be grown in a pure stream, which ought to come from the depths of the earth at the temperature of 52°, and then ought to run over a clean pebbly bed. To start, you take a handful of watercresses and put a stone upon them, then another, and so on, until you have covered the space on which you want them to grow; and then, if you pick them fresh from the brook, they are one of the most wholesome vegetables which the country can afford. But you often see them grown upon the verge of sewage beds; and then consequences may arise from eating them which are too serious to contemplate. You have heard of the terrors of the tape-worm; you know that it may consist of two or three hundred joints, and that each of these may contain about thirty thousand ova. If you consider that these are common in the sewage beds, and that they are so distributed to the watercress plant, and if you consider that they are thus taken into the animal economy, you may judge the danger there is in using watercresses, and the necessity for preventing their sale under such circumstances. When they are sold in the neighbourhoods of large towns, the danger is much greater than those who eat them are aware of. We cannot all, perhaps, get perfectly pure and fresh watercresses, but I can. My crystal brook comes to my aid. However, mustard is always at hand. In the shops we buy what is called mustard; but we get rape. These are much alike; but there is a difference in their quality. I will not, however, detain you with salad plants; but I wish to say a word about absinthe, which is a dangerous plant. Absinthe is now drunk enormously in Paris, and I have consulted medical practitioners in France, who say that many brain diseases and epileptic fits are produced by taking this pernicious herb. Therefore, if you have it, have it merely to show persons, that they may not introduce it into this country.

From vegetables let us pass to fruit-trees. I have already told you that apples are mere varieties of the wild crab. But these varieties are very numerous; I have myself more than three hundred kinds. Now, with good management, we ought to have an apple for every day in the year. You begin with a little apple that ripens in July. You go on step by step until you have apples ripening at Christmas. You go on again until March, and then you still have apples—for there are some which do not become ripe until March—and we finish off with the French crab in June, which is not only in perfection then, but will last over a second year; and so, by a little careful adjustment we may have not only culinary, but also eating apples all the year round. About from thirty to forty kinds are amply sufficient for this purpose. Then we come to the pear; but pears are either very fine or very bad, and we must make a much more careful selection. If we begin by the end of July with a small early pear, and go on from one to another, we can have fruit well into the winter. "He who grows pears grows for his heirs," is an old saying. Virgil says, "Plant pears and thy posterity shall gather the fruit." But we know now how to get them much sooner. We cut off the shoot of a pear, and "plant" it upon a quince. By grafting in this way we render the pear tree fertile, and then in a year or two we get fruit which we might have had to wait twenty years for if the tree had been grown in the ordinary way. It is to be observed that the quince stock should be cut off close to the ground, not under the ground, or else the pear will throw out roots, and you will be no better off than if you had planted the pear tree itself. Having planted our pear trees, we must train them in a particular way. We therefore cut the branches into the form of a pyramid, as near

as may be, to look like a Jack-in-the-Green. Every branch is thus exposed to the sun and light, and upon every branch there we get pears. We pass now from pears to plums, and from those to grape vines, and on to nut trees, where you must notice the two blossoms, one, the catkins, being the male, which comes out early in January and February. The female is a little red flower, which is overlooked by most people; but I need scarcely say that both males and females must be present in our plantations, or there will be few nuts.

As for plants, I am, like everybody else, a lover of ferns. Fern roots do not like to be soddened in water and do not like to be dry; now you must find the happy medium. They should be never dry, ever moist, and yet neither too dry nor too moist. The best way to manage that is to plant them upon a bank. And what happens? There is always moisture draining through the earth, and the wet is always running away from the roots, and if you plant them in that way you will have as luxuriant specimens as are to be seen anywhere. Now ferns, you know, as a rule like a little shade, not too much however. There are some which will bear the full blaze of the sun. The *Osmunda regalis* and several other ferns bear well the light of the sun, but next in order we come to those delicate ferns which will not bear so much light, and these we must put in another situation. I have never succeeded in growing the fern of Tunbridge Wells, out of doors. It is most delicate, and is altogether a most charming plant. But the way I can manage, with most perfect success, is to bury in the ground a little square box, put in the fern, and then put a piece of glass over it; that is sufficient to protect it from the wind and to keep up a continual moisture, and it never gets materially frozen, and so, many of these tender ferns may be grown in perfection. I have grown in this way that wonderful fern which was discovered by Captain Cook in New Zealand, the *Todea superba*; so you will see what may be done by a simple protection of glass. Sometimes we adopt other plans, we make a little pocket for the plant by putting two or three stones round it in a little hole, and so it has the advantage of full light and air and yet is protected. There are many exotic ferns, however, which will grow out of doors as well as the English ferns, but we carry their outward growth to a greater extent by housing some of the delicate ones in the winter and putting them out of doors in the summer. In this way the large tree ferns will grow, and show their forms remarkably well. To go into my fernery in winter when all there is beautiful and green, and then to come out and regard the snow and ice, and naked trees, is an effect which is as remarkable as it is beautiful. Of alpine flowers I have many hundreds. They can be grown with perfect success on one condition, that you allow no one to dig amongst them, and that you leave them carefully alone as soon as they are established. I know of no greater pleasure than to select your flowers on the mountain and bring them home to plant in your garden, and then to see them as reminiscences of the beautiful scenes you have before seen. My alpinery is a very delightful place to me. I always go there to see what flower is out; the last was the Lily of the Field of the Bible. Then there are the Saxifrages, and the Grass of Parnassus, which was thought so beautiful as to be dedicated to the Muses. Then there is another plant in the alpinery which I must notice, the *Linnaea borealis*. It is the smallest of all the honeysuckles, and that great naturalist, Linnæus, chose it as a type of himself, because it had so lowly an origin. He obtained permission to use it as his coat of arms. It is a very scarce plant, and I can hardly describe the pleasure I have found in seeing it in a wood in Aberdeenshire. We are not restricted to foreign plants, our very woods and fields are beautiful with flowers. There is no more beautiful plant than the marsh marigold; to see it growing in spring, is a sight not to be forgotten. Its perfection of form renders it a plant which is one of the beauties of our streams. The purple loose-strife which grows by the banks of the Thames renders them a perfect flower garden. When we find the wild digitalis, the wild violet, the wild honeysuckle, and many other plants, we may say there is a beautiful flower garden in our woods. I was never more struck than when I saw some drawings of some wild flowers; I found that we had put aside for our garden flowers others which had higher claims. The time has nearly run out, but am I not to speak of my orchids, my bees, and my flies? Am I not to speak of the man orchid, which looks as though a little man were dangling from the flower? This is to be found within a few miles of London. The curious fly orchid is not far off and must not be forgotten. The dove orchid has in its flower a figure of a dove, spotless as ivory. It is looked upon with considerable superstition by the Spaniards in Central America where it grows. I cannot describe the many beauties we grow, and it would take much longer to describe the plants. A garden must ever be a source of pleasure to a man: it helps him over his troubles, soothes his nervous system, and carries his mind from the beautiful things which grow there to the Author and Designer of them all.

THE FLOWER-GARDEN



ROSES AND ROSE CULTURE.

BEFORE I continue my catalogue of those roses which I have proved to be the most vigorous in constitution, and which I specially commend to the young rosarian as most likely, from their "staying qualities," to encourage and extend his ambition, I must reply to the inquiries and observations of my friend Mr. Fish (p. 203), concerning certain varieties already noticed and commended. To hold converse with such a congenial spirit must always be to me a happy employment, and it is so more particularly on the present occasion, because I venture to hope that some readers of THE GARDEN may be interested in the discussion of two veteran florists,—

Arcades ambo,
Et cantare pares et respondere
parati,—

may perhaps learn something from our experience, and be induced to communicate their own.

With regard, in the first place, to *Souvenir de la Malmaison*, of which Mr. Fish complains that, out of doors it is so hard-hearted and unsatisfactory, that he has almost given up growing it, I most earnestly say to him, as *Punch* to persons about to marry, "Don't." Because, although it rarely succeeds at all, and is short-lived at best, upon the briar, and although in a cold or wet summer its first buds are deformed and decayed, it rarely fails when once thoroughly established upon its own roots (in no other form will it prosper continuously) to produce in the later summer, and especially in the autumn, its lovely roses. Being, like all Bourbons, of tender constitution, it must have a good warm overcoat of farmyard manure put on towards the end of November, and then, though the upper shoots may be blackened by frost, it will come out in force from the roots in spring. Again and again I have cut away in March the dead wood from this ancient stump, until nothing was to be seen above ground; but soon the new growth began to break, like heads of asparagus, around; and, as I stated before, plants purchased and planted in 1846 still continue to yield beautiful roses in our cold Nottinghamshire clay. And I have but three more words to say on this subject to my friend, or to any other brother rosarian,—*"Come and see."*

In the next place, and with reference to the two *Devoniensis*, *mère et fille*, my good brother not only accuses me of preferring

the daughter to the mother (an infirmity common to man), but, in his enthusiastic admiration of the older variety, he decries and disparages the new. Let me say, that I only passed over *Devoniensis* senior because the list which I am giving in THE GARDEN is restricted to roses which are perfectly hardy; that I quite agree with him that there is nothing lovelier than this variety in its most perfect phase; and that if any eminent composer will prepare a duet in its praise for myself and Mr. Fish, to sing at the next congress or *conversazione* of the Royal Horticultural Society, I will endeavour to learn my part.

But he is mistaken about the daughter. He can never have seen it, as I and others have grown it, upon the hybrid Bourbon (*Céline*) stock sixteen feet in height, and bearing an abundance of roses, quite as beautiful as the parental flower. It is, as he says, too delicate for outdoor cultivation; and yet I still possess upon a wall one of the original trees sent to me by Mr. Curtis, of the Devon Nursery, Torquay. The proper place for Climbing *Devoniensis* is in a rose house, and then, carefully treated, it is, in April, exquisite. Why they who grow flowers for the London market have not cultivated this rose more extensively I am at a loss to know, unless its blooms are too large for the button-hole.

On the the third count I must plead guilty. I did not express myself adequately as to soil. The sentence should have been, "A mellow loam in which, when it has been double dug, a walking-stick may be readily pushed into it up to the handle." His comments are perfectly just upon the remark as it stood, and I correct my error with apologies and thanks.

And now I must conclude my list of weather-proof roses, too few in number, ere the time of planting be past.

S. REYNOLDS HOLE.



Yucca pendula.

YUCCA PENDULA.

THIS is one of the very best species of the genus, considering its graceful and noble habit simply invaluable in every garden. It grows about six and a half feet high, the leaves being at first erect, and of sea-green colour, afterwards becoming reflexed, and changing to a deep green. Old and well-established plants of it standing alone on the grass are pictures of grace and symmetry, from the lower leaves which sweep the ground to the central ones that point up as straight as a needle. It is amusing to think of people putting tender plants in the open air, and running with sheets to protect them from the cold and rain of early summer and autumn, while perhaps not a good specimen of this fine thing is to be seen in the place. There is no plant more suited for planting between and associating with flower-beds, for isolation or cold groups, on the turf of the pleasure ground, for large vases, and for bold rocky banks.

DESERTED FAVOURITES.

THE WHITE LILY.

AMONG our grandest "old-fashioned" flowers, no garden purite ever held higher rank than the White Lily. It has earned the theme of poets, the model of painters, and has been the symbol of spotless purity, and of youth and beauty, from time immemorial. Among garden flowers it is fairest among the beautiful. Matchless in its snowy whiteness and exquisite form, it seems loftily to disdain the aid of the fairest hues. It would, indeed, be as futile "to gild refined gold," as Shakespeare has said, as to "paint the lily"; for, in fact, colour would but detract from the proud chasteness of this stately flower. It is one of those fine old plants with which we have been associated from our youth, and therefore must not be discarded, even to give place to the golden-rayed Lily itself.

How grandly the tall groups of White Lilies used to rise in early summer among the fine old border flowers, before they were all uprooted and banished to make way for the monotonous, "ribbon system," or geometric masses of less worthy flowers! How much more interesting than such plants, or such a system of culture, were those great clumps of aspiring Lilies that appeared every successive spring on a well-known spot, and with their upright growth contrasted so finely with the horizontal lines of our old, old terrace walls, relieving their monotony by rising above their upper lines, whose course they interrupt with a mass of floral beauty that made the cold sculpture of the marble vases and their pedestals look poor and pale in comparison with the living forms and dazzling whiteness of the sculpture-like flowers!

One cannot wonder that the Lily became long ago an emblem of purity and beauty; nor that, as Chaucer tells us, St. Cecilia's name was derived from *Cœli lilium*, the Lily of Heaven,—

"First I will to you the name of St. Cecilia
Expound, as men may in her story see:
It is to say, in English, Heaven's Lily,
For pure chasteness of virginity."

Shakespeare, as is well known, took many of his happiest similes from flowers; and in the following might almost appear to have foreseen the neglect and banishment of the Lily from our gardens, when he makes a stranger in his own land exclaim,—

"Like the Lily,
That once was mistress of the field and flourished,
I'll hang my head and perish."

There would be no end to quoting all that poets have said

of the "white-plumed" lilies, as Keats called them; but the lines of Ben Jonson, in which he turns the fair image of the Lily to exceeding good account, must not be passed over,—

"It is not growing like a tree
In bulk: doth make men better be;
Or standing long as oak, three hundred year,
To fall a log at last, dry, bald, and sear:
A Lily of the day
Is fairer far in May;
Altho' it fall and die that night,
It was the flower of light."

Nor can Cowper's happily-conceived characteristics of the Lily be omitted; they are so extremely apt, and so like, that they may be taken as an accurate portrait, though by the

hand of an accomplished painter, who always knew how to seize upon the best points of his sitters. It is in his short poem describing the rivalry of the Lily and the Rose that the following lines occur:—

"The Lily's height bespoke command,
A fair imperial flower;
She seemed designed for
Flora's hand,
The sceptre of her power."

Seeing how the most gifted of our flower lovers, our greatest poets themselves, have admired the beauty of the White Lily, we may fairly hope that we will not persist in perversely refusing due court, as of old, to the undoubted queen of border flowers; neither neglecting her culture for weedy novelties nor gaudy masses of glaring pelargoniums (which yet have high value in their proper place). Let, then, the lily once more reign supreme in our flower borders, among many other deserted beauties, whom must be recalled from banishment to form her court. Let not the shortness of her summer career be deemed a defect—her single month of glory is worth a whole summer's bloom of meaner flowers. There is the month of lilacs and laburnums to precede her reign, and the months of roses to follow, and the noble autumn flowers afterwards. There is something more attaching and interesting in the visits of these plants, that come

and lavish their beauty upon us for a golden month, and then bid us adieu till another summer, than in those flowers that bloom on monotonously month after month, lingering with us till their very presence is unnoticed; while the advent of the first lilacs, the first lilies, the first roses, for their brief stay, mark so delightfully the growth and progress of each garden year, from early spring-tide into the midst of high summer, and on to golden autumn.

FLOS.



The White Lily.

Sweet Peas (see p. 162) It has been our practice for a good many years to sow sweet peas in the open ground in November, at the same time as we put in the first crop of edible peas. It is astonishing how much better they flower; and they are quite as hardy as the hardiest of the edible sorts. To keep up a succession, it is as well to sow again in February and the end of March. In this way, flowers of sweet peas may be had from June to November.—D. T. F.

THE FLOWER GARDEN FOR FEBRUARY.

BY GEORGE WESTLAND, WITLEY COURT.

IN re-arranging flower gardens, hardy evergreen shrubs may be employed with the best results; for in the working out of parterre patterns, judiciously disposed groups with graceful outlines, associated with bedding plants, are more effective and desirable than many of the tender subjects now so freely used for such purposes, necessitating as they do the employment of unusual care and fertility of expedients on the part of the cultivator, and often, after all, producing but a small amount of success. One of the most important points in connection with flower garden operations at this season is preparation of the beds and the securing of proper composts; where beds are not planted with spring-flowering things, advantage should be taken of the fallow, so to speak, to which they are subjected to have them deeply worked up and prepared for planting. Upon poor soils, too little attention is often paid to our flower beds, which are kept under crop year after year without taking into consideration that the ground is becoming annually poorer. Flower-beds to be perfectly successful must be treated according to the crop which they are intended to carry. Some things, as for example, Abutilons, Aralias, Cannas, Ferdinandas, Ricinus, Solanums, Wigandias, &c., require a large amount of manure to give them nobility of aspect and perfect leaf development. In preparing beds for these, especially in cold, wet localities, it will be advantageous to place the soil on brick rubble, which will secure good drainage and tend to raise the temperature of the soil a few degrees higher than it otherwise would be. The compost should be used in rather a rough state in order to promote healthy development by gradual decomposition. Hardy Clematises grown as bedding plants should now have attention; their blooming season may be considerably prolonged by pruning them at three different periods, viz., in autumn, mid-winter, and early in spring. Cut back to the ground, and surface-dress with rich rotten manure. This is especially necessary in order to insure continuity of bloom. Fill up all vacancies which may now occur among spring-blooming plants, and pay every attention to securing neatness and order. If the plan for the bedding out of the flower-garden has not yet been determined upon it should now receive immediate attention, in order that some idea may be formed as to what quantities of different subjects must be secured by means of propagation.

Shrubberies.—This is a good time to re-plant and re-arrange masses of the better kinds of rhododendrons, which, when grouped with taste, are gorgeous in the extreme. Their hardiness and luxuriant deep green foliage render them desirable at all seasons; but many, nevertheless, are deterred from growing them from an impression that they do not succeed without peat. No doubt sandy peat is the best soil for them when procurable, but where it cannot be had they will not only grow but luxuriate in a sandy, fibry loam. The most satisfactory plantation of rhododendrons I ever made was one in a sandy loam skimmed from an old wood six inches deep. In this the plants grew and flowered with the greatest freedom; and in the absence of good peat I can recommend this as the best material that can be substituted for it, not only for rhododendrons but for all kinds of American plants; it should, however, be rich in decayed vegetable matter. In preparing positions for rhododendrons resting upon calcareous matter it is imperative to success that the whole of the soil in the beds should be above the ground level, otherwise the drainage from the surrounding grounds will penetrate the beds and destroy the plants. In planting, hardy Azaleas must not be overlooked, their brilliancy of flower and delightful fragrance rendering them most desirable. They may be grown in masses by themselves or interspersed with rhododendrons, or used promiscuously in mixed shrubberies. Kalmias are not so much planted as they deserve to be, for they are amongst the most elegant of plants grown, their charmingly delicate blossoms and dark glossy foliage contrasting admirably with most kinds of vegetation with which they may be associated. They grow freely in low situations, and, moreover, the Kalmia is one of the few plants that game will not molest. Attend to previous directions as to planting and pruning. Common Laurels should be cut down, but under no circumstances should specimen Portugal Laurels be pruned now, as the searing winds we often experience after this time, disfigure the foliage to such an extent as to render it unsightly for months, which late pruning will, in a great measure, obviate.

Pits and Frames.—As soon as plants in these are in a state to furnish cuttings, propagation may be proceeded with in a bottom heat of from 80° to 85°, and a growing temperature at about from 70° to 75°. Shade only to prevent flagging, and give ventilation as the state of the cuttings and other circumstances will admit. Accelerate, too, the growth of such plants as are required to produce cuttings, by placing them in heat. A sure and ready way of

securing a stock of Centaureas is to break out their growing crowns and to lighten the plants of foliage, placing them afterwards in a growing temperature, where free ventilation can be given to prevent "fogging off." Under such circumstances they make shoots quickly which, when fit for handling, should be slipped off with a heel and potted singly in the smallest sized pots; if plunged in bottom heat, they will speedily root and establish themselves. The variegated Polemonium should not be overlooked, and if cuttings are required, bring forward a few plants in heat, which will produce side shoots in abundance that will root freely. Abutilons, Cineraria acanthifolia, Ferdinandas, and Wigandias, &c., should now be incited to grow, pinching out their crowns so as to induce the production of side shoots for propagation. Variegated and flowering Pelargoniums, brought forward in heat, may now be propagated in soil consisting of loam, leaf-mould, and sand, in about equal parts. In the case of scarce sorts, of which the most should be made, take the cuttings progressively, choosing the strongest first. Where the stock of Alternantheras is insufficient, it should have timely attention as to propagation, as they are charming subjects for carpet bedding. The finest varieties are A. amabilis, A. amabilis magnifica, A. amena, and A. paronychioides. A good companion plant for this style of bedding is the trailing Mesembryanthemum cordifolium variegatum, which strikes freely and makes a lovely edging. Seeds should now be sown of Acacia lophantha, Acanthus latifolius, Centaureas, Cineraria acanthifolia, Lobelias, and Cannas. The last, however, do not reproduce themselves true from seed, and therefore cannot be depended upon for anything but mixed arrangements. Keep up the heat in dung-frames by hot linings of stable-manure and leaves, and let out damp and steam by slightly raising the sashes. In cold frames, Calceolarias should be gone over, and stopped back; give air freely to such structures according to the state of the weather.

FAMOUS TREES.

THE MONKEY'S BREAD, OR BAOBAB TREE.

(ADANSONIA DIGITATA.)



HE Baobab is so gigantic in its growth, and appears to live to so great an age, that it has been justly considered one of the greatest marvels of the vegetable world. It was unknown to science till the French botanical traveller, Adanson, discovered it in Senegal, in the year 1749. Michael Adanson (of Scottish descent) was born at Aix, in Provence, in 1727, and was educated for the clerical profession. He had, indeed, already entered holy orders and obtained a Cure, when his original predilections for natural science, which had displayed themselves while he was yet a child, broke forth with such force that he quitted the Church as a vocation unsuited to what he felt to be his ruling instincts.

After studying the principles of botany with enthusiasm, and attending the lectures of Jussieu, Reaumur, and other great naturalists of the day, he set about preparing himself for an energetic career in the profound study of nature in all her various forms; and, as the first step, after the completion of his book studies, he determined to travel. Europe having been, as it were, thoroughly ransacked by the researches of former naturalists, he made up his mind to plunge boldly into Africa as an untrodden field of scientific discovery; and having finally resolved upon this course of action, he confided his project to his father, and to their friend the Chevalier David, who was at that time chief governor of the French Compagnie des Indes. From this gentleman he obtained an appointment at the French factory (*comptoir*) on the Senegal, and, after having stayed some time on his route at the Canaries, Tenerife, and Goree, he arrived in the Senegal River in December 1749, and found himself in reach of some of those vast districts of tropical Africa which had filled his imagination with enthusiastic longings.

He describes, in his "Voyage au Sénégal," his first impressions of tropical scenery with graphic power. "I experienced," he says, "an entirely new set of emotions, such as I had never felt before, at the new and strange appearances of nature which were presented to me. Earth, sky, plants, animals, the human race—all bore a strikingly novel aspect which at once riveted my attention and excited my utmost



THE BAOBAB TREE.

curiosity." In fact, he remained spell-bound during five years, discovering and collecting specimens of an almost endless series of wonderful natural products, entirely new to him as the first explorer of that region, and utterly unknown to modern science. It is true that vague reports had reached France, through ordinary and generally ignorant travellers, of vegetable wonders of an extraordinary character which were said to exist in the prolific region of the French possessions on the Senegal, especially rumours of enormous trees bearing gigantic fruit. But such stories were disbelieved in the scientific world, and contemptuously relegated to the domain of fable, from which it was supposed they had sprung.

Adanson was the first to verify some of the most extraordinary of these floating rumours, more especially that concerning the giant trees and their singular fruit. His description of this discovery is well worth repeating. At the village of Sor, not very distant from the mouth of the great river, he requested the natives, whose language he had made himself partially acquainted with, to conduct him to some part of the neighbouring forest where there was a good supply of game. After being taken some distance through the jungle, by a narrow path which in places passed through matted underwood, beneath which he was obliged to crawl on all fours, he came at last to a more open space, where he was delighted to behold a herd of beautiful antelopes; but he saw at the same moment another object which at once attracted all his attention, and in an instant the antelopes were forgotten. The object was one of the giant monkey-bread trees, an enormous Baobab. It was not the thing of fable which science had hastily supposed it to be, but a living, growing, wonderful entity. "Je ne crois pas," he exclaims, "qu'on ait rien vu de pareil dans aucune autre partie du monde." "How is it possible," he continues, "that it could remain undescribed by all those who have pretended to give us accounts of Senegal? The more especially," says the writer, "as I found it to be one of the commonest trees of that region." In his enthusiasm, he tells us, he at once attempted to measure the girth of the vegetable colossus by means of his fully extended arms. ("J'en fis le tour et tendant les bras autant qu'il n'était possible.") He found that it required thirteen times their length to span the great trunk, and calculating the length of the measure thus used at five feet—he being a small man—the girth of the trunk proved to be, at a part as high as he could reach, sixty-five feet, giving a diameter of about twenty-two feet; dimensions which he afterwards found to be correct by means of a string which he borrowed from the negroes. The height of the tree was by no means extraordinary—he estimated it at not more than sixty feet; but its breadth was enormous. He found that the branches, which commenced at a height of about eighteen feet, extended each way full sixty feet before they touched the ground, giving a total breadth of one hundred and twenty feet; and each of these branches, with its lesser ramifications, would have formed, he says, a monstrous tree in any European forest. He afterwards found trees of seventy-six feet in girth and over twenty-five feet in diameter, apparently at the limit of their growth, which he believed to be extremely slow. The leaves of this vegetable giant are five-lobed, very large, and of a fine deep green. The flowers, which measure about eight inches across, are white, and crumpled at the edge, and somewhat resemble a large Hibiscus flower. The fruit is of gourd-like aspect, and about the size of a man's head. It consists of from ten to forty cells, containing several kidney-shaped seeds embedded in pulp. It is eatable, and has a sweet and not disagreeable flavour. The juice is used as a cooling drink in marsh fever, and is found generally useful in allaying feverish symptoms. The ashes of the wood are used by the natives, in conjunction with palm oil, to make a coarse kind of soap.

Adanson afterwards found, near Cape Verd many smaller Baobabs of about six feet in diameter, which, though still in the growing vigour of early youth, must be of great age, as measured by years; for he found carved deeply in their bark the names of some of the earliest explorers of the West Coast in the fourteenth and fifteenth centuries. This fact will give to these youthful Baobabs an age of about four centuries since the names were inscribed, at which time they must have been already trees of considerable size. From these data Adanson

reasonably enough assigns an age to the full-grown trees which stretches back far beyond the dim ages of our earliest historic records.

After his return to Europe the great botanical discoverer read to the Académie des Sciences a detailed description and character of the Baobab, which Cuvier has pronounced a masterpiece. In ingeniously arranged and minute detail the essay is exhaustive, and leaves nothing to desire. But one portion of the essay is hotly disputed by botanists, namely that referring to the age which he assigns to the largest trees (as calculated by the concentric rings), which he estimates at over 6,000 years,* a period of time so stupendous, that the hesitation of the world of science to accept the calculation may be easily conceived. Yet, if the age of other less wonderful trees is calculated by the number of the concentric rings, and the result is not disputed, why may not the age of the Baobab be calculated, at all events approximately, on the same principle? But this is one of those discrepancies of science which may form the ground of many a good learned fight in the future!

H. N. H.

THE MONTEREY CYPRESS (*CUPRESSUS MACROCARPA*).—I did not say, as Mr. Barnes makes it appear (see page 220), that out of one thousand of this cypress planted near the sea, 999 died, and that one only was left. What I said was, that of the thousand referred to, "few now remained." The group of *Cupressus macrocarpa* to which I alluded was planted about fifteen years ago in well-prepared ground. The plants were about from two to three feet high, and were intermixed with a good assortment of other trees and shrubs, such as *Pinus austriaca*—which is still doing well—*rhododendrons*, *laurestinus*, sweet bays, laurels, &c., all of which acted as nurses. Thus situated, *Cupressus macrocarpa* grew away splendidly for a few years, until 1860-61; they were then about ten or twelve feet high, and the cold, cutting winds of that winter told upon them; they were swept and tossed about till the remnants look like so many broom sticks with the broom uppermost. Of the thousand planted, not a tree died in the first instance, because of the good ground in which they were planted and the good shelter which the other trees and shrubs afforded them. But directly they got beyond this shelter and outgrew it the severe winds were too much for them. For many years past I have been laying out private grounds and public parks, and the Monterey Cypress will always be found therein planted in considerable quantities, but not to "any required extent for shelter," and I repeat my caution as to the use of this cypress for that purpose. Mr. Barnes adds that he could "adduce proofs by the hundred" that *Cupressus macrocarpa* will thrive in an exposed situation. I should feel obliged if he will kindly point out some such localities, giving the number of trees planted, and when. That they will grow nicely for a few years I am well assured; but I am anxious above all things to ascertain where this cypress can be found in any quantity in this country of, say, fifteen or twenty years' growth, and still showing the characteristics of a tree that we can plant with confidence for "shelter to any required extent."—WM. BARRON, *Sketty*.

THE ARBORETUM FOR FEBRUARY.

BY JAMES BARNES.

MAKE all possible progress with trenching, planting, fencing, and draining. See to plants already planted; if blown on one side by the late winds, place them in an upright position: such as require stakes should be furnished with them when planted. Single trees in parks, paddocks, &c., not grown out of the reach of cattle, should have their guards repaired, if necessary, and new ones supplied where required. Pruning, thinning, faggoting, and clearing away of all wood, should be attended to for the next six weeks, where game is preserved, in order that there may be no interference or disturbance during the breeding season. It is often said that it is best to plant larch where pheasants are preserved, as they select that tree to roost on, which is true; but, in my opinion, larches are the worst of all trees for that purpose, as on them the birds are so fully exposed as to be readily seen, either by moon or starlight. Spruce firs are much safer trees, and have a nice appearance in the landscape. Seeding conifers and forest trees should now be transplanted on trenched land, and the seeds of last year prepared for sowing. *Picea nobilis*, which is one of the most lovely of coniferous trees at all seasons of the year, I have raised thousands from seed, and planted them out in various plantations and aspects, and a glorious appearance they are now making; and will continue to make, in the landscape, as they

* On the appearance of Adanson's paper, which is to be found in vol. 61 of the *Mémoires de l'Académie des Sciences*, attempts were made to calculate the age of the world by that of the Baobab.

attain age and size. Male catkins make their appearance in March, and female cones in May, the latter of a greyish blue colour. They increase in size quickly, and are full grown by midsummer, when they measure from eight to eleven or twelve inches in length, weighing down the branches. In September the seed gets ripe, which is indicated by extensive swelling, and a portion of a cone here and there bulging and cracking. If not then looked sharply after, they will very soon fall to pieces, and the seeds will get carried away by the wind. The seeds, which are the size of two barleycorns, are very full of turpentine. They should be sown the end of February or beginning of March on a healthy prepared border or quarter, patted firmly down, and covered with open sandy soil three-quarters of an inch deep. If a portion of charcoal is applied, so much the better. The same remarks with regard to the sowing and sowing seeds of all *Piceas* hold good; for they all produce their cones in spring, and ripen their seed the same summer.

GARDEN DESTROYERS.

APHIDES: THEIR FRIENDS AND THEIR FOES.

BY EDWARD NEWMAN.

(Continued from page 212.)

THE enemies of aphides are quite as numerous as their friends, and quite as constant in their attentions. The principal—or I might say with greater precision, the better-ascertained—of these belong to four different classes: *Aphidius Rosæ*, a minute Ichneumon belonging to the class Hymenoptera; *Syrphus Pyrastris*, a hovering two-winged fly belonging to the class Diptera; *Chrysopa perla*, the golden-eye, a lace-winged fly belonging to the class Stegoptera; and, lastly, ladybirds, *Coccinella septem-punctata* and *Coccinella bipunctata*—these ladybirds belonging to the class Coleoptera.

The first of these, *Aphidius Rosæ*, lays its eggs under the skin of the aphid, and out of the egg proceeds a grub which inhabits the body of the aphid and feeds on its living flesh, consuming the whole until the skin is left a dry husk. This insect parasitism is one of the most distressing phenomena in natural history: only meditate on the state of a living body being devoured, bit by bit, day by day, hour by hour, by a voracious indweller whenever hunger prompts him: only meditate on the fact of this horrible process being purposely and instinctively prolonged by the parasite's avoiding the vital parts, because the living flesh is the only food adapted to its requirements, and because if life once departed decomposition would set in, and the nutritive property of the flesh would be lost: so the victim drags on an enfeebled existence as long as its body has a particle of flesh for its ruthless destroyer to devour. This revolting history is familiar to entomologists; they know that thousands of these indwelling species exist, as if purposely to prevent the too rapid increase of the thousands of species that support them. It has been said that every vegetable-feeding species has a flesh-feeding species to hold it in check, and almost every vegetable-feeding individual contains in the recesses of its body, concealed from all observers, a flesh-feeding individual destined to take its life. The details of this particular instance of parasitism have been carefully observed and ably recorded by the late Mr. Haliday.

The male Aphidius may be seen throughout the summer, creeping about the rose leaves or running rapidly over the backs of a thickly packed phalanx of aphides, as if for amusement; his partner is of a less roving disposition, and confines her excursions to the straight path of maternal duty. Finding herself at birth amid the myriads of plant lice which encircle almost every shoot of the rose bush, she is content to remain there; she has no house to build, no stores of food to provide for her future offspring, no care to take of their education—if I may use that term for the exertions so constantly exhibited by mothers in the world of animals. She has only to lay her egg and leave it. With extended antennæ and iridescent wings shivering with desire, she walks sedately and leisurely over the aphid herd, and feels and fondles each with her antennæ until she finds one exactly suited to her purpose; then she stops short at about the length of her own body from the selected victim, and, standing erect on stiffened legs, she bends her abdomen under her breast until its extremity projects beyond her mouth; then, erecting her thorax by depressing the hinder part, she simultaneously makes a lunge forward with her abdomen, which is lengthened out in a most remarkable manner, and then by an instantaneous touch on the under-side of the aphid deposits a single egg. The victim of this treacherous and always fatal stab in the stomach will sometimes kick and plunge like a restive horse trying to throw its rider, but escape is impossible; the aphid is anchored to the rind of the twig or to the surface of the leaf by its sucker, which when once inserted is seldom withdrawn prior to the attack of the Aphidius. I advisedly use the word seldom,

admitting the possibility of withdrawing the sucker, for I have seen—who has not?—solitary aphides wandering slowly over leaves and flowers like sheep that have gone astray. Should the Aphidius meet with a luckless aphid thus nomadising, she will walk round and round it until a favourable opportunity occurs of taking it in flank, when the deed is done, the fatal stab given.

Mr. Haliday notices the extremely delicate sense of touch vested in the antennæ, which are always used by the Aphidius to obtain information whether an egg had previously been laid in an aphid, for one aphid could not support two Aphidii, and if two eggs were by accident laid in one aphid both the grubs must perish. There is therefore never more than a single egg laid in a single victim; the Aphidius ascertains by a touch how the case stands. We may call such knowledge instinctive, or intuitive, or empirical, just as we please—all that we know is, it is infallible; two eggs are never laid in the same individual.

When the parasite has consumed all the interior of its aphid, it may be found full and fat, a white maggot doubled up inside and filling out the skin of its victim, its head being placed nearest the tail of the aphid. When this period has arrived, the aphid withdraws its sucker, and, "like the stricken deer," leaves the herd, and retires to die in solitude. It will then fasten itself by means of some gummy secretion to the upper surface of a leaf, and there remain, a helpless and hopeless picture of misery. The hardened skin of the aphid forms the only protection of the Aphidius, which spins no cocoon or other covering. A few days are sufficient for all its parts to acquire firmness and consistency; and, while the newly-risen sun is yet glittering in the early dewdrops, the now-perfected fly, by a gentle push, detaches two or three terminal segments of the aphid in the form of a lid, and comes out into open day, the separated segments springing back into place after the parasite has departed to make the first essay of his powers of flight, and to renew the circle of his existence. Sometimes a slight variation takes place in the programme, the detached and hardened case, instead of springing back to its place, hangs down like the lid of a tankard; and sometimes a circular hole in the back of the aphid shows where the life-robber has escaped.

The second enemy of the aphid is the hovering fly to which entomologists have given the name of *Syrphus*. These will remain stationary, but not motionless, for many minutes, as though let down from heaven by an invisible thread, suspended like Mahomet's—but I forbear the comparison; it is worn threadbare. They appear motionless, but are not; their wings move with a rapidity that renders them invisible. Approach them or attempt to catch them, and they disappear, but return almost immediately, to hover again exactly in the same place, or perhaps a yard to the right or a yard to the left. This creature, while thus apparently doing nothing, is surveying the twigs and the leaves in search of a herd of aphides engaged in their life's business of sap-sucking. Having discovered a promising flock, she forthwith descends from her aerial perch and deposits an egg in their midst, leaving chance or nature to provide for its future. In fulness of time this egg becomes a grub of leech-like appearance, and wolf-like disposition. Even while still a baby, he exhibits his murderous propensities; he slays the lambs of the flock, and a rapid digestion enables him to dispose of these with great expedition. He soon attains his full stature, and all the while he is growing he lies lazily among his victims, who never exhibit the slightest fear of their dangerous companion, but continue sap-sucking with the most stolid indifference; or if they have occasion to move—and this is no common occurrence—they walk over his body without betraying the least symptom of distrust, and will even caress him with their antennæ. I believe these aphidions, for so they have been called, are totally blind. Kirby and Spence compare them to the Cyclops groping about for Ulysses and his companions; an apt comparison, for so does this creature, after fixing himself by the tail, feel about with his anterior extremity for his unresisting prey. His mouth is armed with a three-pronged fork, which he thrusts into the aphid up to the hilt, and then lifts high in air, the transfixed victim feebly and unavailingly struggling to escape; in this strange position all its juices are extracted, and the empty skin falls on the surface of the leaf or drops to the ground. And these empty skins may be seen by dozens strewn around the scene of slaughter, and attesting in the most unmistakable manner the service which this strange-looking creature renders to the gardener, especially to the rose grower.

When this aphidion is full grown he glues himself to a rose leaf, or the leaf of any tree or shrub where he has been feasting on the plant lice; his body shortens and thickens, his skin becomes hard and firm, and after awhile he turns to a chrysalis, his own skin answering the purpose of a cocoon. A few days suffice for preparing him for the next and last transformation; the new parts—legs, wings, eyes—gradually assume consistency and form, his case-like skin bursts open, and he comes out more completely transformed than any of the subjects of Ovid's "Metamorphoses."—*Field*.

GARDEN DESTROYERS IN FEBRUARY.

At this season of the year insect life is dormant or in abeyance, but a good deal may, notwithstanding, be done to prevent future mischief, and the gardener has the assurance that anything he does now is like nipping a disease in the bud, and probably is of many times the value of what he can do at a later period when his enemies, if more apparent, are more numerous and more rampant. In digging, he will meet occasionally with brown, long, barrel-shaped chrysalids in the earth from half an inch to an inch in length. These he may safely treat as enemies. His friends do not assume this form in passing through the chrysalis stage, and he may find it worth his while to turn up with a fork the earth and moss at the roots of any trees in the neighbourhood of the garden in quest of chrysalids. Let him also search in outhouses and sheltered corners for those chrysalids which are not in the ground. We strongly advise the young gardener to put any he may find aside in a place where he can see them come out, not to make him an adept in entomology, although it would do him no harm to learn a little of that too, but that he may learn at least the principal forms that come out of the different chrysalids. If he pins a sample or two neatly and puts them away in a box or drawer it will do him no harm, and he may rest assured that the knowledge he thus acquires will not be thrown away. There are always plenty of entomologists in towns who have not the gardener's opportunities, who would be only too glad to exchange information for specimens, and there is really no excuse nowadays for every gardener not being a bit of an entomologist. There is not a gardening periodical which has not entomologists of every kind and every degree upon its staff or among its supporters, who are always happy to give information to every one who seeks it—and it is a kind of knowledge that pays the trouble of acquiring it by the wonderful ingenuity of the contrivances it discloses and beauty it displays.

In the chinks of trees—especially fruit trees—many nascent evils now lie hid in the form of eggs, and in orchards where fruit suffers much from that kind of vermin this is the time to go over the branches with a nail-brush and Gishurst soap and water. There is a capital kind of nail-brush now made of fibres of palm (3d. each), strong and durable, which the gardener would do well to patronise, if not for his own at least for what we may call the skin and nails of his trees, viz., the chinks in which the dust gets and the insects lay their eggs. This is the season in which, too, he ought to look over his fruit and other trees for indications of the various blights, and many a hidden foe may now be disclosed by cutting across a suspicious-looking twig or branchlet, when such disclosures as the beautiful yellow spotted caterpillar of the leopard moth, the large claret-coloured caterpillar of the goat moth, &c., may be met with resting in comfort in their wonderful tunnels. A. M.

NOTES AND QUESTIONS ON GARDEN DESTROYERS.

Soluble Sulphur.—I use this in spring in large quantities for the destruction of red spider on gooseberry and currant bushes, and prepare it as follows:—I slake some quicklime, and mix it with about half its weight of common flour of sulphur in a heap, with a little water, as in making mortar. After lying a few hours, I boil it for twenty minutes in a large boiler of water, in about the proportion of one gallon to one pound of the mixture. This produces a sulphurous liquid, about the colour of porter, two or three pints of which to a two-gallon bucket of water is strong enough for syringing; but we test the strength, by dipping a spray into the bucket, and get the liquor just strong enough not to damage the leaf. If too strong, the leaf withers in an hour or two.—R. VARDEN, *Seaford Grange, Pevensey.*

Chickens versus Insects.—We quote the following as conveying a hint which may be useful for other cases of insect damage, besides that of the Plum Curculio of America, to which it individually refers:—"For many years past," says an American paper, "the curculio has so sadly damaged our plum trees that they have had to be cut down as cumberers of the ground, no fruit being obtained from them." A writer in the *Ohio Farmer* says:—"I have a few nice trees still left standing for ornament and shade, and year after year these trees have bloomed and set full, but in spite of every effort until the present season not a quart of fruit was received. While the trees were in full bloom last spring, my wife determined to try an experiment upon one of them, which she did, and it resulted more favourably than could have been expected. Early every morning, while in bloom, corn-meal was strewn over the ground beneath the branches, and the whole flock from the poultry-yard at once set to work to gather up the particles of grain. The ground was daily thoroughly scratched over, and meal, insects, and everything to the fowls edible, gathered up. Later in the season, a brood of chicks were cooped beneath the tree, and the operation of strewing meal continued. This operation was not omitted for a day, from the time of the putting forth of the bloom until the plums were beyond the reach of the little pests. The result was that this tree, and this alone, was loaded with fruit as perfect as could be desired. So heavily, indeed, were the limbs laden, that props had to be used all around

the tree to keep them up. Not a plum matured on any other tree, and all are of the same variety as the one saved." The following from the *American Entomologist*, vol. II., p. 53, is to the same effect:—"Having occasion to build a new house where a plum tree stood, instead of removing the tree, I enclosed the trunk, and trimmed off the branches to the roof. Result—I have for two years past gathered perfect fruit from the tree, and have not found one specimen stung by any insect. A temporary hen coop constructed under another plum tree the past season partially succeeded, while the trees not so protected lost all their fruit by the curculio." A very noteworthy circumstance to be kept in mind in regard to such experiences as this is, that the plum curculio is winged in its perfect state, and both can and does fly, and yet there is no reason to doubt the accuracy of the facts above stated.

Wireworm.—I have had some experience on three-quarters of an acre of garden ground made from old turf land, and I feel sure the remedy which I adopted will answer the end on any land. The first and second years I was dreadfully pestered with wireworm; my potatoes, turnips, carrots, and other roots were pierced through and through with this pest. A thought struck me that the application of spent gas lime would settle my enemies; so I sent for two cartloads from the Denby Gas Works, and I had it mixed with six times as much good soil and manure, equal quantities; the manure was chiefly sawdust upon which pigs had run. This was spread on the ground in November, and dug in a spade deep; then in the spring I put early and other potatoes and the general crop, with some light stable manure. I had excellent crops that year and afterwards, but not a single wireworm could I detect after that dressing. It is very important not to overdose with the gas lime; dilute it well with soil and manure, and it will destroy grubs as well.—T. M., in "*Field*."

Insects in Winter.—One might suppose that by the end of winter little birds which are solely supported by insect food would find some difficulty in providing for their wants, but I have found the stomachs of the tree creeper and the small titmouse, even in February, quite filled with parts of coleopterous insects, which, by their activity and perseverance, they had been enabled to procure beneath the mosses, on the branches, and from the chinks in the bark of trees, where they had retired in autumn. Small slugs and some insects may be consumed by the severity of winter, but many of them are so constituted as to suffer no injury from the inclemency of the season, but afford during many months provender to other creatures.—*Journal of a Naturalist.*

Destruction of the Woolly, or American, Bug.—Among all the methods recommended for the destruction of the Woolly Bug, brushing, washing with essence of mint, turpentine, alcohol, soft soap, tobacco, potash, various oils, &c., we have found none to be perfectly effectual. We hasten, therefore, to communicate an "infallible remedy," which has been forwarded to us from several quarters. This is simply petroleum or paraffin oil. It is sufficient to brush the trees infested once with a paint-brush dipped in this oil (pure), applying it to all the parts attacked by the insect.

NORTH AND SOUTH.

THE charts of the world which have been drawn up by modern science have thrown into a narrow space the expression of a vast amount of knowledge, but I have never yet seen any one pictorial enough to enable the spectator to imagine the kind of contrast in physical character which exists between Northern and Southern countries. We know the differences in detail, but we have not that broad glance and grasp which would enable us to feel them in their fulness. We know that gentians grow on the Alps, and olives on the Apennines; but we do not enough conceive for ourselves that variegated mosaic of the world's surface which a bird sees in its migration, that difference between the district of the gentian and of the olive which the stork and the swallow see far off, as they lean upon the sirocco wind. Let us, for a moment, try to raise ourselves even above the level of their flight, and imagine the Mediterranean lying beneath us like an irregular lake, and all its ancient promontories sleeping in the sun: here and there an angry spot of thunder, a grey stain of storm, moving upon the burning field; and here and there a fixed wreath of white volcano smoke, surrounded by its circle of ashes; but for the most part a great peacefulness of light, Syria and Greece, Italy and Spain, laid like pieces of a golden pavement into the sea-blue, chased, as we stoop nearer to them, with bossy beaten work of mountain chains, and glowing softly with terraced gardens, and flowers heavy with frankincense, mixed among masses of laurel and orange, and plummy palm, that abate with their grey-green shadows the burning of the marble rocks, and of the ledges of porphyry sloping under lucent sand. Then let us pass farther towards the north, until we see the orient colours change gradually into a vast belt of rainy green, where the pastures of Switzerland, and poplar valleys of France, and dark forests of the Danube and Carpathians stretch from the mouths of the Loire to those of the Volga, seen through clefts in grey swirls of rain-cloud and flaky veils of the mist of the brooks, spreading low along the pasture lands; and then, farther north still, to see the earth heave into mighty masses of leaden rock and heathy moor, bordering with a broad waste of gloomy purple that belt of field and wood, and

splintering into irregular and grisly islands amidst the northern seas beaten by storm, and chilled by ice-drift, and tormented by furious pulses of contending tide, until the roots of the last forests fail from among the hill ravines, and the hunger of the north wind bites their peaks into barrenness; and, at last, the wall of ice, durable like iron, sets, deathlike, its white teeth against us out of the poplar twilight. And, having once traversed in thought this gradation of the zoned iris of the earth in all its material vastness, let us go down nearer to it, and watch the parallel change in the belt of animal life: the multitudes of swift and brilliant creatures that glance in the air and sea, or tread the sands of the southern zone; striped zebras and spotted leopards, glistening serpents, and birds arrayed in purple and scarlet. Let us contrast their delicacy and brilliancy of colour, and swiftness of motion, with the frost-cramped strength, and shaggy covering, and dusky plumage of the northern tribes; contrast the Arabian horse with the Shetland, the tiger and leopard with the wolf and bear, the antelope with the elk, the bird of paradise with the osprey; and then, submissively acknowledging the great laws by which the earth and all that it bears are ruled throughout their being, let us not condemn, but rejoice in the expression by man of his own rest in the statutes of the land that gave him birth. Let us watch him with reverence as he sets side by side the burning gems, and smooths with soft sculpture the jasper pillars, that are to reflect a ceaseless sunshine, and rise into a cloudless sky; but not with less reverence let us stand by him, when, with rough strength and hurried stroke, he smites an uncouth animation out of the rocks which he has torn from among the moss of the moorland, and heaves into the darkened air the pile of iron buttress and rugged wall, instinct with work of an imagination as wild and wayward as the northern sea; creations of ungainly shape and rigid limb, but full of wolfish life; fierce as the winds that beat, and changeful as the clouds that shade them.—*John Ruskin.*

THE KITCHEN GARDEN.

THE KITCHEN GARDEN FOR FEBRUARY.

BY JAMES BARNES.

KITCHEN GARDENING is now becoming interesting and, if well carried out, profitable. Everything should be planned and executed with foresight and method. Peas should now be sown on open quarters, ten, twelve, or fourteen feet apart, thus inducing them to produce as much again as thickly-sown crops. Planted or sown between the rows may be drills of early Turnips, Spinach, and Radishes, spring-sown young Cabbage, Cauliflowers, early Potatoes, &c., all of which will be off and out of the way by midsummer or sooner, rendering the ground available for Celery. After the Peas are cleared off, the space will be available for successions of Lettuce and Endive, young Coleworts, &c., all of which will be again off before the soil is required for earthing the Celery.

Asparagus.—Continue to get into moderate heat in succession, strong plants of this; let the bottom-heat be moderate and genial, in order to give it plenty of time to put forth strong, robust buds and shoots. Regulate the interior of the frame or pit by methodical airing. If the Asparagus is intended to be of a good flavour and eatable, allow it to colour well, by means of sun and air. Cover the roots lightly at first, then put on three or four inches, or from that to six inches, of well-decayed tan, leaf-mould, or light earth. Water early in the afternoon with tepid water, and shut up if intended to be bleached white. No glass need be used; shutters will do for cover, or it may be placed in a cellar or mushroom shed.

Broccoli coming on, keep a sharp eye on, and protect against frost by doubling the leaves down. Put a wisp of short straw over the heads.

Of Beans, plant this month a full general crop, such as Dwarf Gem, Early Long-pod, Broad Windsor, or any other good variety. Surface-stir on fine days, and dredge with dry dust against severe frosty nights.

Cabbage.—Surface-stir and make up all gaps and deficiencies. Make another planting from reserved transplanted beds, and sow a small quantity in pans or on a warm border. Prick out those sown last month into shallow boxes as soon as they can be handled. Place in shelter, harden off gradually, and prick on warm borders as soon as the season permits. For real usefulness, the small sweet kinds are the most profitable and best appreciated, large, coarse kinds being only fit for cattle.

Cauliflowers.—When well cultivated, this is one of the most valuable of our early spring and summer vegetables, requiring a little care and good culture. Sow small portions in succession, prick out those up in boxes and pans, and surface-stir. Plant out now some of the strongest autumn-sown plants that have been nursed and hardened in pots or frames on to warm borders. Surface-stir,

clear dead leaves, and harden off succession plants. Those nursed under hand-lights, encourage by surface-stirrings, drawing up all round a little earth in order to raise the glasses and form a basin in the centre for the application of manure-water.

Carrots.—Early varieties, such as Horn and Dutch, sow on well-prepared, healthy, warm, borders, in drills; and drill Radishes thinly between them for the last time this season. Shelter with straw or evergreen boughs for a time.

Celery.—Choose dry weather for applying earth to bleach late crops. Sow a pinch in gentle heat, and prick out early into shallow boxes or pans that sown last month to grow on in succession in frames, for early spring use.

Capsicums and Chilies sow in strong heat, and prick off as soon as up an inch apart in pots.

Chervil, curled, sow in small quantities in warm corners.

Lettuce.—Make good all winter crop blanks, and plant out in succession strong plants. Prick off and protect with dry dust small seedlings. Sow in gentle heat, and put a pinch on a healthy warm border, of summer Cos and Cabbage kinds. Beware of birds and mice.

Onions, autumn sown, transplant on well-prepared ground, a foot apart row from row, and six inches in the row, in order to have every other one pulled for early use. Sow in a box or frame, on a slight heat, Spanish, Tripoli, or any favourite variety, in order to have strong plants ready to put out the end of March or beginning of April. Sow thickly on a warm border and protect with a little straw the two-bladed union, for early drawing and "bulbing"; what is left, will be of a beautiful size, shape, and colour for pickling. Plant out Potato onions on firm ground; if on loose soil they are apt to canker, mildew, and rot. This also holds good in the case of Shallots, which should now also be planted above ground, that is, just pressed into firm soil. Garlic also plant now. Remove all old keeping onions into the coldest, draughty, dry place that can be found, in order to subdue growth and prevent exhaustion.

Parsley.—Sow the best curled in drills, one foot apart. Weed out from old beds or rows intended for seed every plant that is not fully up to the mark as regards curled quality.

Peas.—Sow now some of the best varieties of second crop kinds, both dwarf and tall, such as Advancer, Anvergne, Green Marrow, Climax, Harrison's Glory, Perfection, Napoleon, Nonpareil, Veitch's Perfection, Champion of England, the Prince, &c. Shelter with sticks and a few green boughs in the cold windward side, and dredge with dry dust on dry evenings against frost those now up and growing.

Tomatoes.—Sow now; prick out, pot off into stiffish, poor soil, and harden off in due season those intended for outdoors.

Brussels Sprouts, Borecole, Budakale.—Sow the first portion after the middle of the month, in order to have some strong and fit to produce a heavy autumn and winter crop.

Turnips.—Early varieties, such as American Pink, Stone, Dutch, &c., sow on well-prepared warm borders.

Spinach.—Sow in single drills between peas, stir the surface soil about winter Spinach, which must be kept in a growing condition.

Place in gentle heat or shelter, successions of Tarragon, Mint, Sorrel, &c.

Seakale.—Keep up a good succession of this most appreciated vegetable by placing some on a gentle heat and covering with pots and fermenting materials crowns outdoors.

To Cucumbers in a bearing state keep up a kindly, uniform heat from 72° to 75°, charged with humidity, allowing, on nice, light, sunny days, a rise of 10°. Stop the shoots at every fruit joint. Put in cuttings of favourite kinds shy in the way of seeding. Sow in succession; make a kindly preparation of fermenting materials for those intended for outdoor frames. Do not allow those in fruit-producing order to carry too many at a time, to impoverish, weaken, and disease the vine; thin methodically.

Melons.—Plant out in succession on good holding, healthy soil. Sow now for full crop. Keep a good stock of healthy, sturdy plants in readiness for turning out as pits and frames become vacant. Do not allow overcrowding of the vines; stop seedlings first at third joint, after that at every joint showing fruit.

Potatoes now growing in pits, frames, or houses, under hoops, or other shelter, should have plenty of air to maintain sturdiness. Surface-stir those lately planted. Earth with moderately moist, lightish, healthy soil. Be careful about the application of water; never apply it overhead, but only to the soil. Never water early potatoes in the afternoon and shut them up directly, except you wish to produce disease; if by any accident they are caught in a shower when exposed to the air, leave them night air on and a space back and front of the lights for the moisture to have room to evaporate without settling on the foliage. A full crop of Potatoes should now be planted. Let them consist of early and middle early kinds, which have a better chance of escaping disease than late sorts.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

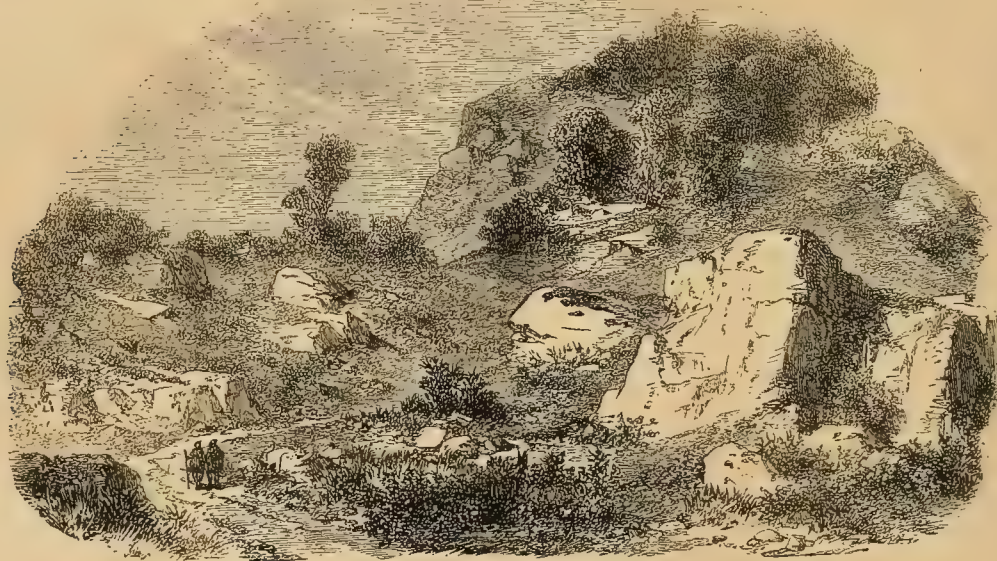
Miniature Mushroom Beds (see p. 207).—I was much interested by Mr. Fish's bold little mushroom-bed propositions in last week's GARDEN. The suggestion for the cook to grow his own mushrooms, by placing his sweet little beds on the kitchen-shelves and under the tables is admirable. It is cheerful, too, to contemplate Mr. or Madame Cook turning from the manipulation of pastry to that of the materials of which mushroom-beds are made, and *vice versa*. Permit me to add a thought or two to those of your correspondent: a few dozen miniature mushroom-beds would, for example, do nicely in quiet nooks, under our sofas, &c., and two might adorn the sides of each step in our broad staircases. Indeed, it would require a short catalogue to name all the places suitable for this fascinating kind of fungus culture. Why not fill some of the more roomy epergnes in the sitting-room with the desired matrix, and have the pleasure of seeing the mushrooms grow under our very eyes? Best of all modes, however, for an imaginative horticultural writer would be to stuff his bolster with a miniature mushroom-bed, and allow the crop to grow forth at the ends. Vigorous mushrooms, however, would poke their heads through the linen. Will your talented correspondent try this, and let us know the result? and then some spring morning, when he opens his eyes, and finds the first half-dozen "buttons," inviting him to cut them for breakfast, I hope the spirit will again

GARDEN DESIGN.

GARDEN ROCKWORK GOOD AND BAD.

GARDEN ROCKWORK, if of a high and artistic kind, must be founded on natural models. The forms, the distribution of the masses, the accidental and divergent levels of the fractured face, as well as the forms, directions, and general character of the fissures, and every other feature of natural rocks, must be carefully studied before artificial garden rockwork, worthy of the name, can be attempted. A well-constructed piece of garden rockwork should be like the rockwork of a first-rate scene-painter—so excellent a device, that a young draughtsman might feel happy to transfer a memorandum of it to his sketch-book as a piece of art worth recollecting.

One of the most curious, and at the same time excellent pieces of artificial rockwork which I remember to have seen, is the work of mediæval artists, the massive and yet highly-wrought work of Gothic chisels; and it has been sketched and painted and etched, over and over again, by travelling artists



Out-Cropping Rocks.

move him to encourage us to fresh attempts in this ever-interesting phase of gardening.—AGARIC.

Spawning Mushroom Beds.—Mushroom beds or boxes may be formed and spawned at any season, but decidedly the best times are in the months of September and February; for instance, a bed spawned in September will last through the winter months, and will be succeeded by the February or March bed, which will in its turn give a supply through the summer and early autumn.—B. W.

House Sewage.—Anyone who has a garden, and who wastes the slop-water and sewage from house and stables, wastes manure in a valuable form—this is certain. If to any country house there is a garden and land, all refuse, liquid and solid, should be used either on the garden or on the land. The distribution of sewage, or of any liquid manure, however, should not be by hose and jet; there are other special modes and means of delivering sewage and liquid manures for garden uses; the plants should know nothing of sewage but through the soil by their root-lets; the leaves should not be touched. I would not even hose and jet grass-land.—ROBERT RAWLINSON.

Broccoli.—London is now receiving large supplies of broccoli from Cornwall—last week about eighty tons; price from 1s. 2d. to 1s. 4d. per dozen heads. The crop is expected to prove a very good one. Bristol, Manchester, Liverpool, Leeds, Sheffield, and two or three other large markets are each receiving many tons weekly

who have been wonder-struck on coming unexpectedly across this curiously elaborate piece of work. Branches of bramble, laden with berries, trail over it, and stems of ivy cling closely both to face and crevice; while small herbaceous plants fill the interstices with delicate leaf and blossom; and the wonder is that, the plant-work, like the rock itself, is entirely of stone; the whole, rock and plant, being equally the production of the ancient sculptor. These plants of stone are so truly wrought, distributed with such natural grace, thrown athwart the angular masses of rock (equally the work of the chisel) with such artistic boldness, that were they artificially coloured, like the exquisitely moulded plants of Della Robbia ware, they might be mistaken for the living originals, situated as they are in the open air, and first seen from a moderate distance. This singular piece of sculptured rocks and plants forms the entrance to the ancient tombs of the Emperors of Germany at the side of the Cathedral of Spires. It is well worthy the pilgrimage of every lover of art to look upon, and still more especially worthy the study of every would-be maker of artistic rockwork; as it shows plainly

with what patient labour every truly artistic result is attained, and at the same time that, without loving labour and loving thought, nothing great in art can be achieved.

Garden rockwork, however, even of the good kind, is a much more simple matter than the great sculptured mass at Spires. Yet, nevertheless, it cannot be effected without a good deal of trouble and considerable expense, if it is



Face of judiciously-covered, built-up Rockwork.

really intended to be of high character and on a large scale. Without a few bold masses of natural rock of considerable size, for instance, little can be done that is really grand, simple, and effective, and wearing that certain aspect of crispness and breadth which is always present in natural rocks. When such natural masses are not attainable, it is true that smaller pieces may be so built together as to present



Cavern.

the aspect of a continuous face with tolerable success; especially if the top line be well designed. But in such cases a careful design must first be made, and then carefully adhered to; the joints, when not natural-looking, being concealed as in the uppermost engraving. Some of them may be left as open crevices, in which great stars of sedum or masses of golden moss may cling; which, at certain points, may entirely conceal the

offensive joints. A mass of built-up rockwork may, after this manner, be managed with striking effect, if constructed after some good natural model, such as portions of the real rock scene at the commencement of these remarks.

Such is the best that can be done with built-up rockwork; but where large masses can be obtained, or where such crop up naturally out of the soil, the task is much easier, and almost invariably more successful. For instance, by breaking away certain portions, or by piling on others which may be broken off for that purpose, it is easy to produce a cavern, which, to a certain extent, is a purely natural one, and to all appearance entirely so. For instance, an effect similar to the cavern represented might be very easily contrived, and by the establishment of a few ferns and masses of wall Linaria in the crevices, a bold and entirely natural effect would be produced with little labour; the breadth of the naked unbroken surfaces imparting an air of unwrought simplicity analogous to the broad and bold workings of Nature's own hand.

In other somewhat similar cases, where natural rocks occur cropping out of the soil here and there, in suitable parts of the grounds for the creation of a display of rockwork, much may be done by excavation. In all probability, where one or two masses of rock project above the surface, other portions of the same formation occur at a short distance below it, and by judicious digging, following the sinuosities or suddenly irregular turns of the openings



Passage in Rock-garden.

between the masses, and, in some cases, by cutting a way through the stone itself, either in the form of a rude arch, or clear opening at the top, a rocky pass of very real and imposing character may be constructed. In one place it may be light and open, and in another dark and narrow, as shown in the woodcut. In rockwork of this nearly natural kind, it is sometimes difficult to arrange positions in which to establish plants of any considerable size just where they are desirable, and yet cannot be planted. In such cases seeds may be inserted into the smallest crevices with almost certain success; for plants coming up from seed will eventually take better care of themselves, and get a tighter and healthier hold, than things that have been transplanted, however skilfully.

Such are the best methods of producing really good rockwork. That which may emphatically be called bad, is generally formed by a heap of flints or glass-house clinker, which under the most favourable circumstances, and even when pretty well covered with creeping plants, produces no more satisfactory effect than that of a rubbish-heap which has been rather dexterously concealed. But when oyster-shells, fancifully disposed, or big lobster claws, or crab-shells, are used as adjuncts, it becomes at once evident that the constructor has not intended to conceal his rubbish-heap, but rather to make it very conspicuous, and we are compelled to wonder at his taste without being able to admire it.

The art of making really picturesque masses of artificial

rock is now so far advanced, as just described, that broad and good effects are produced in places devoid of a particle of natural rock. In numbers of places, however, there are grand rocks hidden or half hidden beneath the surface, which will with less trouble make more effective embellishments. The most remarkable results have been effected in this way in Mr. E. W. Cooke's peculiarly beautiful and interesting garden at Glen Andred, in Sussex. H. N. H.

BLUE-FLOWERED HYDRANGEAS.

DURING a trip to Jersey last June we observed some magnificent blue Hydrangeas in the terrace gardens of the Royal Hotel. The colour of these was of the finest ultramarine, and wonderfully uniform. We remarked that among the blue-flowered plants there were others with rose-coloured flowers, but the plants which bore these were far less vigorous. The blue colour was always in direct proportion to the strength of the plant. The natural conclusion, therefore, was that the colouring agent also acted as a stimulating manure.

In 1857 Mr. Luscombe exhibited in London some splendid blue Hydrangeas. These had merely been planted in a small pine-wood, in the soil formed by the decomposed leaves of conifers. Now, up to that time, no one had thought that blue flowers could be produced in Hydrangeas, except by means of the following substances, and that, too, in different degrees:—Lime-water, water naturally impregnated with iron, common red sand, free Norwood soil, water in which hot iron had been dipped, alum in solution, iron filings mixed with the soil. To the presence of the iron in solution, of the lime, and of the alum, was attributed the effect of the various substances which we have just named. Now, Professor Solly proved by experiment that lime, alum, or iron, rendered more soluble by the use of hydrochloric acid, or less soluble by means of carbonate of soda, exercised only a moderate influence in the colouration of plants of the genus *Hydrangea*. On the other hand, Mr. Fortune, who could not produce blue Hydrangeas by the application of iron alone, succeeded in doing so by watering them with a solution of alum, or by applying this substance in powder. And yet neither peat soil nor leaf-mould contain any alum. We can only seek for the explanation of the effect of these soils in the tannin which they contain, and which is acted upon by the peroxide of iron which exists in the tissues of the shrub. This might be proved by making the experiment (which Dr. Lindley formerly suggested) of watering the plants first with water mixed with the peroxide of iron, and afterwards with a weak infusion of tannin. This is only one side of the question. In 1861 another Englishman brought forward the fact that blue-flowered Hydrangeas might be obtained by planting them in any soil which had never been previously tilled. He made several experiments with garden soil and virgin peat alternately, and obtained the same results for five consecutive years. Further, a specimen planted in cultivated garden soil, and producing rose-coloured flowers, began to bear blue flowers as soon as its roots reached the virgin soil which had been placed underneath the plant.

On the other hand, it is well known that in granitic, schistose, mica-schistose soils, and generally in soils of igneous formation, Hydrangeas bear blue flowers abundantly. Here the question rested; and the fresh experiments of M. Gris had thrown but little additional light upon it, when M. Eug. Fournier commenced some further investigations, after a discussion on the subject which had taken place before the Botanical Society of France. He watered some Hydrangeas with the following solutions daily, and in equal quantities, from the 1st of May:—

- 1st. 316 grains of ammoniacal alum to 1 7-10ths pint of distilled water (as recommended by Dr. Boisduval).
- 2nd. 316 grains of sulphate of iron (the common recipe).
- 3rd. 316 grains of carbonate of copper (suggested by M. Crochard).
- 4th. Ammonia (in no definite proportion).

By the 15th of June, the plants watered with the solutions of ammonia and the carbonate of copper had perished. Those which had been treated with the sulphate of iron exhibited a moderate degree of vigour and red sepals. The solution of

ammoniacal alum, on the contrary, had produced a luxuriant growth and large flowers of a violet-blue colour. From other experiments of M. Eug. Fournier, which we have not space to report here, the conclusion is that, if iron colours the flowers of Hydrangeas blue under certain conditions, it is because it excites a more active growth in the same way as does ammoniacal alum. Beyond all doubt, the blue colour in the flowers of Hydrangeas is the result of an excess of vegetation artificially produced.

To these experiments we shall only add one observation, which is that, although we have seen in Jersey, and also in Guernsey, that the most vigorous Hydrangeas bore blue flowers, while the rest produced rose-coloured ones, we have also often found an exuberant growth of this plant coincident with the production of flowers purely rose-coloured. We need only mention, as an example, the *Hydrangea Otaksa*, which has been not many years introduced, and which is merely a Japanese variety of the common kind. At Versailles we have measured corymbs of it which were more than sixteen inches across, and which were exhibited by M. Duval, in May 1870.—*L'Illustration Horticole*.

Vegetation.—What infinite wonderfulness there is in this vegetation, considered, as indeed it is, the means by which the earth becomes the companion of man—his friend and his teacher! In the conditions which we have traced in its rocks, there could only be seen preparation for his existence; the characters which enable him to live on it safely, and to work with it easily—in all these it has been inanimate and passive; but vegetation is to it as an imperfect soul, given to meet the soul of man. The earth in its depths must remain dead and cold, incapable except of slow-crystalline change; but at its surface, which human beings look upon and deal with, it ministers to them through a veil of strange intermediate being; which breathes, but has no voice; moves, but cannot leave its appointed place; passes through life without consciousness, to death without bitterness; wears the beauty of youth, without its passion; and declines to the weakness of age, without its regret. And in this mystery of intermediate being, entirely subordinate to us, with which we can deal as we choose, having just the greater power as we have the less responsibility for our treatment of the unsuffering creature, most of the pleasures which we need from the external world are gathered, and most of the lessons we need are written, all kinds of precious grace and teaching being united in this link between the Earth and Man; wonderful in universal adaptation to his need, desire, and discipline; God's daily preparation of the earth for him, with beautiful means of life. First, a carpet to make it soft for him; then, a coloured fantasy of embroidery thereon; then, tall spreading of foliage to shade him from sun-heat, and shade also the fallen rain, that it may not dry quickly back into the clouds, but stay to nourish the springs among the moss. Stout wood to bear this leafage: easily to be cut, yet tough and light, to make houses for him, or instruments (lance-shaft, or plough-handle, according to his temper); useless it had been, if harder; useless, if less fibrous; useless, if less elastic. Winter comes, and the shade of leafage falls away, to let the sun warm the earth; the strong boughs remain, breaking the strength of winter winds. The seeds which are to prolong the race, innumerable according to the need, are made beautiful and palatable, varied into infinitude of appeal to the fancy of man, or provision for his service: cold juice, or glowing spice, or balm, or incense, softening oil, preserving resin, medicine of styptic, febrifuge, or lulling charm; and all these presented in forms of endless change. Fragility or force, softness and strength, in all degrees and aspects; unerring uprightness, as of temple pillars, or undivided wandering of feeble tendrils on the ground; mighty resistances of rigid arm and limb to the storms of ages, or wavings to and fro with faintest pulse of summer streamlet. Roots cleaving the strength of rock, or binding the transience of the sand; crests basking in sunshine of the desert, or hiding by dripping spring and lightless cave; foliage far tossing in entangled fields beneath every wave of ocean—clothing with variegated, everlasting films, the peaks of the trackless mountains, or ministering at cottage doors to every gentlest passion and simplest joy of humanity. Being thus prepared for us in all ways, and made beautiful, and good for food, and for building, and for instruments of our hands, this race of plants, deserving boundless affection and admiration from us, become, in proportion to their obtaining it, a nearly perfect test of our being in right temper of mind and way of life; so that no one can be far wrong in either who loves the trees enough, and every one is assuredly wrong in both, who does not love them, if his life has brought them in his way.—*Modern Painters*.

MOLE HUNTING IN GARDENS.

At a happy period of my life when I came into possession of the charming abode assigned to me, by the gracious favour of the Queen, in Richmond Park, I was discussing with the gardener, one fine evening in May, some horticultural operations, when a functionary of the Park was announced and made his appearance. He was the "mole-catcher," and had plied his vocation there, he told me, man and boy for upwards of fifty years. He respectfully intimated to me that my predecessor had found it necessary to avail himself of his services in keeping down what would otherwise be a grievous pest to both lawn and flower-bed. I expressed my surprise at the intimation. Rats, I knew, were plentiful about, but moles I had thought were a scarce article in a garden. However, I inquired the "terms," as it was "no part of his regular business to look after the gentlemen's gardens belonging to the Park." My predecessor, it appeared, had subsidised the old expert at a guinea a-year, and I was warranted "never to see a mole twice" in the garden on these terms. The difficulty, it struck me, was as to getting any glimpse at all of the interesting burrower: but it was the mole-heaps old Warps meant; once levelled after the upturner had been trapped, they would not reappear. I hesitated, and pondered on the capabilities of my then limited salary from the Royal College of Surgeons, and its contrast with the probable fortune of my gallant predecessor at Sheen Lodge, and concluded that I must forego the luxury of keeping a mole-catcher.

Next morning I was disturbed at breakfast by my gardener, with the announcement that the moles had been at work; and, by a most curious coincidence in the very part of the kitchen garden where the conference with the mole-catcher had been held on the previous evening. There, sure enough, no fewer than six mole-hills had been raised in that very night, most of them breaking up the rows of the brightly-sprouting peas, on which I had been building flattering hopes of a rarely enjoyed luxury.

It seemed plain to me that moles and fresh-gathered peas were incompatible. I struck my flag: sent for the mole-trapper, and paid him his guinea in advance. I never regretted it. I got more mole-lore out of that old gentleman than I had ever before heard or read of. He always reminded me of a mole himself—a thin, prognathic visage, the nose longer than it was deep, and ending in a red point; the smallest, keenest eyes that ever peered out of sockets.

If at home on the evenings of his professional inspection, I usually ordered a jug of Mortlake ale into the arbour, and went in for mole-gossip. I owe to Warps my first evidence of the vocal powers of *Mastela vulgaris*. "You know, sir, them parts of the Park as the servant-galls and people won't go near to, after dark, coz of the screams of the murdered babby, as was heard thereabout half the night." "Well, it must have taken a long time to kill," I interposed. "Now I tell you what that was, sir, it were a weasel as got trapped in one of my mole-traps, and I never heard a beast squeal so loud afore. I couldn't 'a thought such a little critter could 'a made such a row."

After a long pull at the jug, old Warps grew confidential. "Now, I don't mind showing you, sir, what a mole can do." And he pulled a live one out of the depths of a capacious pocket in his fustian jacket. "You'd never think to look at him he could run so quick." And I own I was surprised the first time I witnessed the rate the little short-limbed animal sped along the hard ground till he came to the nearest bed, then with snout and the fore-shovels up flew the soft mould, and he was out of sight in a few seconds. "But, Warps," I exclaimed, "he's got into the carnation-bed, and will have them all up!" "Oh, never fear, sir! I'll have him again to-morrow;" and so he did. Whenever I wanted a mole for anatomical purposes, I had only to send to old Warps and it was forthcoming. No matter at what season, or of what sex, or in what stage of the "interesting condition" of the female. When other monographs now in hand are finished off, I may have leisure to work up my materials, so obtained, for an embryogeny of *Talpa europæa*.

I own to a voluntary blindness to one weakness of Warps, which I had not at first suspected, and to which some of my neighbours were less indulgent. I was making a call on the resident of one of those beautiful villas at Roehampton, just outside the Park wall, and was ushered into my friend's garden. We paced along the noble gravel-walk separated by a well-grown evergreen hedge from the pathway to the offices. Our chat happened to turn upon moles.

"Do you know," I asked, "how quickly they will run on hard gravel like this?" "Oh yes," said he; "I have seen it, and I can tell you more than that. Did you know, Professor, that a mole can leap?" "No," said I, "that it can't do; its organisation is quite unfitted for that mode of motion." "It can, though," replied my

neighbour; "I have seen a mole take a flying leap over that very Portugal laurel" (it was at least eight feet high), "and come down on this very walk. It was then I first saw how fast a mole could run. Mr. So-and-So" (a common acquaintance) "happened to be here with me, and if he had not been quick enough to give the little beast a kick on the ribs before it had buried itself in the flower-bed, I should have believed it to have been a rat. Fancying I heard a footstep in the back walk just before the mole flew over the fence, I called my servant and asked if any one had been that way to the kitchen? 'Only old Warps,' he said, 'the mole-catcher.' 'Ah,' rejoined my neighbour, 'I suspected so. Tell that old rogue when next you see him, that if ever I catch him within fifty yards of my boundary, I'll make him remember it the longest day he has got to live!'"

Poor old Warps was not far from his longest and last when he sent the live mole flying over the laurel bushes. About a month after he was laid in mother earth, where he rests quieter than his subjects.—*Richard Owen, in "Blackwood," for February.*

A WINTER GARDEN FOR LONDON.

"When we reflect," says a correspondent of the *Times* of Thursday last, "on the Siberian winter with which we were last year afflicted, and are led necessarily to anticipate something of the same sort for future seasons, we are lost in astonishment that in the whole *enceinte* of this great and magnificent metropolis there should not exist one establishment in which wholesome air and exercise, at a properly regulated temperature, can be obtained. Such a resource would be invaluable during the cruel winter months to those who fear to expose themselves to the chilling blasts of Æolus and Boreas.

"It was for a long time a question whether the transept of the beautiful Exhibition building of 1851, with its lovely fountains and gigantic trees, should not have been allowed to remain permanently on the spot where it stood, for the purpose of forming what is now so much desired, a winter garden. The clamour of a few interested individuals was allowed to overcome the desire of a numerous but unobtrusive public, to many of whom such a resort in the winter months would have been as life to death when compared with the confinement to the heated rooms of their own houses or an expatriation among the expensive inconveniences of a foreign sanitarium. It is really inconceivable that in rich and great London, where hundreds of thousands of pounds are constantly waiting for a profitable investment, no speculator should have thought of employing it in a manner sure to pay so enormously.

"Everybody knows that there was in Paris a few years ago a charming winter garden in the Champs Élysées, which was always kept at a temperature of 63° of Fahr., where hundreds took their daily walk who were afraid of exposure to the open air, for an entrance fee of one franc. It was a beautiful resort, filled with tropical plants, fountains, and all the little amusements for which the French are so famous—bagatelle tables, Chinese shows, shooting galleries, &c., affording pleasure as well as health.

"The writer of these remarks being subject to bronchitis, passed seven years in the immediate vicinity of that garden without having had one attack during that period, as he always had the resource on bad days of taking his exercise in its balmy walks, and he has frequently walked five miles on such occasions. This winter garden ceased to exist only because the demand for building ground became so great in that locality that it was sold at fabulous prices for erecting those palaces which border the Champs Élysées.

"Hundreds of ladies condemned to seclusion at home would drive to such a building every day to take their walks, and it would, without doubt, soon become a place of fashionable resort, as will be evident to everyone who remembers the familiar saying so much in vogue in 1851, 'Meet me at the fountain at five.' In order to ensure the success of the speculation, two points must be kept in view:—First, the situation, which must be one of easy access to those who are best able to support the undertaking—namely, the inhabitants of the West End. The best site would be a small portion of Hyde Park, which her Majesty would not, I am persuaded, refuse. Next to the invalids themselves, the persons most interested in procuring and supporting such a building as this are the physicians of this metropolis, who, instead of finding their best patients deserting them in the month of October, to transfer their fees to foreign M.D.'s, would be enabled conscientiously to permit them to stay at home, and reap the benefit of their fees for their own pockets.

"At Pan during the late severe weather the thermometer stood as low as 17° of Fahr.; and at Arcahon the deluded hunters after southern, sunny climes were shivering in their wooden huts in a temperature of fifteen degrees below the freezing point."

SOCIETIES, EXHIBITIONS, ETC.

Royal Horticultural Society's Show at Birmingham.

The first meeting of the local committee was held on Thursday, the 25th of January, at the Great Western Hotel, under the presidency of the Marquis of Hertford. The hon. secretary (Mr. E. W. Badger), read the resolutions passed at the meeting on the 18th inst. He also read a letter from the Earl of Bradford, accepting the office of President of the committee, and requesting his name to be added to the list of contributors to the special prize fund for the sum of £25. It is intended, we believe, that there shall be a congress during the show week, the details of which will be published as soon as they have been decided upon. In the meantime, all who are willing to read papers, and take part in it, should at once communicate with the hon. secretary, *Midland Counties Herald* office, Birmingham, in order that arrangements may be made accordingly. In the case of those who wish to read papers, it is desirable that they should state the subject of them, and length of time they desire to occupy.

PRINCIPAL FLOWER SHOWS OF THE YEAR.

February.—14th.—Royal Horticultural Society (fortnightly meeting). 20th.—Manchester Botanical and Horticultural Society (monthly meeting).

March.—6th.—Royal Horticultural Society (fortnightly meeting). 13th.—Royal Botanic Society (spring flowers). 19th.—Manchester Botanical and Horticultural Society (monthly meeting). 20th.—Royal Horticultural Society (fortnightly meeting).

April.—3rd.—Royal Horticultural Society (fortnightly meeting). 9th.—Manchester Botanical and Horticultural Society (monthly meeting). 10th.—Royal Botanic Society (spring flowers). 17th.—Royal Horticultural Society (fortnightly meeting). 18th.—Royal Horticultural Society of Ireland (spring flowers). 25th.—Cambridgeshire Horticultural Society (spring flowers).

May.—1st.—Royal Horticultural Society (fortnightly meeting). 8th.—Royal Botanic Society (spring flowers). 11th.—Crystal Palace (great flower show). 15th and 16th.—Royal Horticultural Society (May show). 18th to 27th.—Manchester Botanical and Horticultural Society (grand national exhibition). 22nd and 23rd.—Royal Botanic Society (great summer exhibition). 23rd.—Cambridgeshire Horticultural Society (summer show). 23rd.—Royal Horticultural Society of Ireland (May show). 27th to June 15th.—Royal Botanic Society (exhibition of American plants).

June.—5th, 6th, and 7th.—Royal Horticultural Society (great summer exhibition at South Kensington). 19th.—Ditto (fortnightly meeting). 19th and 20th.—Royal Botanic Society (great summer exhibition). 22nd. Crystal Palace (annual rose show). 25th to 29th.—Royal Horticultural Society (great exhibition at Birmingham). 26th.—Bishop Stortford and Hertfordshire Horticultural Society (great summer show). 27th.—Royal Horticultural Society of Ireland (summer show).

July.—3rd.—Royal Horticultural Society (fortnightly meeting). 5th and 6th.—Manchester Botanical and Horticultural Society (roses and fruit). 10th and 11th.—Royal Botanic Society (great summer show). 17th.—Royal Horticultural Society (fortnightly meeting).

August.—4th.—Royal Horticultural Society of Ireland (autumn show). 7th.—Royal Horticultural Society (fortnightly meeting). 21st. Ditto (fortnightly meeting).

September.—4th.—Royal Horticultural Society (fortnightly meeting). 10th.—Manchester Botanical and Horticultural Society (monthly meeting). 18th.—Royal Horticultural Society (fortnightly meeting). 19th.—Cambridgeshire Horticultural Society (first autumn show).

October.—2nd.—Royal Horticultural Society (fortnightly meeting). 8th.—Manchester Botanical and Horticultural Society (monthly meeting). 10th.—Royal Horticultural Society of Ireland (great fruit show).

November.—6th.—Royal Horticultural Society (fortnightly meeting). 14th.—Cambridgeshire Horticultural Society (second autumn show). 19th.—Manchester Botanical and Horticultural Society (monthly meeting).

December.—4th.—Royal Horticultural Society (fortnightly meeting).

Cocoa-nut Groves.—The peninsula of Manabique presents the aspect of one vast grove of cocoa-palms, and affords the traveller an opportunity of seeing these trees in all their majestic beauty; rearing their tufted heads high into the air, while their roots are washed and often undermined by the rolling waves. No other tree ventures so near the water's edge, and dreary beyond description would this uninhabited coast appear, were it not for these littoral plants. The air is filled with a sort of music, produced by the wind, while shaking to and fro the long, sharp-edged leaves, and the wailing, doleful sounds thus brought forth cannot fail to impress the lonely traveller with melancholy thoughts or soothe his restless spirit. Thousands of cocoa-nuts annually fall into the sea; these, like the apples falling by the road-side, belong to the poor, or to those who take the trouble of picking them up. The cocoa-nut crop of the whole peninsula is annually sold by the authorities to some trading ship-captain, or to the highest bidder.—*Our Ocean Highways.*

OBITUARY.

MR. THOMAS OSBORN.

THE horticultural and botanical community has lost many of its prominent men of late—some, like Lindley, Hooker, and Paxton, ripe in years; others, like James Veitch and Berthold Seemann, in the prime of life; but not one that will be more regretted by all who knew him than Mr. Thomas Osborn, of Fulham, whose comparatively early and too sudden death it is now our painful duty to record. A principal of one of the oldest and most interesting of London nurseries, in him the commercial spirit was entirely subordinate to the love of plants for their own sake, and his knowledge of botany and horticulture was very great. What are called business qualities were, however, developed in him in the highest sense, and led to his being appointed trustee of the Gardeners' Royal Benevolent Institution in the room of the late Mr. James Veitch, and to his co-operation being sought in the chief movements of the horticultural world, as, for example, the great exhibition of 1866. Possessed of wide and accurate knowledge of trees and plants of all kinds, and particularly of the hardier and nobler subjects, the pleasure of a visit to the ever-interesting Fulham Nursery was always heightened by his cheerful guidance and great plant lore. He died at Fulham, of quinsy, on Sunday last. A day or two before his death, we had a communication from him respecting the weeping *Sophora* figured in *THE GARDEN* of January 20th, and of which there are two very old specimens in the Fulham Nursery, so rich in rare trees. To us, therefore, his loss has seemed peculiarly sudden, as he always seemed in robust health. Few men have adorned their profession more. No loss can be greater to the gardening community, and especially to London horticulturists.

COVENT GARDEN MARKET.—February 3rd.

Flowers.—These are now sufficiently numerous to give to the western entrance of the central avenue quite the appearance of a spring flower show. Little groups of lovely Tulips meet the eye on every side, supported by charming pots of Crocuses and Hyacinths. Then there are Callas, with their great trumpet-shaped white flowers; Spring Heaths; and Chinese Primroses, with blossoms large and richly-coloured. Cyclamens, too, with which everybody is delighted; Camellias and Azaleas; and last, but not least, pretty little bushes of *Deutzia gracilis*, loaded with blossoms that vie in purity with those of the Snowdrop itself. Among sweet-scented flowers are Lily of the Valley, Violets, Mignonette, and Wallflowers; and among berry-bearing plants, are different sorts of *Solanum capsicastrum*, thickly covered with orange-red fruit, each as large as a good-sized marble. Other things consist of Acacias; *Astilbe* (*Spiraea*) japonica; Begonias; Christmas Roses; Cinerarias; Narcissus; Snowdrops; *Eranthis hyemalis*; *Pelargonium*s; *Poinsettias*; and Roses.

Prices of Fruit.—Apples, Dessert, 1s. to 3s. per dozen.—Cobs, per 100 lbs., 60s. to 65s.—Filberts, per lb., 8d. to 10d.—Grapes, per lb., 4s. to 10s.—Lemons, per 100, 7s. to 10s.—Spanish Water Melons, each, 3s. to 5s.—Oranges, per 100, 6s. to 10s.—Pears, per dozen, 3s. to 5s.—Pine-apples, per lb., 6s. to 10s.—Pomegranates, each, 4d. to 8d.

Prices of Vegetables.—Artichokes, green, each, 6d. to 8d.—Asparagus, per 100, 8s. to 10s.—Beet, per dozen, 1s. to 2s.—Broccoli, purple, per bundle, 10d. to 1s. 3d.—Brussels Sprouts, per half sieve, 2s. to 3s.—Cabbages, per dozen, 10d. to 1s. 3d.—Caulicums, per 100, 1s. 6d. to 2s.—Carrots, per bunch, 5d. to 7d.—Cauliflowers, per dozen, 2s. to 6s.—Celery, per bundle, 1s. to 2s.—Chilies, per 100, 1s. 6d. to 2s.—Cucumbers, each, 1s. to 2s.—French Beans, new, per 100, 3s. to 4s.—Herbs, per bunch, 2d. to 4d.—Horse Radish, per bunch, 3s. to 5s.—Leeks, per bunch, 2d. to 4d.—Lettuces, per score, 1s. 6d. to 2s.—Mushrooms, per pottle, 1s. to 2s. 6d.—Onions, per bunch, 4d. to 9d.—Parsley, per bunch, 2d. to 4d.—Radishes, per bunch, 2d.—Rhubarb, per bundle, 1s. 6d. to 2s.—Salsafy, per bundle, 9d. to 1s. 3d.—Scorzenera, per bundle, 9d. to 1s. 3d.—Seakale, per punnet, 1s. 6d. to 2s. 6d.—Shallots, per lb., 8d.—Spinach, per bushel, 3s. to 4s.—Tomatoes, per small punnet, 3d. to 6d.—Turnips, per bunch, 3d. to 6d.

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All communications for the Editorial Department should be addressed to WILLIAM ROBINSON, "THE GARDEN" OFFICE, 37, Southampton Street, Covent Garden, London, W.C. All letters referring to Subscriptions, Advertisements, and other business matters, should be addressed to THE PUBLISHER, at the same Address.




"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—Shakespeare.

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THE FLOWER GARDEN.

ROSES AND ROSE CULTURE.

BY S. REYNOLDS HOLE.



ELECTING for beginners in rose growing a few varieties which are really winter proof, I find myself engaged in an enterprise which requires great nerve. I almost shut my eyes, and shiver at my own hardihood, as I pass over roses exquisite in beauty, but more or less delicate in constitution. I almost believe (for I am very superstitious about the sentient powers of plants) that they feel a strong resentment, and that they go as far in opprobrious epithets as delicate ladies can with reference to my wretched taste. "I was in his forty-eight at Kensington;" "and I in his thirty-six at the Palace;" "and he made no end of a fuss about me at Birmingham," methinks I hear them say; "and now we must give place to these coarse, vulgar wenches, just because, like tramps and gipsies, they've acquired the habit of living out-o'-doors in the winter."

And all this is harder to bear, because I am loyal and loving as ever to those who thus upbraid, and am only suggesting the hardier varieties as harbingers and pioneers, knowing well that if the young rosarian is not discouraged and disappointed at first, he must have all roses beautiful, be they robust or sickly. But it's no good offering explanations, you know, to the feminine mind in a fume; and, therefore, let us on with our list.

From the son to the father, from John Hopper to his sire, Jules Margottin; the mamma being Madame Vidot. And as I write the name Jules Margottin, I am reminded to give a hint, *en passant*, not so much to new rose purchasers as to purchasers of new roses, always to buy the article which bears the maker's name—the rose called after its raiser.

As Mr. Ward named his glorious seedling after his friend (I have seen it referred to by the reporter to a London daily newspaper as "the John Hopper," under the impression, I suppose, that it took its title from some insect of the grasshopper family), so the French rosarians append to their best roses the appellation of persons or places dear to them (I will mention as examples, Jules Margottin, Victor Verdier, Mdlle. Eugenie Verdier, François Lacharme, Marie Beaumann, &c.), and have given to second-rate roses the names of first-rate English rosists, such as Thomas Rivers, Charles Turner, Madame W. Paul, John Keynes, &c., the only exception which occurs to my memory being the lovely Mrs. Rivers.

Jules Margottin should be one of the first roses ordered by the novice, hardy as handsome, and of the few perpetuals

which deserve the name, as being sure to bloom again in autumn.

La Ville de St. Denis is another constant and beautiful rose (quite good enough for exhibition in its best form), which, upon its own roots, has been in my garden for some twenty years. It withstood the fiercest ordeal through which roses have passed in my experience—the winter of 1860-61.

If Madame Boutin in the flesh resembles Madame Boutin in the flower, I offer my hearty congratulation to Monsieur as being of Benedicts Benedictissimus; for age cannot wither her; and be the seasons sunny or clouded, damp or dry, she is faithful and beautiful for ever.

To Mesdames Boll, and Caillat, and Clemence Joyneaux, and Domage, and Rivers, I must hurriedly pay a similar compliment, and then fly for my life, lest those inconstant beauties, Mesdames Furtado, Vidot, and many others, fascinating but frail, should fasten their thorns in my cheek. Whither shall I fly? From the boudoir to the barracks, to Maréchal Vaillant, the hero of a hundred rose fights? I know of no rose, unless it be Gloire de Dijon, which is more reliable than this. It never fails in my garden to produce abundantly its symmetrical rich crimson flowers.

And Marquise de Castellane will, I believe, prove to be hereafter as laudable for her generosity and endurance as she has already shown herself for her beauty.

Paul Neron is handsome, and strong as Hercules, and looks as though, in time, he could grow a stem which might make that demigod a club.

I have the pleasure of knowing a goodly number of members of Parliament, but the one whom I most admire and believe in is pre-eminently *Senateur Vaisse*. His rooted attachment to the land of his adoption, his faithful adhesion to his colours (his beautiful colours of crimson and scarlet!), his upright habit, his sweet beneficence in beautifying the homes of the poor, while he is equally welcome and gracious in his visits to the peer—all these good qualities are his; and I counsel those who do not know him to cultivate his friendship at once.

May they be more successful in cultivating the friendship of the rose than I was some years ago in an attempt to cultivate the friendship of a rosarian, whose name is borne by my last selection, Victor Verdier. I called upon him in the year 1861, and, supposing that he knew a little English, and that I knew a little French, I anticipated a gush of fraternal sympathy and sweet communion of kindred spirits. The gush did not take place. We could not understand each other in the least; and I do not suppose that two large men ever looked, or felt themselves to be, so small. I fled to my wife (I was on my wedding tour), and the Frenchman, I doubt not, betook himself to Madame Victor Verdier (her namesake is one of the most beautiful, but not one of the most hardy, of roses); and told her of his interview with a strange Englishman, gigantic in stature, but weak in intellect.

The Englishman has, nevertheless, sufficient intellect to admire the rose, though he failed to make himself intelligible to the rosarian; and he advises all young amateurs to include it in their first order. It is one of the grandest and most constant of roses.

I have only to append, in its completion, the little list of very hardy roses for beginners, to be planted immediately in soil well drained, and dry, and manured, away from trees, but not in a bleak, exposed position:—

Gloire de Dijon, Noisette	Comte de Nanteuil, do.	Madame Clemence Joyneaux, do.
Souvenir de la Malmaison, do.	General Jacqueminot, do.	Madame Rivers, do.
Bourbon, do.	John Hopper, do.	Maréchal Vaillant, do.
Alfred Colomb, Hybrid	Jules Margottin, do.	Senateur Vaisse, do.
Perpetual, do.	La Ville de St. Denis, do.	Victor Verdier, do.
Baroness Rothschild, do.	Madame Boutin, do.	Blum No. 2, Hybrid China
Baronne Prevost, do.	Madame Boll, do.	Charles Lawson, Hybrid
Caroline de Sansales, do.	Madame Caillat, do.	China.

I omitted the last rose, when speaking of those which bloom only once; but he has pleaded with me for admission every time I have passed through my rose garden, reminding me how many years he has faithfully served me with large and beautiful roses, and at last convincing me that I should do an injustice to him, to myself, and to the young amateur, if I did not include him in my list.

CLIMBING DEVONIENSIS ROSE.

Your correspondent "D. T. F." says this is the tenderest of all tea roses; he also says it will not do upon a wall without being thatched over. Four years ago we planted, against a twelve-foot wall facing due east, a plant of the Climbing Devoniensis, budded upon a dwarf briar. The first season, owing to its having been cut rather closely for buds, it did not flower much; but the following spring it threw out one shoot eighteen feet long, with thickness in proportion, and several others of less dimensions. That season we had a few blooms which were very fine, but there were not many of them. Last season, however, the display was magnificent, as many as thirty beautifully-formed, half-open buds, with a quantity of others in various stages of development, being all visible at one time—the admiration of all who saw them. This tree withstood the severity of the winter of 1870–1871 without being in any way injured. It was neither thatched nor protected in any shape. Against the same wall we have, on three successive seasons, lost plants of *Maréchal Niel*, on the *Manetti* stock. We have also standards of Climbing Devoniensis, which did well last winter, planted upon a piece of ground facing due north; but we cannot say as much for several other teas planted in the same situation, such as *Madame Falcot*, *Madame Margottin*, *Madame Willermoz*, and others, all of which have been cut down to the buds. C. W.

White Cross Nurseries, Hereford.

A HEREFORDSHIRE COTTAGE GARDEN.

A PLEASANT garden, with plenty of large and fine pansies, some roses, and great promise of more. It is extremely neat, clean and finely kept, and it is the pride of the mistress that she takes the entire care of it herself; as we walk, she has her scissors in her hand, and cuts flowers; and when we are seated in a curious little arbour of clipped yew, where she had left her "work" when she came in to see us, she arranges nosegays and presents them to us. The house is small; the walls are of plain red brick; the roof of slate, with but moderate pitch; the chimneys and windows of the usual simple American country-house form and size. There is no porch, verandah, gable or dormer, upon the garden side, yet the house has a very pleasing and tasteful aspect, and does not at all disfigure the lovely landscape of distant woody hills, against which we see it. Five shillings' worth of material from a nursery, half-a-day's labour of a man, and some recreative work of our fair and healthy hostess' own hands, have done it vastly better than a carpenter or mason could at a thousand times the cost. Three large evergreen trees have grown near the end of the house, so that, instead of the plain, straight, ugly red corner, you see a beautiful, irregular, natural, tufty tower of verdure; myrtle and jessamine clamber gracefully upon a slight trellis of laths over the door; roses are trained up about one of the lower windows, honeysuckle about another, while all the others, above and below, are deeply draped and festooned with the ivy, which, starting from a few slips thrust one day into the soil by the mistress, near the corner opposite the evergreens, has already covered two-thirds of the bare brick wall on this side, found its way over the top of the tall yew-hedge, round the corner, climbed the gable-end, and is now creeping along the ridge-pole and up the kitchen chimney—which, before speaking only of boiled bacon and potatoes, now suggests happy holly-hangings of the fireside and grateful harvest's home, hides all the formal lines and angles, breaks all the stiff rules of art, dances lightly over the grave precision of human handiwork, softens, shades, and shelters all under a gorgeous vesture of Heaven's own weaving.—*Olmosted's Walks of an American Farmer in England.*

A NEW GRASS (ERIANTHUS MOUSTIERII):

THE plant to which we have given this name, in remembrance of its introducer, M. le Comte A. de Moustier, is not only new, but probably unknown in Europe. It is a native of Mount Olympus, near the town of Broussa, where M. de Moustier met with it growing amongst shrubs, in a perfectly wild locality, during his journey through Asia Minor about the year 1861. These details are authentic, having been furnished by M. Vilcot, gardener to M. le Comte de Moustier, at La Chapelle-sur-Crecy (Seine-et-Marne), in a letter which he wrote to us November 22, 1871, and from which we extract the following:—

"This species grows much taller than our tallest *Gyneriums*. M. de Moustier, when gathering the seeds, was obliged to stand upright in his stirrups, being on horseback at the time. The stems which he sent me were almost as white as those of the *Gyncrium*, but not nearly so strong; they were very silky and flexible.

"I sowed the seeds in March 1863 in a seed-pan, which I placed in a temperate house; they began to vegetate in about a month's time. At this stage of their growth the plants were so like *Gyneriums* that, but for their label, I should hardly have been able to know the difference. About May I potted them off into three-inch pots, and then successively into six-inch and ten-inch pots. During the winter of 1863–64 I put them in a temperate house, where they remained until May 1864, when I planted them out in the open air. It was only then that I perceived that the leaves had a white stripe running down the centre. At the present date the only two plants which I have left stand on a shady knoll: they have as yet given no signs of flowering."

Having ourselves possessed this plant for two years (M. le Comte de Moustier having had the kindness to send us a strong specimen in the spring of 1869), we are enabled to describe it:—It is a caespitose plant, not running at the root, but with a very stout rhizome, from which issue numerous closely-set shoots. The leaves are very long, comparatively narrow (almost rushlike), very flexible, arching forwards in a graceful curve, and having in the centre a prominent rounded midrib, the top of which is concave and marked with a white line; the edges of the leaves are very finely toothed, but do not cut like those of *Gynerium*; the underside (and particularly the leaf-stalk) is covered with white silky hairs. From the centre of the principal leaf-stalks issues a jointed flower-stem, sheathed for a great part of its length by the enveloping and villous base of the leaves. This flower-stem attains a height of nearly ten feet or even more, and bears the inflorescence at its summit.

We are not certain that this plant belongs to the genus *Erianthus*. If we have placed it there, it is because of its resemblance to that genus, of which it appears to possess all the characteristics. But even if it should hereafter have to be transferred to the allied genus *Saccharum*, it should still be allowed to retain the appellation *Moustierii*, in memory of its introducer the Count de Moustier.—*Ed. Carrière, in "Revue Horticole."*

NOTES ON BEDDING PLANTS.

LOBELIA SPECIOSA.—Many raise their stock of this from seed sown in heat in spring; but a much better plan is to sow it in October. Our seedlings of it, sown last October, and placed on a shelf near the glass in a cool house, are now strong and healthy, and ready to prick off; when established, they will be moved to a cold pit. There is no comparison between dwarf, bushy, autumn-sown plants of this *Lobelia* and those raised in heat in spring. When the stock is kept true, and carefully selected, seedlings will generally hold their own against cuttings. Nevertheless, with particular kinds, and for certain positions, we always raise a part of our stock from cuttings.

LOBELIA PUMILA GRANDIFLORA.—This has a dense dwarf habit and bright blue colour. Planted rather closely, I have no hesitation in saying that it makes a very beautiful bed.

SPOTTED DEAD-NETTLE (LAMIAM MACULATUM).—Without seeing this in a mass, it is impossible to form an opinion as to its beauty and usefulness in the flower-garden. Either for winter, spring, or summer decoration, it always looks fresh. It does beautifully for covering the edges of raised beds, or for forming undergrowth in beds of *Dracenas* and similar plants. It is, also, especially useful for softening and toning down bright colours.

ABUTILON THOMPSONII.—This beautiful variegated greenhouse plant is a great acquisition in the flower garden, either for massing, or as single specimens, or in mixed beds of foliage plants, or as a front plant in an ornamental shrubbery. It will bear several degrees of frost without injury, and, if carefully lifted in autumn, and potted, it will be found useful in the conservatory. We have several plants of it which were potted up from the borders last autumn that have been in flower ever since, and that will continue in that condition through the winter. Young shoots strike freely in spring in a hot-bed.

ACER NEGUNDO VARIEGATUM.—All who have seen this beautiful Maple in Battersea Park will require no further inducement to plant it. Dwarf plants of it make a striking bed; standards or half standards succeed beautifully, and look well in the centres of large beds. They have, also, a fine appearance in shrubberies, brightening up, as they do, in an astonishing degree dark masses of evergreens in summer.

CENTAUREA RAGUSINA.—This, I need scarcely say, is one of the best and most useful white-leaved plants for the flower garden yet introduced, and it is easily propagated in a cold pit in September. Last autumn, after our September stock was in, we found that we required nearly a thousand more cuttings. These were put in the first week in November, and from them we shall obtain, at least, nine hundred plants. Anyone, too, who has a few old plants may easily increase them in the spring in this way: cut off the soft growth down to where the shoots are rather firm; place the plants near the glass, in a temperature of 55°; plenty of young shoots will soon push from the stems; and when an inch or an inch and half long, will strike in a hot-bed as easily as verbenas, and make nice plants by May.

E. HOBDAY, *Ramsey Abbey.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Perpetual Red or Pink Climbing Roses.—May I ask Mr. Reynolds Hole to be kind enough to furnish me with the names of eight or ten good red or pink climbing roses, for either the wall of a house or for a verandah? I have twelve columns of a verandah, on which I wish to plant alternate colours of roses. Of the yellow, white, &c., there can be no want; but the difficulty is in finding good sorts of perpetual red roses for either pillars or walls. I may mention that it is for a place in Kent, with a dry, sandy soil.—CONSTANT SUBSCRIBER.—[To the above Mr. Hole has kindly furnished the following reply:—"I grieve to inform your correspondent that climbing roses, in bloom perpetual, and in colour red or pink, are hopes, but not realities, to us rosarians. They are visions of beauty which we see through our rose-coloured spectacles, to be verified hereafter, as I firmly believe, to those organs which Mr. Weller has described as 'our werry eyes.' In kindly soil General Jacquemiot and Climbing Geant des Batailles would, I think, satisfy your correspondent's requirements, and there is a Climbing Victor Verdier, raised by Mr. George Paul, of Cheshunt, which seemed to me full of promise; but I know of no other red or pink perpetual climber, which can enlarge this trio into a quartet. There are reliable varieties which flower but once, such as the Crimson Boursault and several of the Hybrid Bourbon and Hybrid China families; but these are not what your correspondent wants.]

The Rose-Tree of Hildesheim.—The oldest rose-tree known is said to be that which covers a wall of the Cathedral of Hildesheim, in Germany. It is a thousand years old. From the main stem, which is a foot in diameter, extend six branches, fifteen feet high. In the Middle Ages it was afforded a shed roof, as a protection from the vicissitudes of the weather.

Cheap Roses.—"Y." (p. 204) says we can have roses at threepence each. One can hardly manage them for that at home—I mean standards—though we have learned the art of buying the briars in the cheapest market, and growing and working them in a wholesale way in out-of-the-way places. I confess I have never been very successful, except with Teas, Chinas, &c., and it is rather galling to one who likes dwarf roses best of all on their own roots to throw away thousands of shoots of Perpetuals every winter, if they really can be made to strike like willows, under certain treatment.* Will "Y." kindly inform us what this treatment is? For I see no prospect of roses at 3s. per dozen, unless we strike and grow our own. Neither will this hurt the growers, for all must go to them for new varieties, and new rose growers by the thousand are cropping up afresh every year. It is, too, a most extraordinary fact that the more roses we work, the more we buy.—D. T. F.—[Other correspondents write for information on this subject. "Y." says he does not like to part with his secret.]

Verbenas for Bedding Purposes.—Will you kindly name a few good varieties suitable for beds?—K. J.—[Mr. Westland says the best bedding verbenas, taking habit and continuity of bloom into consideration, are *Aristo Improved*, rich mulberry; *Crimson King*, a compact and good bedder; *La Grande Boule de Neige*, a fine white; *Purple King*, the best purple; *Perfection*, pink; *Venosi*, a hardy variety, producing a charming effect when planted in masses or grouped, coming true from seed; *Celestial Blue*, a good and distinct sort; *Firefly*, very bright scarlet; *Melindris splendens*, vivid scarlet, well adapted to form a ground work for other plants, very desirable; *Snowflake*, white; *Annie*, rosy pink, striped with white; and *Blondin*, magenta, very compact.]

Santolina incana.—This has proved a good acquisition to our flower gardens in summer; it is perfectly hardy, forms a neat edging plant for beds or borders, and is equally valuable for carpet-bedding purposes. It never exceeds nine inches in height; if required it can be pinched down to within one inch of the ground; it will stand three or four years. As soon as the flowers appear in spring, clip it down to the required height; it will soon recover and assume its beautiful silvery appearance. The best method of propagating the *Santolina* is to lift a few plants in autumn, cut them close down and pot them; store away in a cold pit or frame, and remove them, say about the beginning of February, to a propagating pit or house. As soon as the young growths have attained an inch in length, take the cuttings off; guard against injuring the cuttings, a sharp knife being essential to prepare them; insert them in pots or pans, prepared in precisely the same manner as for verberna cuttings. It is a waste of labour to attempt to strike the *Santolina* in pots in autumn; then they will strike inserted in a shady situation in the open ground. They ought to be hardened off by the beginning of May, when they may be taken from the store pots, and planted out about four inches apart; they will form a beautiful edge, and amply reward the cultivator for any trouble bestowed upon them. This *Santolina* is also a neat and attractive rock-plant.—H. W., *Bury St. Edmunds*.

Bambusa edulis.—Of the numerous species of bamboos which are hardy in our gardens, and which have been introduced within the last ten years from China, Cochinchina, and other regions of the distant East, none has exhibited a more vigorous growth than *Bambusa edulis*. We have seen it produce in a few weeks shoots over nine feet long, and as thick as a man's wrist at the base. These giant pseudo-asparagus did not begin to branch until they had reached their full length. One might "see them grow," as the gardeners say. We have not yet tried to eat the young shoots, which are said to be nutritious, and we are now only urging the ornamental value of this fine plant in moist soils and on the margin of pieces of water.—Ed. André, in *L'Illustration Horticole*.

GARDEN DESTROYERS.

APHIDES: THEIR FRIENDS AND THEIR FOES.

BY EDWARD NEWMAN.

(Continued from page 243.)

A word must be said about the "golden-eyes," the "lace-winged flies," whose larvae are also called aphidions, and well deserve the name, for they spend the whole of their existence—I mean the whole of the larval portion of their existence—in gorging themselves with aphides. In many particulars of their lives the two kinds of aphidions resemble each other, but in others they are decidedly different. The golden-eyes fly in the evening only, unless disturbed; the Syrphid fly only in the sunshine, or at any rate in the hottest and brightest hours of the day. Then the mode of flight is different; the golden-eyes have a very uniform fluttering, and feeble flight, and never suspend themselves seemingly motionless in mid air, or dart off with lightning speed, as do the Syrphid. Their mode of egg-laying is essentially different; seven or eight eggs constitute the whole of one laying. I have seen ten in one instance, but this is very unusual. Almost every entomologist with whom I am acquainted has described these eggs as attached to the disk or surface of the leaf, but I have commonly found them attached to the edges. The female stands on the edge of the leaf, and with the tip of her body just touches it, emitting at the same time a small quantity of liquid glue. Then, still holding the leaf with her legs, she draws her body away from the leaf, at the same time discharging this liquid glue in the form of a hair, which almost immediately hardens, assuming the appearance of a real hair; at the extremity of this seeming hair, which does not usually exceed half an inch in length, she leaves a long oval egg; she repeats the same process with a second, a third, and so on, up to seven or eight. The eggs thus deposited have a most singular appearance. When the inclosed larva is ready for exclusion, he pushes off the top of the egg, and pops out his head like Jack-in-the-Box. He then comes deliberately down the seeming hair which supports the egg, and at once finds himself surrounded by his living food. But I must dwell for a moment on the empty egg-shell, which is a most beautiful object. It resembles a hair-bell on its long footstalk, or still more nearly those pretty campanulate aquatic zoophytes which our microscopists delight to contemplate, and our natural history artists to portray.

When full fed, the larva leaves the scene of slaughter, and retires to a neighbouring crack or other place of concealment, and there spins a little round cocoon, so very small that it is difficult to conceive how it can hold the large lace-winged fly which has to come out of it. There is so great a discrepancy between the size of the cocoon and the fly that I could not for a long while trust the evidence of my own eyes, and thought I must have made some mistake, but repeated observation convinced me I was right. There is something equally strange about the fabrication of this cocoon. It is spun not from a silken thread proceeding from the mouth, but from silk produced at the other end of the body. This strange creature is furnished with little nipple-like warts, very small, and quite invisible to the naked eye, situated just where we observe the spinnerets of a spider, and from these issues the silk necessary for constructing the pea-like cocoon in which the creature chooses to imprison itself. And here I cannot resist the temptation to invite the attention of naturalists to the almost exact accordance of these spider-like larvae of aphidions, and antlions as well, with the true spiders in their full grown and adult condition. The food is exactly the same, the mode of seizing it with the jaws the same, the mode of extracting its juices for nutriment the same, the absence of all mastication the same, the consequent rejection of all the solid parts the same, the mode of producing silk from the extremity of its body the same, and finally the cocoon of the golden-eye so exactly resembles the egg bag of a spider that, with fifty years' experience, I am even now unable to distinguish some of them without opening; but then the resemblance is at an end—the spider's cocoon contains eggs; that of the aphidion contains itself, and nothing more.

With regard to the perfect golden-eye, a few words may suffice to describe it. It has two eyes of the most glorious gold-colour—indeed, more golden than the precious metal itself—no burnished gold can compare with the beauty and lustre of these eyes. Several entomologists have tried to account for the extraordinary beauty of these eyes by the presence of a peculiar varnish which is spread all over them, and say that this varnish catches the light in some peculiar manner, and thus acquires its intense brilliancy; but this is purely imaginary, and we can only admire without explaining. The wings are four in number, beautifully reticulated and exactly alike; and the body and legs are green. Altogether it is one of the most attractive-looking insects that our gardens produce; but the attraction lessens when you handle it. Catch it, and hold it for

examination between your finger and thumb, and it will emit a stench so intolerable that you are glad to release it instantly, and wash your hands to rid yourself of the contamination.

What shall I say of the ladybirds? We know that they are the favourites of children, who delight to pick them off the leaves by the wayside, to let them crawl up to the tips of their fingers, to watch them open their coral wing-cases, spread their gauzy wings, and launch themselves on the summer air. The little ones will then advise their pets to return to their homes, on account of a domestic calamity, a conflagration, to which it is necessary they should attend at once, because their children are still under the paternal roof, which is becoming a prey to the devouring element. We know also that they are the most serviceable of insects, and seem, like the Aphidii and the aphisions, to have been expressly created by an Allwise Ruler to hold in check the aphides, those scourges of farm and garden against which man, with all his power and all his experience, is utterly defenceless. All this we know, but very little more. I will relate a little, a very little, of their life-history.

The female, wandering over the aphides, and making a meal of two or three, as her inclination prompts—hunger is out of the question with such an abundant table spread before her as the succulent shoot of a rose bush smothered with a serried phalanx of aphides—will now and then pause from a feeling of repletion, and lay a few yellow eggs wherever she can introduce her ovipositor among her victims. These hatch, and produce little hexapod, lizard-like larvæ, and these, being born amidst their food, begin killing and eating in their very babyhood, and continue killing and eating until arrived at their full stature, when they fix themselves by the tail end of their body to the surface of the leaf; and, after a time, sundry movements show that, although thus securely moored, a locomotive instinct is at work within. This exhibits itself more and more decidedly until the skin parts at the head end, is gradually shuffled downwards towards the other extremity, and remains just round the tail, puckered and folded like a stocking pushed down to the ankle and left there, the foot still remaining covered. The object that has thus wriggled itself out of its skin, or almost out of its skin, is a chrysalis of very curious form; its head is bent under its breast, its back is rounded or humped, and notched like a saw, and the two wing cases, or what are destined to become the wing cases, hang down beneath the body like the flippers of a seal. They do not touch any part of the back, which in a few days they are destined completely to cover and protect, as a thatched roof covers and protects a cottage, overhanging it all round. This chrysalis exhibits an impatient, angry disposition if you touch it, and jerks itself from side to side in futile efforts to escape, which is rendered impossible by the secure manner in which the creature has fastened itself by the tail. The chrysalis state lasts ten or twelve days, and then the perfected ladybird emerges, clothed in black-spotted scarlet. In this state, like the golden-eye, it has the power of emitting a fetid fluid which communicates its disagreeable odour to everything it touches. This seems the inherent property of all aphidivorous insects, and it may possibly be a wise provision for their safety, for neither bird, beast, nor insect would be likely to enjoy so disgusting a morsel.

There has been considerable discussion on the question whether ladybirds confine themselves strictly to an aphid diet; but I can assert positively that they do not. A ladybird may often be found secreted in the hollow of a plum or pear when thoroughly ripe—indeed, these fruits rarely exhibit cavities until they are thoroughly ripe—and the fact of the insect being taken in the act, as it were, has often been regarded as positive evidence that it was the excavator; but truth is on the other side. The cavity was made by a wasp, or a slug, or a snail, and, being made, the ladybird crept into it, and while in has actually so far departed from its usual custom as to nibble at the luscious pulp. The fact makes itself manifest by watching a ladybird when engaged on a plum. Its mandibles may be seen in motion under a lens of moderate power, and the diminution of the pulp after a time becomes very evident. But even in this matter the ladybird is guiltless of doing us an injury, for it only takes the leavings of others—fallen or decaying fruit, which we leave on the ground as useless.

Let me conclude by entreating my readers to spare and to protect these aphid-eaters wherever they may be found, and not to condemn the aphides, their friends and their foes, to indiscriminate slaughter.—*Field.*

CATERPILLARS AND CAULIFLOWERS.

DURING an excursion last September, near the town of Meaux, I observed in a bed of cauliflowers several rows of elder branches, planted about three feet from each other, and still retaining their faded leaves. On making inquiry as to the use and purpose of these,

the owner replied, "Some years since, one of my neighbours had several rows of cauliflowers planted near a hedge of young elders, and further on—in the same field and on the same day—he had planted another lot. These last, which were as carefully attended to as the others, and from which the caterpillars were constantly picked, were very much injured by them, and the crop was scanty, and, from its wretched appearance, hardly fit to offer for sale. The most careful picking could not dislodge the caterpillars from the hearts of the plants. On the other hand, the few rows which had been planted near the elder hedge were perfectly uninjured—not a caterpillar had touched them. The explanation of this curious fact is that the butterflies preferred laying their eggs on the leaves of the elders, which were completely devoured by their caterpillars. Ever since that time, the people of this neighbourhood stick branches of young elders among their cauliflowers, and, later on, when the caterpillars on these have reached a certain stage of growth, some cool morning before sunrise they pluck up the elder branches, throw them in a heap, which they cover with straw or dry grass, and set them on fire. As the cauliflowers are not yet fully grown, fresh elder branches are placed amongst them."

As it is natural to conclude that other cruciferous plants might be protected from caterpillars in this way, a supply of elder branches will be a desideratum. This might be supplied by planting a piece of waste ground with elder, at a distance of a yard apart, heading them down close to the ground like osiers. The result would largely repay the trouble in the saving of time which is lost in caterpillar picking, a process which cannot, moreover, always be relied upon from the difficulty of performing the operation thoroughly and efficiently.—*Correspondent of "Revue Horticole."*

EFFECTS OF A ROOKERY ON VEGETATION.

If there were not some compensating influence at work, it is quite plain that trees would show far greater evidence of suffering from the friction of the feet of such a multitude of birds of no small size than is observable in most of our rookeries. But the excrement dropped by the birds, and washed into the earth by rain or drawn in by worms at night, does in fact greatly stimulate vegetation; and not least that of the lofty trees themselves.

Of the effect on the humbler growth, the following instance seems worth recording. I have a grove of tall horse-chestnuts, sycamores, and Spanish chestnuts, with here and there an oak. The upper soil is a light, dry, and weakly humus, of a blackish colour, and no great thickness; whilst beneath lies a yellow ferruginous rubble of sand and clay, intermixed with carboniferous freestone. Neither soil nor subsoil are such as can be described of even average fertility; and were it not that the trees had the benefit of two very favourable conditions, they could not have reached their present timber-like stature, though more than one hundred and fifty years old. They stand on a hillside, always a friendly site for timber, and the aspect is cool and northerly, another great aid where the soil is light and hungry.

Some twenty years ago, before the rooks had established themselves, so exceedingly poor and hungry was the ground, that no one native plant, save a little struggling and almost invisible dog's mercury, showed itself. Nothing but dead leaves lay on the surface, and repeated attempts to establish periwinkle, London pride, and common bramble (growing luxuriantly close by) altogether failed. I should add that no cattle or sheep had access to fertilise the surface.

At the present time, after twenty years of a moderately stocked rookery overhead (but no admission of more air by thinning of the timber), the ground is covered knee-deep by brambles, intermingled with periwinkle, grasses, stachys, nettles, &c., and the old trees are quite as thriving, if not more so. In another quarter an avenue of tall beeches is the scene of clamorous nidification. The soil and subsoil are here deep and good, but the site high, exposed to every wind, and very dry. Formerly the grass was poor and scanty under these beeches. Though the nests have never been numerous here, the airy avenue is a favourite trysting place of swarthy hosts from neighbouring localities on a fine morning, which come to sun themselves.

Under these trees there was last summer the finest growth of coltsfoot and foxtail grass that I ever saw under beeches anywhere, and the tall summits overhead show no signs of harm or scathe from being the scene of so many loquacious parliaments.

By the way, on these tall beeches a curious approximation and fraternisation of rooks and guinea fowls used to take place; for it pleased the latter birds, at roosting time on mild evenings of April and May, to mount aloft very high, quite near to the rook nests; and there sat the two incongruous European and African groups, within a

yard or two of each other, vying with each other in discordant clamour, yet evidently recognising a certain mutual allegiance and respectful good neighbourhood. So they passed the nights for many weeks in spring, and it was very stormy weather indeed that would compel the guinea fowls to sit lower than their friends.—*R. Carr Ellison, Dunstan Hill, Durham, in "Field."*

NOTES AND QUESTIONS ON GARDEN DESTROYERS.

Hairy Caterpillars.—These, almost without exception, are free from the attacks of birds, and, what may perhaps be an indirect consequence of their instinctive knowledge of this immunity, there are no caterpillars that so freely expose themselves to view. The cuckoo is almost the only bird that takes them. And even it does not feed upon all indifferently; for M. Grette de Palléul states that he has never found, in all his examinations, any caterpillars of *Liparis chrysorrhœa* in the stomach of any bird.

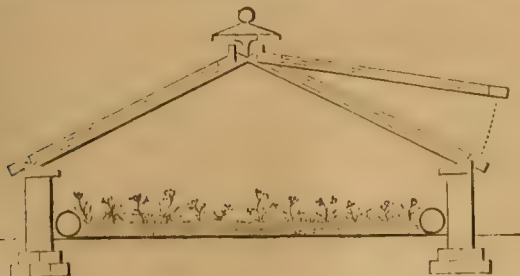
Lymexylon navale.—This is common in oak forests in the north of Europe, where it does much injury, by perforating the solid timber, and is occasionally so abundant in the dockyards there as to do much mischief. Linneus, who studied the life history of the insect, ascertained the period at which it made its appearance in the perfect state and when it laid its eggs, and recommended that the oak timber in the dockyards in Sweden should be sunk under water at that period. This was done with perfect success. The insect, therefore, has always had a certain interest of its own for the entomologist, which is not diminished by its being rarer in other districts than in those infested. It is rare in this country, and used to be rare in the neighbourhood of Paris; but it is curious, as showing how rapidly an insect scourge may be invited by producing abundance of pabulum, that this year it has ceased to be so, it having been taken in great quantities in the dead oak left lying in the forests, which had been cut down by the Prussians. The dead oak timber has apparently served as an attraction to bring it from distant quarters.

Worms on Lawns.—Will some of your readers kindly inform me what are the best means of destroying worms on lawns? I have a bowling-green, consisting of 3,000 square yards, which is infested with them; I have killed thousands with corrosive sublimate, but thousands more seem to come to the funeral of those that are dead. At the present time, while the ground is damp, the worms form innumerable little mounds of earth on the surface of the green, which, when the roller goes over them, are flattened on the grass, completely spoiling the green. Last season, being a wet one, I had great trouble from these worms, and used a large quantity of sublimate. Can anyone give me a better remedy?—J.B.

GARDEN STRUCTURES.

A WARM FRAME.

I THINK all interested in horticulture would be pleased to see two new frames which I have built, one hundred feet long by eight feet wide. By a simple piece of machinery the ridges are lifted, though so long, with the greatest ease, thus giving air without the trouble of opening the lights. A four-inch pipe goes round each frame, connected with a hothouse, and fitted with a valve. Each light is hung on pegs of iron dropping into a hook, so that they can be lifted off to paint. The lights open as if connected by hinges; their being movable is a great advantage. The bottom of the frame



is filled with cocoa fibre refuse, in which the pots are plunged. Now for its, or rather their, advantage, for I was so pleased with the first, built in 1868, that I built another in 1869. They are ventilated in a few seconds, without a cold wind playing on the plants. There are no hinges to get fast with rust or to break. They are safe from frost. The plants are near the glass. There is room for a man on his knees to work inside plunging plants when the lights are down. The pots being plunged in cocoa fibre refuse (which is clean, pleasant to handle, and free from insects and snails), there is little or no evaporation from the sides of the pots, and the plants seldom want watering. These frames are filled with seedling geraniums and tricolor

geraniums; and all who have seen them are pleased and surprised at their appearance. They look as if growing in an open bed in summer weather. Now, if these plants had been kept in greenhouses, they would have required watering every few days; but the frames have only been looked over once a week, and the plants have not been watered once a fortnight, except the row nearest the pipes. In watering, say, 5,000 plants, the difference between the labour required to do it once a fortnight and six times is something considerable. But this is not all; the plants are not chilled, the goodness of the soil is not washed out by such frequent waterings; and again, the cocoa fibre refuse being so perfect a non-conductor, the roots are kept in a more equable temperature than by any means with which I am acquainted. I shall be glad to show these frames to anyone.—*J. R. Pearson, Notts, in "Field."*

A GOOD AND SIMPLE HEATED PLANT CASE.

WE have much pleasure in calling attention to a plant case invented by Mr. Peter Barr, which is most effective in raising seedlings and growing plants which require a genial warmth. Our illustration saves us the necessity of describing it. Below the "fibre" and the "water" the section shows a hollow chamber, and below that a little stand supports a lamp, the heat from which enters the chamber and escapes through small perforations in its sides. This lamp works



very well, simply requiring trimming night and morning, and replenishing with oil; the best colza oil is used. There are two patterns of this case—one rather deep, in which small stove plants, &c., may be grown; the other shallow, and more suitable for seedlings, cuttings, and other dwarf subjects, which are thus brought much nearer the glass. They are manufactured in several sizes. These cases will be found very useful by persons who wish to raise seedlings or grow tender plants in a dwelling-house, or in a cool greenhouse, orchard-house, or conservatory. This is a modification of an improvement on the Waltonian case.

THE PROPAGATOR.

RAISING SEEDS OF HARDY AND TENDER PLANTS.

GOOD seeds are of great importance towards the success and enjoyment of a garden, but to have a clear idea of the best and simplest way of raising them is very much more so. The seedsmen may have a good deal to answer for, but in the great majority of cases the blame is wrongly laid on their shoulders. The "bad seed" of the amateur very often means mismanaged seed.

The first thing the sower should do is to classify his seeds—at least, in all cases where there is a variety of tender and hardy plants to be sown. They should be classified according to the positions in which it is intended to raise them—in the hotbed, frame, open air, or as the case may be. Then each packet should have a wooden label written for it, and affixed to the packet by a kind of matting. This will save a good deal of trouble when a favourable time for sowing comes, as the sower will not have to cease his sowing every moment to write a label. Mistakes are also less likely to occur when the proper writing of the labels forms an operation by itself.

The following rules may prove useful to the inexperienced in the sowing of seeds in pots:—

1. All pots and pans used for seed sowing should be well drained in the ordinary way; and, as fine soil is much employed in seed sowing, a layer of dry moss or of roughish soil should separate the drainage from the fine soil above.

2. The soil on the top surface of all pans, pots, &c., used for seed sowing should be finely pulverised by sifting, not only to allow the seeds a medium in which to root readily and freely, but also one in which they may be divided with little injury to the roots.

3. Good sandy loam may be taken as the base of most soils used for seed sowing, but it should always have nearly half its bulk of finely pulverised leaf-mould, peat, or some vegetable soil in it, and

fully one-fourth of the whole should be of sand. Where vegetable soil is abundant, it may be employed almost exclusively, always however with the addition of fine sand.

4. The soil should be made perfectly firm and level in the pots, particularly in the case of small seeds. This is most important.

5. All small seeds should be sown very much thinner than is customary. Very often they are sown so thickly that the poor little plants can do nothing but illustrate the "struggle for life," and, when drawn up and etiolated in this way, the whole batch often perish from mould. Sow thin enough to permit of every plant having room to unfold its leaves when it peeps above the ground. In nine cases out of ten one thousand seeds are sown where one hundred would have sufficed.

6. It is a usual plan to cover all seeds with a covering of soil about equal to their own size; but in the case of large seeds, like those of the castor-oil plant, for example, little nicety as to covering need be observed, as they will push up through a much greater depth of soil than we can give them in pots or pans. It is with the small seeds that the care is required. In their case a perfectly level firm surface is, above all things, necessary, and very finely sifted sandy soil; for very small seeds it may be nearly all sand. In the case of the most minute class of seeds, of which the *calceolaria* is an example, it is better not to cover at all, but, having made the soil perfectly firm and level with the bottom of a smooth pot, or circular piece of wood with handle attached, water it with a fine rose; and, as soon as the water has disappeared, sow the seeds on the surface. Many very small seeds do not start from being too deeply covered, and even some not very small ones often fail to vegetate from the same cause—the Chinese *primula*, for example.

7. All seeds sown in pits, frames, or houses require shading during sunshine; and it is particularly necessary in the case of the finer kinds of seeds sown on the surface. As these must first put forth their delicate little rootlets on the surface, an hour's strong sun would completely sap the life out of them. For frames, tiffany, thin canvas, or mats will serve. For a few dozen pots of seeds sown in a hothouse, there is nothing better than a newspaper spread over the pots, and supported by their labels. Where a number of different kinds of seeds are sown together in a frame, many kinds will be an inch above the surface, and with perfectly developed leaves, before others have shown at all. It is desirable to frequently remove and harden off those that are well up, as by doing so we are enabled to leave the frame, or pit, or handlight, in the darkened condition that is desirable for the seeds not up.

8. Do not water seeds immediately after being sown, but when they begin to come freely they will be very thankful for a good watering of a fine morning when dry. As a rule, water them with tepid water from a fine rose. Of course, this applies to indoor seeds only.

Next let us take the various classes of flower seeds, hardy, half-hardy, perennial, biennial, stove, and greenhouse seeds.

Hardy annuals usually flourish in any ordinary garden soil, and merely require a slight covering, according to their size. Half an inch suffices for the largest kinds, such as the lupins—that is, half an inch over the seeds; whereas the smaller kinds, such as *viscaria*, &c., require but a mere sprinkling. We usually have a barrowful of sifted potting refuse, or some other not over precious, fine, free, and sandy earth at hand for covering them; though, if carefully and neatly covered with a little of the ordinary earth, they are quite safe. But the quickest, simplest, and best way is to have some sifted earth at hand, and then the depth of covering required by each may be regulated with ease. It is best to take this fine earth up in handfuls, and scatter it broadcast over the seeds, or to put some in a convenient sized flower-pot, and then scatter it with the hand. Of course, a nice mild day should be chosen for this and all similar operations, and the soil should be dry and friable, that the sowing may be made with comfort and facility. These and all seeds should be sown in lines or rings, not in broadcast patches, because when sown in line the difference between the plants and weeds can be seen in a moment, when both come up thick after a few weeks; whereas, if sown broadcast, all come up together, and unless an experienced hand familiar with the youngest aspects of the plants, you may not be able to distinguish them from the weeds. Garden ground is generally full of the seeds of weeds, and these usually come up freely among flower seeds sown in the open air. They should be removed from among the annuals as soon as observed. When once the annuals get a little start of the weeds, the rudest garden workman may distinguish them. Hardy annuals are like grass. They may be sown in the open ground at any time without fear of failure. It is, however, needless to sow them at any other time than in autumn or spring—chiefly in September and March—and early or late in spring or autumn, as the bloom may be required. Hardy annuals are in most instances, however, improved by being sown in

autumn. For example, there is as much difference between a bed of the bluebottle or corn-flower (*Centaurea Cyanus*) sown in autumn and one sown in spring, as if they were two different plants, the advantage being all in favour of the autumn sown subjects. The same is true of the sweet pea and many other plants.

Biennials, among which are some of the prettiest plants used for spring gardening, generally are best sown in June and July, but particular requirements or soils may make it desirable to modify this. They should be sown in some spare spots in the kitchen garden, and in autumn transplanted to the places in which they are to bloom the following spring or summer. It is a class worthy of much more attention than it usually receives, and includes not a few fine old garden flowers, like the Sweet William. This, however, and a good many others of the class, may be sown in nursery beds in spring.

Half-hardy annuals form an important class, and with them may be sown such bedding plants as are usually raised from seed. A gentle hotbed is the best place for the generality of these, and if the bed be covered with fine soil, and the seeds sown directly upon it, so much the better. The greater number of half-hardy annuals will succeed perfectly if sown in pots in a cold frame or pit, with the lights kept close and shaded till the seeds germinate. No matter how they are raised, they should be gradually exposed to the open air, so as to be quite inured to it before the end of May, or, in the case of the quickest growing and hardiest things, long before that time. In the case of those sown directly on the soil of a gentle hotbed, the lights may be removed. Some of this class may be sown in the open air when the earth becomes sufficiently warm—say about the beginning of May—but many people lose them by sowing earlier.

Tender annuals are a small class which require to be sown in a warm frame; a melon or cucumber frame, or nice warm stove, will do admirably. Give them and all other indoor seeds plenty of light when once up; in other words, keep them near the glass to prevent their being drawn.

Hardy perennials.—Some of the finer and rarer sorts, slow-growing alpine plants, &c., should be sown in pots or pans, and carefully looked after till strong. The month of March is, generally speaking, the best time for sowing these. The gentians, many North American plants, some anemones, peonies, cyclamens, and various other perennials are slow to germinate, and should be waited for, keeping the pots clear of weeds and in a cold frame during summer. The hardiest kinds may be raised abundantly on a bed of fine earth in the open air—say, on a favourably situated border. Sow in April, or, indeed, at any time that the seeds come to hand or become ripe. By having a little nursery of young plants of this kind, vacancies may be filled up or new plantings made at any time. Many of the finer spring flowers come into this class, as well as the showy summer border flowers. Hardy perennials may be sown in autumn with great advantage, or, indeed, at any time during the summer, when the seed is ripe. Cover, as usual, in proportion to size, and sow in little drills—say half an inch deep—made by laying the straight handle of a rake or hoe across the bed, and then gently and equally pressing it down. Do not sow perennials in the place in which they are destined to flower, but plant them from the seed beds into such positions.

The taste for sub-tropical plants, palms, &c., that is now arising is likely to cause many to take an interest in the raising of plants requiring a warm temperature. Their name is legion, and they differ much in size, from palm seeds as big as eggs to minute ones requiring scarcely any covering. All stove seeds should be sown in spring, at any time from January to the end of April, but if obtained in early summer it will be better to sow them at once than lose another season. They should rarely be sown in autumn, except where there are very good appliances, as otherwise they are apt to die off in winter. One of the most important points in the raising of seeds of stove plants is keeping them near the glass from the moment they have appeared above the earth, and they should be potted off when very young. A few day's neglect of these points may spoil them. There is not, nor is there ever likely to be, a better position for raising seedlings of stove plants than the old-fashioned hotbed or pit heated by stable manure or leaves. The stove with a tan bed is also excellent, and they may also be raised in the ordinary plant stove. In it, however, we have always found ants great enemies to seeds, eating every grain of some kinds in a single night.

Greenhouse seeds are at present required by a larger class than the preceding, and are, as a rule, much better started in the places recommended for the stove seeds than in the greenhouse; and, failing a stove, a good hotbed suits them to perfection. If they must be sown in the greenhouse proper, it would be wise to plunge the pots in moss or cocoa fibre, so as to counteract the effect of the dry air common to greenhouses. There are palms for the greenhouse

as well as the stove. We have just seen a list of twenty-eight kinds of palm seeds in a seedsman's catalogue, but everyone of these we should place in a brisk hotbed, and give them a vigorous start. A gentle hotbed will prove an agreeable starting-place for seedlings of pelargoniums and plants of that type. Cinerarias should be sown towards the end of summer in a cool frame or pit, and with them the handsome herbaceous calceolarias.

With stove and greenhouse, as well as many other seeds, it is often necessary to have a good deal of patience. Nothing is commoner than for people to throw away pots of seeds, under the impression that they are dead because they have not come up as soon, or nearly as soon, as soft and vigorous kinds, while all the time the seeds are as sound as can be. Some subjects take a long time to germinate; and some, that naturally start immediately after they fall from their pods in autumn, seem to become hardened by being kept over the winter in drawers, as our convenience requires. Therefore, we should always satisfy ourselves that seeds are dead before throwing them away.

R.

THE ART OF GRAFTING.

(Continued from p. 234.)

PLANTING.—A young, compact, well-rooted plant should be selected. If more than one year old, it should have been transplanted. Before planting it is dressed, that is, its roots and branches are pruned and cleaned. The stem should be cut down to about ten inches from the collar, if the graft is to be low down, and about four inches in cases of cleft and crown grafting. The side branches should be cut away, or rather shortened. Evergreens and certain kinds with hollow wood, as the sweet and horse chestnuts, the walnut, and the tulip tree, should not be topped. The trees should be planted in rows, so that those of each successive row may be opposite the spaces of the preceding one, and at distances calculated according to the future size of the subjects. A space of twenty inches between the plants, and thirty inches between the rows, is the average in well-kept nurseries. This may be increased or diminished as the plant is likely to branch much or not, and in proportion to the length of time it is to remain in the nursery. The planting is done with a dibble or spade. If it is carried on slowly, or in a time of great heat, the roots of all the plants should be dipped in mud, or in a mixture of soft clay and cow-dung, which will prevent them from suffering by being kept out of the ground. The soil should be well pressed down after planting. Watering will generally be necessary the first year only, and then chiefly at the commencement of vegetation.

CUTTING DOWN THE STEM.—During the first year we confine ourselves to the culture and care of the plant. We will suppose that it is intended for a standard for a tall stock: we shall speak further on of low stocks. After the first year of growth, or before the second commences, the plant intended for a standard is cut down to within two inches from the surface of the soil. This operation should not be performed until the month of February or March, when the sap is at rest and the winter frosts are no longer to be feared. During the summer we select the finest shoot which has sprung from the stump, and bend and tie it up to the stump so as to give it a vertical position. All the other shoots are cut away; and in autumn the stump itself is cut away. Should it be found difficult to fasten the shoot properly to the stump, a stake may be used instead. The following year the young tree will be allowed to grow on. If it should turn out badly, it must be cut down a second time, or else grafted at the base with a vigorous kind, which, when it has grown sufficiently, will furnish a suitable stock. This cutting down is, of course, unnecessary in the case of fine, stout, vigorous, and straight stocks; but with doubtful subjects it is better to practice it.

TRIMMING THE YOUNG STOCK.—This consists in cutting off the useless branches. In general, the strong ones are removed altogether, being cut close to the stem; the medium-sized are shortened; and the weak ones left as they are. The shortened branches may be left from two to ten inches long, always retaining some of the eyes. It should not be forgotten that cutting the branches weakens a tree, and that retaining them has the opposite effect. In this operation therefore, the healthy growth, as well as the form of the stock, should be

considered. When the stem is strong, it will not suffer from the removal of the lateral branches from the neck up to the place intended for the graft. In short, strong stems should be cut closely, weakly ones only partially, and poor ones as little as possible. In cutting away a branch entirely, it is well to leave a small portion with a bud on it at the base. In making the cut, the direction of the pruning-knife should be from below upwards, as it requires very great skill to make a clean cut in the other direction, and avoid tearing the wood. To prevent the growth of useless thick branches near the terminal shoot, the buds on that part should be pinched off in the spring. The young leading shoot should be trimmed moderately; its branches being shortened where they are too long, and the others left as they are. It should not be topped until it has grown at least a foot beyond the height intended for the graft.

PREPARATION OF THE STOCK FOR GRAFTING.—Whether the stock shall be headed down or not will depend on the mode of grafting employed. The removal of the head, indispensable in crown-grafting, is effected at the moment of commencing the operation, as the wound is then not likely to become inflamed, being covered immediately with the grafting-wax as soon as the graft is in position. However, when large trees are grafted, they should be cut some weeks beforehand; and the same may be said of all kinds of grafting which are done at the time when the sap begins to flow, and which require the stock to be cut in this way. During the dead season, after the heavy frosts have passed, the head of the stock should be cut down to within about four inches above the place where it is intended to insert the graft. At the time of grafting it is cut finally, or else the wound is simply trimmed by slightly reducing the length of the stock, so that the graft may be placed in contact with a living and healthy part. Side-grafting does not require the removal of the head of the stock. It is sufficient that the part which is to receive the graft should be clear, and that the shoots for four inches above and below it be cut away. The upper branches will then continue to draw up the sap, and the lower ones will promote the growth of the stock. In summer graftings, the stocks should be trimmed a month beforehand. The flow of the sap, which is diminished by this operation, will then have had time to recover its activity, and will contribute to the success of the graft. But cutting off superfluous branches a week or so before grafting, would be followed by a check in the flow of the sap at that time, which would be very detrimental to the uniting of the parts of the graft. It would be better not to cut them till the moment of grafting, as the junction would be complete before the vegetation had suffered much abatement. These operations should be performed with keen-edged tools, and by a skilful workman, who would neither bruise the stock nor leave stumps full of supplemental buds. Resinous trees do not require this preparatory treatment. With the exception of bushy kinds, stocks grafted low down the first year of their planting have seldom any branches to be removed. It is sufficient to wipe with the hand or a rag the place which is to receive the graft. Usually grafting is performed on the low stem, which has been shortened down to ten inches at the time of planting. In grafting briars, any prickles that are in the way should be removed, as well as any buds of the stock that might come under the bandage. This is done at the time of grafting. If, from any cause, the flow of the sap is arrested in mid-summer, vegetation should be excited by liquid-manure waterings, moving the soil about the roots, and a mulching of old hot-bed manure.

SELECTION OF THE SCION.—The tree, branch, or shoot which is grafted on the stock, and which it is desired to propagate, is termed the scion or a graft. The plant from which it is taken is called the parent plant or tree. The scion should be of good quality, healthy, hardy, and of sound constitution. An unsound scion propagates whatever defect it possesses, and a bad selection repeated for several generations leads to a degeneration of the variety, which is, however, local and not general. The proof of this is furnished by the sub-varieties of trees with variegated leaves. The variegation is propagated by grafting, yet the type remains none the less exempt from the disease which produces it. Though the defect is not always visible as in the case of variegation, propagation with inferior scions is

sure to lead to degeneration; one should be very cautious about taking scions from a tree of unknown quality. In nurseries great importance is very properly attached to the vigorous condition and true name of the parent trees. These, while supplying scions, are also carefully trained. They are pruned in order to obtain a greater number of branches, but care is taken to reserve, from one year to another, some branches uncut, if it is desired to have scions that will arrive at maturity more speedily. The shoots which are developed on the upper part of an uncut branch ripen their wood sooner than any others. When a growing tree is to be grafted into another, it should be planted for at least a year beforehand, near the subject on which it is proposed to graft it. The scion should be cut from the parent tree just before it is used. For grafting during the dead season, the scions may be cut some time beforehand, but not until the sap has gone to rest. They may be kept in good condition until they are wanted by burying the ends about four inches in the ground, in the shade of a house or evergreen tree. Long branches should be buried deeper and laid in a slanting position in the trench. They will keep much longer if placed in an ice cellar, buried horizontally in fine sandy gravel such as is used for walks. Graft buds should be taken from the branch which produces them just before they are used. A scion should never be allowed to suffer by long exposure to the air or dampness. The cactus family furnishes individuals from which scions may be detached and exposed to the sun for several months without the least injury; but we are now occupied with woody plants, and not with hothouse or herbaceous kinds. Scions with the leaves removed may easily be sent considerable distances during the repose of the sap, provided they are kept cool. They should be wrapped in moss, and the end of each stuck into a potato, artichoke, &c. When they arrive at the end of their journey, they should be put into water for a few hours, and then laid in a shady place. If the bark is wrinkled, they should be entirely covered with soil in a trench and left thus buried for two or three weeks. The same precautions should be taken with shoots sent, during the time of vegetation, either by post or other mode of speedy transport.

C. BALTET'S "L'Art de Greffer."

(To be continued.)

Beauty of Mountains.—The best image which the world can give of Paradise is in the slope of the meadows, orchards, and corn-fields on the sides of a great Alp, with its purple rocks and eternal snows above; this excellence not being in any wise a matter referable to feeling, or individual preferences, but demonstrable by calm enumeration of the number of lovely colours on the rocks, the varied grouping of the trees, and quantity of noble incidents in stream, crag, or cloud, presented to the eye at any given moment.—*Ruskin.*

THE INDOOR GARDEN.

THE ELEPHANT'S FOOT PLANT.

(TESTUDINARIA ELEPHANTIPES.)

This curious plant is a native of the Cape of Good Hope, where it is locally known by the name of "Elephant's Foot," owing to the fancied resemblance of its singular root-stock to the foot of that animal. It is known also in this country as the tortoise plant, the shell-plated covering of that animal

having suggested its generic name, *Testudinaria*. Root-stocks of a large size are sometimes brought to this country, ranging from one to three or four feet in diameter, the exterior portion being cracked into angular protuberances, as shown in the figure. After they arrive a good plan is to place them on charcoal, broken small, and keep them free from water until the stems begin to grow, after which they may be freely watered while the growth of stem continues. It sometimes happens that they begin to grow at once after being placed in the greenhouse, but they oftener remain from one to three years before they push forth stems. The stem is of annual growth, and, after flowering, it dies down like the stems of ordinary herbaceous plants. When this takes place, the root-stock should be kept dry until it again begins to produce a fresh growth the following season. An ordinary warm greenhouse or conservatory is the proper place for growing it, and also for keeping the plants during their resting period. When put in a dry stove the growth is generally weak, and the root-stock soon gets covered over with plant scale insects. If trained as represented in our woodcut, large plants produce a very pretty effect during the summer months. The flowers are inconspicuous, of a greenish colour, and hang in short racemes. Very light, sandy soil should be used to grow the plant in. M.



The Elephant's Foot Plant.

Eucharis grandiflora.—This is one of the most useful of stove plants, and particularly easy of cultivation. Under the following management, it may be had in flower six or eight times in one year:—Pot the plants in any rich light sandy loam, and drain well, placing them in bottom heat, if possible, close to the glass, and expose them to the sun well when out of flower, in a temperature of from 65° to 85°, syringing them three or four times a day in bright weather, and giving a good supply of water at all times, and liquid manure occasionally. Mr. James Tapling, of New Jersey, has flowered some plants nine times this last year in ten months. The flowers may be kept in a cut state for a fortnight in water in a cold place. They are rather large for hand bouquets, but particularly useful for table decoration, head flowers, wreaths, churches, &c. *Eucharis candida* is very similar, but smaller.—W. HOWARD, Batham.

Lily of the Valley.—I have grown this as recommended at page 168, and my plants never show any symptoms of blooming in the autumn. I have some coming into blossom now which have been treated exactly as stated in the article to which reference has been made.—C. P.

VANILLA CULTURE.

BY E. BENNETT, ENVILLE HALL, STOURBRIDGE.

As a stove climber the vanilla may safely be asserted to be one of the most interesting; its green, fleshy leaves, singular *Cattleya*-like flowers, delightfully fragrant fruit, and great length of roots, make it particularly well worth attention. When properly treated it is a plant of very rapid growth. A cutting placed in one of the pine pits here in August 1870, has made upwards of 240 feet of growth, and I look forward to its producing fruit this season. It grows freely in a mixture of peat, charcoal, and mortar-rubbish. It may be trained in any form, and will attach itself to rough walls, wood, or iron. Having naturally little tendency to branch, I frequently stop my plants in order to make them throw out sideshoots, and in that way secure a greater amount of fruit-bearing wood. When at Osberton I tried several experiments with the vanilla, in order to find out the different temperatures in which the plants would fruit, and I came to the conclusion that for this purpose it is not requisite to keep up a high temperature. The largest plant at Osberton was planted out at the back of a succession pine stove, the temperature of which ranged from 50° to 65°, and sometimes much lower: this plant fruited freely every year. Indeed, one season I gathered off it upwards of 300 ripe pods, for which I obtained five first-class prizes. A second plant was planted in a fruiting pine stove, the temperature of which ranged from 60° to 85°; this also grew vigorously, and fruited well. A third was planted out in a house used for miscellaneous plants, the temperature of which ranged from 45° to 55°. This did not grow freely, but nevertheless bore fruit. I have therefore come to the conclusion that a temperature ranging from 60° to 70° is most suitable for the vanilla.

Major Trevor Clark has stated that the vanilla is a difficult plant to fruit; but failure doubtless occurs in many cases through want of knowledge of the art of fertilising the stigma, an operation requiring both care and skill. In the flowers of vanilla three sepals, and as many petals, surround the column which bears the anther and stigma. The first of these is

attached to the summit of the column by a narrow curved neck, and contains, within a cavity on its lower surface, the pollen masses. The curved neck just alluded to bends towards the lower surface of the column, where it rests upon an organ called the retinaculum, which interposes between the anther and the stigmatic surface of the column; this latter, projecting from the column, lies immediately under the retinaculum, and terminates a bearded glandular process, which covers the lower surface of the column. The retinaculum, which is concave towards the stigma, effectually prevents all contact between that and the anther; it is therefore necessary to remove

the retinaculum in order that the anther and stigma may be brought together, and this is best effected by means of a pair of narrow-pointed forceps. These should be carefully introduced sideways between the anther and stigma, seizing the retinaculum and tearing it off in the direction of the anther. The pollen masses are then drawn out, pressed down on the stigmatic surface of the column, and the operation is completed. If this is properly performed, the setting is certain; if not, the flowers will drop. Where, however, fertilisation has been effected, the flowers remain for a considerable time, or continue fixed to the fruit, which in twenty-four hours will be perceptibly elongated and in about twelve months will be ripe. It is requisite, therefore, that the vanilla should be planted and trained, so that when the flowers expand they may be easily got at. They generally open during the night or early in the morning; therefore the best time to fertilise them is in the morning, and this must be daily attended to as long as the plant is in bloom. The operation



Well-Grown Vanilla in Large Plant Stove.

is so familiar to me now that I could venture to rely upon nearly every pod coming to maturity, although I must confess that I found artificial fertilisation difficult to accomplish at first.

I am of opinion that it would be a good speculation to grow vanilla in this country for commercial purposes, the price charged for imported produce being very high. English-grown pods are very highly flavoured, much more so than those which we receive from Mexico; a large pine stove, where the plants could be removed during the few weeks when the vanilla flowers are setting, would be all that would be needed.

I may mention that I generally keep the temperature rather high during the time the plant is in flower, and I use the syringe freely on it during the summer months. Insects never trouble me, and a little shade during hot weather is all that is required.

Considering the length of time the vanilla has been in this country (over seventy years), it is surprising that more fruiting plants of it are not to be met with. Indeed, I have seen many plants of it that do not produce even a flower, a circumstance which I attribute to not getting the wood well matured, for, if not well ripened and hardened, it will not bear flowers. To aid my plants in maturing their wood, I at times allow them to get almost dry and parched.

The accompanying illustration is a good representation of the vanilla in a large stove when in good health and growing freely.

THE SHRUBBY CALCEOLARIA.

I AM an old gardener, too old for garden work, but I still take a deep interest in all that is connected with that happy employment, in which I have passed my life. Although I can dig no more, I rejoice to read in *THE GARDEN* the sayings and doings of those who are young and strong; and though I can never again march to battle, I can still shoulder my crutch and show how fields were won when I contended for victory at our horticultural exhibitions. And, with your leave, I should like to say a few words about a plant which I grew with great success, and for which I took many a first prize—the Shrubby Calceolaria. Perhaps I may first be allowed to say where I commenced the cultivation of this beautiful flower. It was at Caunton Manor, where I lived for more than forty years as gardener to Mr. Hole, the father of the gentleman well known to your readers as a writer about roses. I hope his reverence will forgive me if I say that, having known him from a child, I can well remember how he first showed his great liking for horticultural pursuits. It was in gooseberries. I grew them for exhibition, and the trouble I had in preventing him from judging them (by flavour) before the show, I am not likely to forget.

And now about the calceolaria. The best kinds I ever saw—and I have seen those shown in London, and those sent out by Mr. Thomson, of Dalkeith, and Mr. Henderson—were raised by Mr. Major, of Knosthorpe, near Leeds. There was more quality about them, both in shape and colour, than I have seen in any others.

They may be struck from cuttings at almost any time except in the winter months. If struck in spring, they will flower in the autumn; if struck in the autumn, they will flower in the following spring. These cuttings, about three inches in length, should be inserted about one inch in small pots filled with a light, sandy compost, and placed under a bell glass in a gentle heat. In a month or five weeks this glass should be gradually raised for a few days before potting the rooted cuttings, when they should be again placed in heat until they are established, when they should be removed to a frame or greenhouse. They must be repotted two or three times, as they require it, with plenty of drainage; their last shift being into pots seven inches in diameter. The soil should be a mixture of turfy loam, which has been taken from old pasture land and lain for a year, leaf-mould, peat, cowdung, silver sand, with a small quantity of charcoal intermixed. They must be well watered when in a growing state, syringed in the evening once or twice a week before they come into bloom, with manure water occasionally given to the roots. They must have all the air you can give when the weather is favourable, and when they begin to flower they must be shaded from the scorching sun. They must be tied out as they require it, and, if carefully cultivated, may be grown to be three feet in diameter. EVAN HIRST.

PERPETUAL CARNATIONS.

This is the time to look up the old plants and get them in a little heat, so as to procure some small grass for cuttings, which should be put in as soon as possible. They will strike as easy as fuchsias in bottom heat during February, March, April, and May. Pot off as soon as rooted, and re-place in a warm dung bed or pit until well established. Gradually harden off in cool frames until May; then plant out in some open place or keep potting on as the pots get filled with roots, stopping the plants as they may require it.

The plants must be lifted from the open ground in September and put in pots, staked, watered well, and placed in a shady place for a few days; then exposed to the sun again; place them under glass before they get saturated with the autumnal rains. When the pots get full of roots, give weak liquid manure once a week. In case the green fly appears, apply tobacco powder or a solution of quassia. Do not let any weeds get among them, or mildew will make its appearance; if it does, then apply flowers of sulphur. In the spring plant the old plants against a wall or in a row across the kitchen garden, and strain a few wires across to tie them to, and they will continue to flower the whole of the summer. Strike a fresh lot of plants every year, as old plants are unprofitable in every form. Some leaf-mould, dung, and sand in equal parts, make a good compost for them. With very little trouble, they may be had in flower all the year round in any ordinary greenhouse, with a little heat during the winter months. The following are the best kinds:—

WHITE.	SCARLET.	YELLOW.
Avalanche	Boule de Feu	Ascot Yellow
Vestal	Covent Garden	Prince of Orange
Bride	Dragon	STRIPED.
Fiatlush	Henshaw	Ainé
President Dayron	Hubert	Gloire de Lyons
Ninon de l'Enclos	Zebra	Miniature
	Jean Bart	Defiance
	Vulcan	

Balham.

W. Howard.

CONSERVATORIES IN THE NATURAL STYLE.

I HAVE read with interest M. André's remarks on this subject, and I think that, on the whole, he has shown considerable skill in grouping and working out the details of his plan.

Taking the temperature given as the right amount of heat in winter, I think the house in the daytime would be too hot to be enjoyable. Ladies, if at all delicate, do not care about entering a very warm house, highly charged with moisture, on a cold winter's day. I must confess, however, to a weakness for bottom heat, judiciously applied, when easily accessible and under control. And, as far as any experiments I have been able to carry out, I have found that plants from warm countries, if treated to a moderate amount of bottom heat, will thrive in a lower atmospheric temperature than is generally considered safe; in fact, I should think in a house of that kind it would not be desirable to encourage rapid growth, but, on the contrary, a temperature just sufficient to keep the plants in vigorous health would be more suitable. If rapid growth were encouraged, many valuable plants, such as palms, &c., would soon get too large for the house, and would have to be removed. Many orchids and winter flowering stove plants might be introduced in groups. Ferns and orchids might also be suspended from the roof, and changed when necessary. Altogether, such a house might be made very enjoyable, and the work in connection with it reduced to a minimum. However, it is only in very large establishments where the tropical conservatory will find a place at present; but I certainly should like to see M. André's idea, or some modified form of it, carried out in many of the large, dark, dismal conservatories still to be met with in many country establishments. All architects, I think, ought to possess a little knowledge of plant growing, just sufficient to convince them that plants are endowed with life, and that, in the winter, light is absolutely necessary to their well-doing. Nothing is more calculated to try the patience of a man than to place him in charge of one of our highly-finished architectural conservatories, and tell him it must be kept gay through the winter. I have seen hundreds of plants carried almost weekly into a house of this kind, and nearly ruined when brought out again. Therefore, I should like to see M. André's plan tried first in this direction; and we have abundant materials at command, as suggested by Mr. Baines, from China, Japan, and the higher ranges of the Andes. Several of the Australian tree ferns and palms, acacias, &c., would also do well, keeping the lightest spots for the groups of flowering plants. Many things from the Cape of Good Hope and the higher latitudes of the East Indies would also be available; in fact, there is no lack of materials, and I believe it would not only be more satisfactory to the owners of such houses, but would relieve the hard-worked gardener from some of his responsibilities. In conclusion, I must protest against the use of white stone for paths in conservatories, especially if they are kept white by pipeclay. I know something about the labour required to keep a collection of plants clean when the dust from such a source settles on them. Minton tiles, or cast-iron of a neat pattern, would be much better.

E. HOBDAY, Ramsey Abbey.

[Conservatories on M. André's plan have been repeatedly formed with the most perfect success by him and others; he did not write suggestions only, but simply described what he had done, and what is perfectly practicable with the materials he indicated].

THE CHINESE PRIMROSE.

[THIS, though not difficult to grow, is one of those not numerous plants that are seen in much fresher and better condition in Covent Garden Market than in private gardens. We have, therefore, much pleasure in publishing the following article on its culture, by Messrs. Hayes, of Edmonton, who are the best of all cultivators of this charming plant. Messrs. Hayes have been cultivating Chinese primroses for the last twenty-five years, and have had considerable influence in popularising them. They supply Covent Garden and other London markets with some ten thousand of these beautiful primroses annually.]

We generally make two or three sowings of these, the first early in March, the second at the end of April, and the third at the end of May. Any time in May will be early enough if they are not wanted in bloom until Christmas, but if required in October and early in November, they must be sown in March, in order to secure good strong plants. To get the seed up successfully we adopt the following plan:—We sow in boxes instead of in pans, as is usually done, as we find from experience that the seed hardly ever comes up round the edges of the pans. The reason is simply this, the pan absorbs the moisture from the soil, and consequently the seed gets dry, and if once it gets thoroughly dry after it has been soaked through, it will never vegetate afterwards; a result which we have noticed over and over again. Gardeners, who have in general only a small quantity of seed, are very apt to sow it in a small pan; the result of which is, in many cases, failure in getting up the seed. If sown in a box you do not run so much risk, as the box does not absorb moisture so readily as pans. We sow on very old rotten dung, at least three or four years old, and we sow on the top of the mould, for the dung has now got into that condition, moistening it before the seed is sown. And when sown, we sprinkle a little silver sand over it—barely enough to cover it. We place a piece of brown paper over the box and keep it moist, never letting the paper get dry if possible, until the seed vegetates, when we remove the paper. Any shady place where there is gentle heat will suit them very well. Our reason for so fully entering into the matter of sowing is, we have repeated complaints of Primula seed not growing, while, at the same time, it grows with us well enough.

As soon as the young plants can be handled, we prick them off, putting four into a sixty-sized pot and keeping them close for a week or two, until they get hold of the pots, sprinkling them two or three times a day. As soon as the plants have become strong enough, we divide them and pot them off into small sixty-sized pots, and still keep them close in a frame, sprinkling as before two or three times a day, and when we find them getting established, we give them more air. When it is found that they require it we give them a shift into forty-eight or thirty-two sized pots, according to the size which it may be desired ultimately to have the plants. If they should indicate symptoms of blooming in August or September, we generally pick the flowers off, an operation which gives the plants strength.

The soil which we prefer for Primulas is well rotted leaf-mould or dung, and mellow loam, mixed in equal parts, with a little silver sand. We keep them in a shady situation during sunny weather, but we do not shade them if that can be avoided, that is we do not cover them over with mats, as that tends to "draw," and make them weakly instead of short, stocky, strong plants.

The best situation to keep them in during the summer months would be a north house, or a frame under a north wall, or the north side of a plantation, but not under trees. We would recommend leaving the lights open at night when the weather can be trusted, but by no means if there is any chance of a storm, as that would prove disastrous to them. For winter flowering you cannot give them too light a situation, the lighter the house the better, with as little fire heat as possible, just sufficient to keep off damp. A little liquid manure, very weak, will be found beneficial when the plants are pot-bound.

J. AND J. HAYES, *Lower Edmonton.*

FLOWERS FOR GRAVES.

IN dealing with the planting of cemeteries in a former number (p. 146), no allusion is made to the planting of flowers round the graves; a custom of which let none think lightly, for it has its origin in the holiest of feelings—respect for the temple from which the indwelling spirit has gone forth. Graves are generally surrounded by a kind of external border for flowers, with a narrow stone coping, the centre being either left as a grassy mound or covered over with a stone. If any iron-work surrounds the grave, no prettier climber can be used than the Aimée Vibert rose; its snowy-white flowers and perennial dark green leaves render it the best kind for grave adornment. The Maurandias, both lilac and white, are delicate climbers. Ivy, of course, is always at hand. Spring is especially rich in flowers for the grave. Snowdrops may be planted in the grassy mound; but prettier still, are the lovely blue flowers of *Scilla sibirica*, either as an edging or dotted promiscuously on the turf.

In the border, Crocuses of every colour may be planted; the single red and white Tulips are very effective, and Hyacinths, red, white, and blue, or other shades. Then there is the Narcissus, the Poet's and double, and the pretty silver-paper-looking flowers of St. Bruno's Lily (*Anthericum liliastrum*)—all of which are desiderata, as are also the double Daisy, white and red; Primroses, single and double; Heartsease, and the Lily of the Valley. The new varieties of Forget-me-Not flower freely; and we may also have the snowy blossoms of the Saxifrage (*S. granulata*). Nor should Anemones, both garden and the blue wild (*A. apennina*), be omitted; the latter is a most desirable flower. Periwinkles, blue and white, carpet the ground. Where there is room for small shrubs, the golden Arborvitæ should be introduced. As summer advances, the choice of flowers is more varied. In Edensor churchyard, near Chatsworth, under a simple gravestone surmounted by a floriated cross, repose the remains of the late Duke of Devonshire, the great patron of gardening. Sir Joseph Paxton lies in the same churchyard. Though ill-kept and unprotected, the Duke's grave looks very pretty, planted with the brilliant white flowers of *Viola cornuta*. This plant flowers so freely, that each kind, white or blue, is a great addition to grave flowers. *Gentiana acaulis* flowers well if not disturbed. The Mule Pink is an abundant flowerer; and the stately White Lily may be raised in pots and sunk in the border.

The tin troughs now made as crosses, circles, and in other forms, and filled with water, greatly extend the decoration of graves by means of cut flowers. The Germans make wreaths of ivy, in painted tin, which they hang upon their tombs. In the cemeteries at Paris, large sculptured marble vases are placed upon the grave slabs, filled with the choicest exotics. F. P.

HOME LANDSCAPES.—HARDY FLOWERS.

BY NOEL HUMPHREYS.

As a substitute for the fashionable geometric masses of geraniums or calceolarias how agreeable and picturesque would be the effect of a slightly-inclining border such as that represented in the accompanying illustration, from which spring forth fair flowers of many kinds, just as in some highly-favoured natural valley, which the disturbing hand of man had never cramped into formal patches. Improved taste in all branches of art is rapidly carrying us in the direction of principles which admit of nature being altered, and even improved, by art, but not subverted. Even the most advanced in horticultural art do not at present fully apprehend the best means of effecting the inevitable reform that is impending.

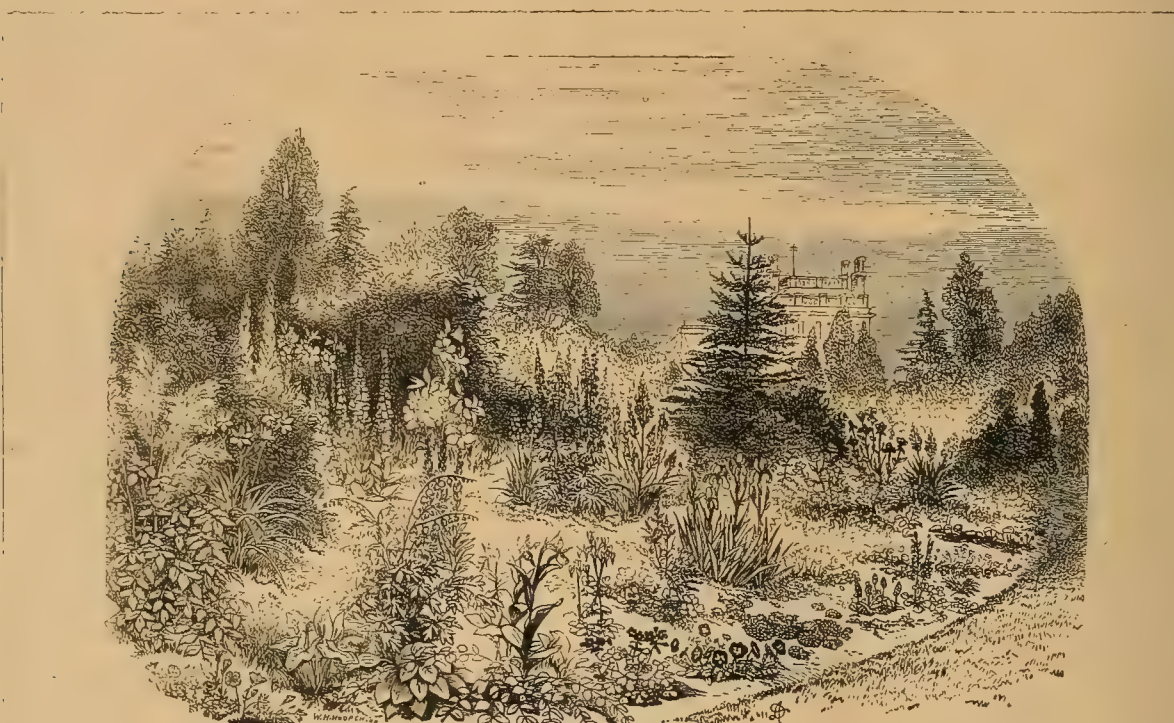
I well recollect, during a dinner-table discussion at the hospitable house of the late Mr. Loudon, suggesting a system of flower culture after Nature's own method—even making the plants grow among the turf, and leaving the surrounding expanse of green to soften and harmonise the colours. Loudon, with all his advanced taste, and with a fine mind, which, upon almost every other subject was entirely free from the slightest tinge of prejudice, could not, as a "gardener" carefully educated in the principles of the time, free himself entirely from the shackles of his art, and from existing custom, and he replied, "Such an attempt, even if the *under* treatment of soils and other conditions could render it successful, would only be a

poor and flimsy imitation of some small district peculiarly rich, in a botanical sense, and would *not be gardening at all*." There are still equally sturdy opponents to flower landscapes, whose opposition to all innovations, as they call them, are far more obstinate than that of Loudon, without a tithe of his well-earned right to express an adverse opinion upon the subject.

In the rage for uniformity, not only are flowers planted in set ovals, circles, squares, or other figures, with no touch of or speck of different colour from some other plant to break the monotonous mass of red, blue, or yellow; but the very grass of our lawns is to be equally monotonous, unbroken even by the sweet sparkling blossom of a single daisy, which would be, in fact, deemed an unpardonable blemish. And yet, what is the smoothest lawn—the most speckless, the most monotonously green—in comparison with the old manor-house lawns I recollect as a boy, softly freckled, ere the snows were well off the ground, with masses and isolated flowers of the pearly snow-drop and, a little later, with a gay sheet of daisy bloom; while late-flowering crocus, in twos or threes, struggled up among the

mass of *Dielytra spectabilis*, with its gracefully bending racemes of flowers, is nearly as hardy as the lily or the fox-glove; and close at hand the elegant Dog's-tooth violet, the red oxalis, and a deep-purple pansy, are plants that positively enjoy our cold, uncertain climate; while masses of *Hemerocallis*, *Yuccas*, and *Iris*, all so carefully outlined by the artist as to be recognizable at a glance, are obstinately hardy even in our northern counties. Note, too, how beautiful is the perfectly hardy *Cypripedium*, and how distinct and pleasing are the hardy little succulent plants till recently so uncommon!

The only difficulty in producing a lovely floral landscape such as the one represented, would be the careful selection of such a series of plants as would, one after another, produce a succession of bloom during the whole of the spring, summer, and autumn: but this difficulty, with a little management and consideration, might easily be got over. An impediment, however, which might require more skill to surmount, would perhaps, be the one touched upon by Loudon, as narrated already, when he alluded to the *under* treatment as regards



A Mixed Border of Hardy Flowers.

blades of green, and expanded their delicate lilac petals to the autumn sun? Portions of our lawns, in suitable situations, may safely and advantageously be allowed to run wild.

But it is time to analyse the pretty floral landscape illustrated above. If as a mere engraving it is very pleasing, which cannot be denied, what must be its increased charm in reality, invested with all the beauties of colour and the ever-varying fascinations of sunlight and shadow? The greater number of the flowers introduced to produce the effect are perfectly hardy—some are even called weeds—not even excepting the regal foxglove, which French landscape-gardeners treat as a "flower," using it profusely with the richest and most happy effect. How grandly its acuminating spikes of flowers tell out against a mass of dark-green foliage in our engraved picture, and how happily the character of the drooping flowers contrast with the aspiring boldness of the great white lily blossoms, the very queens of a tribe that Linnaeus unhesitatingly designated "the aristocracy of the floral kingdom"! A great

soils specially suited to each individual plant. Even here however, we should find little difficulty with our mixed border of noble hardy flowers, if we thoroughly prepared the ground at first.

ASPECTS OF VEGETATION. MEXICAN CACTI.

AMONG the many wonders to be found in the vegetable kingdom, few have attracted more attention than the Mexican cacti. Some of the species are so small as to be scarcely noticed as they grow in the sand or crevices of rocks, while others assume the giant proportions of our largest forest trees, rising perpendicularly to the height of fifty or sixty feet. Truly, nature seems fond of contrasts, or why should we get such gigantic productions as the great leafless cacti of Mexico? one of the most grotesque of which—the *Cereus giganteus*—is represented in the accompanying illustration. There they stand, having more the appearance of fossil trees than the



ASPECTS OF VEGETATION.—TREE CACTI IN NEW MEXICO. (THE *CEREUS GIGANTEUS*.)

living vegetation of a district. Widely different is the scene we now represent from that of the Brazilian forest which we gave the other day. There the vegetation abounds in graceful beauty. Here we have it stiff and formal, though still rich in interest. The *Cereus giganteus*, the most prominent figure in our sketch, was discovered by Dr. Engelmann a few years ago, who speaks of it as follows:—"As far as the eye can reach, in the valleys or on the mountains, little else but rocky boulders and the stately yet awfully sombre aspect of the *Cereus giganteus* can be seen." This *Cereus* grows very high, branching at intervals; the spines are nearly white and very sharp. When the plants reach a certain age, which is said to be between two and three hundred years, they die and are dried up by the sun, when they split and fall to pieces. Many sorts of dwarf cacti also grow in the same district, as *Echinocactus californicus*, a plant with very strong hooked spines, said to be eaten by the inhabitants; and many *Mammillarias* and *Opuntias*. These dwarf varieties, though not so conspicuous as the larger kinds, nevertheless make their presence known quickly when one comes in contact with them. The giant *Cereus* is the most striking of the genus. It is a native of the hot, arid, and almost desert regions of New Mexico, extending from Souora, in lat. 30° N., to Williams' River, in lat. 35° N., and is found growing in rocky valleys and upon mountain sides, often springing out from mere crevices in the hard rock, and imparting a singular aspect to the scenery of the country, its tall stems with upright branches looking not unlike telegraph posts. While young the stems are globular, becoming gradually club-shaped, and ultimately cylindrical. They are most frequently unbranched, but some of the older ones have branches which issue at right angles from the stem and then curve upwards and grow parallel with it. The stems are gradually ribbed or fluted, the ribs varying in number from twelve to twenty, and have, at intervals of about an inch, thick yellow cushions bearing five or six large and many smaller spines. The flowers are produced near the summit of the stems and branches, and are about four or five inches long by three or four inches in diameter, having light cream-coloured petals. The fruits are about two or three inches long, of a green colour, slightly reddish at the upper end, and oval in form, having a broad scar at the top caused by the flowers falling off; when ripe they burst into three or four pieces, which curve back so as to resemble a flower. Inside they contain numerous little black seeds embedded in a crimson-coloured pulp of a sweet but rather insipid flavour. The Pimos and Papagos Indians, who eat the ripe fruit, gather it by means of a forked stick tied to the end of a long pole. This species of cactus is of very slow growth, judging from the progress made by young plants raised from seed brought from Mexico.

J. CROUCHER.

THE ARBORETUM.

PRUNING CONIFERS.*

DEODAR PRUNING.

THERE are but few species of coniferous plants on which I would recommend the knife to be used. The Deodar is the one on which I most frequently operate. Other species, however, that have been subjected to knife-pruning will hereafter be given. Many individuals are still sceptical about the pruning of the Deodar or any other coniferous tree; one thing, however, is certain, that in not one instance out of the many thousand Deodars pruned in the various parts of the country have I seen any bad effects produced. Pruning no doubt alters the appearance of the trees; but seedlings, when left to themselves, often produce numerous branches, and many of them have a tendency to become leaders, and this often to such an extent that plants six feet in height frequently measure sixteen feet in circumference, and are furnished with twenty or thirty leaders. I generally shorten the branches of such plants so as to give them a pyramidal shape, leaving the strongest or most direct leader, and cutting off all the minor ones. When this is done it will be found that the leader left will go on elongating, and the cut branches will begin to ramify.

Previous to the time when seeds of Deodar were sent to this country in abundance, young plants were extensively propagated by means of cuttings; such cutting-made trees are easily recognized

* A paper read before the Edinburgh Botanical Society by Mr. McNab.

even at the present time, although twenty to twenty-five feet in height, by their horizontal and somewhat sparse branches, more resembling those of the cedar of Lebanon than the Deodar, and many botanists allege that they are one and the same species. Nearly all the cutting-made Deodar trees suffered from the severity of the winter 1860-61, although the tree from whence the cuttings were taken was not in the least injured. This tree, in the Edinburgh Botanic Garden, is now above thirty-five feet in height. It was of necessity severely branch-pruned during the year 1856, from the circumstances of the branches interfering with the walks on each side. The tree, after being operated on, was made to assume a pyramidal shape, and most of the lower branches cut were fully six inches in circumference. This tree is now in a healthy condition, having a fine symmetrical appearance, and covered with young pendent branches all round, and with a good growing leader. Since 1856, it has been three times slightly dressed all over with a knife. Had this tree not been branch-pruned previous to the snow and frost of 1860-61, it probably would have suffered like all those trees produced by cuttings taken from it, and not previously branch-pruned. Three of the cutting-made trees now exist in the garden, averaging twenty-eight feet in height. They had their branches shortened at the same time with several seedling raised trees, after the large tree just alluded to was found to have sustained no injury. The Deodars raised from cuttings had their horizontal branches shortened from two to four feet off the main stem, beginning at the bottom and tapering upwards. This pruning, no doubt, reduced the strain while the snow was resting on the stump portions of the branches, which, no doubt, proved the means of saving them when all the other cutting-made trees were more or less destroyed.

[The Deodar here seems to be treated as a shrub only; how about the Deodar as a tall and noble tree, beyond the reach of the shears or knife? This was our hope of it.—Ed.]

STEM-PRUNING.

A method practised here with many branch-pruned Deodars, but done chiefly for the sake of variety, is the stem-pruning of branch-cut specimens, that is, the removal of some of the lower branches, cutting them off in such a way as to leave fully half an inch of wood close to the stem: such cut points should be smoothed over and darkened with clay. The effect of such stem-pruned Deodars standing on grass lawns is graceful, and where several specimens exist, I would strongly recommend one or more of them to be so treated, as it greatly assists in encouraging an upward growth, besides adding variety to the landscape, and is not in the least injurious to the health of the plant.

Stem-pruning need not be practised on the Deodars till they become eight or ten feet in height, and when of such a size the stem should be divested of its lower branches, ten to eighteen inches from the ground, according to the height of the tree; as the upward growth of the tree increases, the stem-pruning may be carried to the height of twenty-four or thirty inches. The effect of the pendent points of the branches round the central stem, is in some circumstances infinitely more pleasing than seeing the lower branches lying flat on the ground and destroying the grass below.

After pruning the stem of Deodars, as well as all other coniferous trees, where the branches to be removed are in close contact with the ground, it will be necessary to lay down soil, so as to cover any roots which may be near the surface, in order to protect them from the sun or frost. Unless this simple treatment is adopted, such stem-pruned trees are liable to sustain injury, and blame given to the pruning, and not to the want of this after-treatment which is absolutely necessary, not only with conifers, but with all evergreen shrubs requiring to be cut down.

The remarks here given with reference to the Deodar all bear upon it as an ornamental tree. Some years ago, seeds were introduced in very large quantities for planting it extensively as a forest tree. This proceeding cannot be answering the end proposed, or we would have heard of it before now. If not succeeding, it cannot be from cold, as we know that the Deodar, under certain circumstances, will endure a great amount of frost.

With stem-pruned specimens of coniferous plants, I consider that the bark on the lower part of the stem, when allowed to mature and harden from exposure, is better able to resist cold, and the tree more likely to stand uninjured than it does when completely surrounded with branches; besides, from the greatest cold being on the surface of the ground, it is more apt to injure those lying on the surface than those higher up, as happened with some plants of *Cupressus McNabiana* during the winter of 1860-61, when stem-pruned specimens were not in the least injured, while the unpruned ones suffered severely.

Another circumstance which I have frequently found to affect the health of certain coniferous plants is the alternate frosts and thaws which we often experience, and which was particularly noticeable in

many places during last winter, when the ground was frozen hard, and sometimes partially covered with snow. A slight thaw took place, which caused the moisture to rest round the base of the stems, as it could not penetrate the frozen mass. The return of frost at night caused this water to freeze again, and permanently injured the bark on the surface of the ground, and which affected the whole plant. When the bark is thoroughly hardened from free exposure, such injury is less liable to happen. To prevent as far as possible the occurrence of such accidents, conifers should be planted on somewhat raised mounds if on level ground, while on naturally sloping ground an excess of moisture is less liable to rest round the stems.

The Atlantic cedar (*Cedrus atlantica*) is another coniferous tree which I have branch and stem pruned with success, and it is difficult otherwise to form a well-outlined specimen. With this plant, branch-pruning should be carried on till such time as the top assumes a fair upright growth. When this takes place, commence to stem-prune as recommended for the Deodar, taking care not to cut too close; this stem-pruning to be continued as the tree gets up. Like the Deodar, the Atlantic cedar has a tendency to form several leaders. The superfluous ones ought to be removed when young; but if this has been neglected, several leaders will not be objectionable if they all take an equal and upright tendency—one, however, is preferable.

PRUNING PICEAS.

Of the *Picea* tribe, I have only operated thoroughly on a few species, such as *P. Nordmanniana*, *P. cephalonica*, *P. pinsapo*, and *P. Webbiana*. The first of these is inclined to produce strong side-shoots, frequently stunting the growth of the leader to one and a half inch in height per annum. In some plants, ten years old, now growing in the Botanic Garden, Edinburgh, the diameter of the branches is three feet ten inches, while the height of the plant is only one foot ten inches. I have specimens of the *P. Nordmanniana* raised from seed at the same time, and which have been regularly branch-pruned, which are now four feet in height, showing the propriety of branch-pruning this species at an early stage. Seedling plants of *P. Nordmanniana* rarely put up more than one leader, and it is wrong to allow this leader to be robbed by the superabundant growth of the side branches, now that it is shown that no harm will accrue from a judicious use of the knife. During the period when the *P. Nordmanniana* was scarce, the plants were generally increased by cuttings, grafts, and layers. This pruning was unintentionally the means of causing the leaders of the original plants to assume an upward growth. It is surprising to see many of the early produced plants from cuttings, grafts, and layers, although eighteen or twenty years old; growing procumbent, and, if upright, somewhat fan-shaped. The only way to induce a leader on such plants is to cut off all the branches and peg the stump firmly to the ground. By this means, one, two, or more leaders will be produced from the lower part of the stem. By the removal of all but one, it will in time become a well set leader, and ultimately make a vigorous tree. The leading shoots removed will make excellent cuttings or grafts, by retaining their leaders, which is not the case with the points of side branches. The same remarks are, I find by experience, applicable to many other species of the *Picea* tribe when produced by cuttings and layers, such as *P. nobilis*, *P. robusta*, *P. amabilis*, *P. grandis*, *P. pichta*, &c.

THE DOUGLAS FIR.

With the Douglas fir (*Abies Douglasii*) the case is totally different. Previous to the time when seedlings of this tree were freely produced from the early imported specimens, the Douglas firs were all struck from cuttings, generally taking the leaders from side or secondary branches. This propagation by cuttings was carried on with vigour for many years, indeed till such time as some of the original imported trees produced cones, and from that period few or no cuttings have been made. Cutting-struck plants from the original trees were very extensively spread over the country, and many of them are now handsome and well-shaped trees. Some of these are at times unwittingly passed off for early seedlings of British grown trees, and from this circumstance a good deal of discussion about the deterioration of British produced seedlings, as compared with imported ones, has arisen. I am still of opinion that seedlings taken from the earliest cone-producing trees are very inferior to seedlings raised from cones received from their native habitats. All British produced seedlings are easily known from the profusion of resinous blisters all over the surface of the bark, and the naturally light coloured tint of the foliage. The blisters alluded to are not confined to British seedlings but are also found on some delicate foreign seedlings; which is perhaps the cause of their early stunting and the coning of some trees. For my own part, I would not give one cutting-made plant taken from the Belwood *A. Douglasii* at Perth (and from which many thousand cuttings must at one time

have been taken and struck) for any amount of plants produced from the early coning trees. The case, however, is different with seedlings taken from cones produced now for the first time by any of the original imported plants. One of these original trees known to me produced its first cones two years ago. These seedlings are totally different from those produced by the early coning trees, being darker in foliage and of slower growth. To my certain knowledge, many of the original seedlings produced by Lynedoch and Raith trees, where planted in open exposed places, have entirely passed away, while of those planted in close shady woods, many still exist and appear to thrive.

PRUNING FOR LEADING SHOOT.

A common occurrence with some species of *Picea* is the tendency to produce double leaders; when this is the case the weaker one can be removed without injury to the plant. I have frequently noticed the destruction of the main leading shoot, caused either by birds, wind, accident, or mischief, and the result has been that the upper whorl of horizontal shoots all gradually assumed an upright habit. It will be necessary to remove all but one, fixing on the strongest, which will be found to have more of an upright tendency than the others. This shoot will gradually bend over the point where the original leader grew, and although slightly curved in the middle, the top will finally assume an upright position, and this, without any necessity for tying. From this branch-made leader the whorls will be produced year by year, with perfect regularity. In the case of the crown of the leader only being injured, all the incipient side buds on the portion left should be picked out except the one nearest the top; but if the top one is not strong, remove a portion of the injured leader till a vigorous one is reached (judging of this before the incipient buds are picked out). The upper one left will soon form an upright leader, and in a few years will completely obliterate all traces of injury. *Picea lowii*, *P. cephalonica*, and *P. pinsapo* are also wonderfully improved by branch pruning, particularly when growing in soils and situations different from what they are accustomed to in their native homes. Growing on limestone rock, which is the case in their native country, it will be found that, in all similar situations in Britain, these trees generally become vigorous and fine shaped.

TAXODIUM, WELLINGTONIA, CYPRESS, AND PINE.

Taxodium sempervirens is another conifer which stands the knife well; its outline will be greatly improved both by branch and stem pruning. The *Taxodium* is not so extensively cultivated as it ought to be. If properly attended to by judicious pruning it will become in many parts of England an excellent avenue tree, but the condition in which it is generally seen, renders it rather forbidding than otherwise.

Wellingtonia gigantea, whether produced from seeds or cuttings, if growing on good soil, naturally assumes a pyramidal shape. Branch pruning is not therefore necessary except in the case of a stunted specimen or a wayward branch, as occasionally happens. *Wellingtonias*, however, may be stem-pruned with impunity. Where many specimens exist, it will be noticed that the upward tendency will be greatly improved by such treatment.

The *Cupressus Lawsoniana* is another plant which I have no hesitation in freely stem-pruning, but not side branch-pruning. In its natural state it grows to the height of 100 feet, but when cultivated in this country it has often a tendency to assume the habit of the Chinese *Arborvitæ*, by putting out numerous upright stems from the surface of the ground, which in many cases finally stunt what is intended to be the leading shoot. I first commenced the stem-pruning of the *C. Lawsoniana* during the year 1865, and the progress the stem-pruned plants have made over the unpruned is quite remarkable, and, like the Deodar, totally altering the character of the plant.

Of the genus *Pinus*, with the exception of *P. excelsa*, no other species up to this time has been pruned by me, except the removing of any unsightly branch when interfering with a neighbouring specimen. The *Pinus excelsa* when left to itself has rather a sprawling habit of growing, the branches in most cases being wide-spread, to the detriment of the leading shoot. Trees of *Pinus excelsa* have been branch pruned here, more or less, for the last twenty-five years. Such plants so treated have now assumed the habit of *Pinus combris*. The *Pinus excelsa* is rarely asked for by cultivators; but if planted and treated as recommended, it will prove an ornament to the pinetum or shrubbery, its long light-coloured leaves contrasting admirably with the foliage of the generality of the dark leaved pines.

When pruning coniferous trees, I generally commence during the month of August, and continue the operation till the middle or end of October. Some have been pruned as late as December and January without any apparent injury, but this may depend on the

effect of the weather, particularly frost, on the new cut extremities. As a general rule, I prefer the earlier months stated.

Conifers in a state of nature are rarely seen as we are accustomed to look upon them in gardens and pleasure grounds. They are generally in large forests, where, from their proximity, the lower branches generally get destroyed, and from this circumstance the trees must of necessity assume an upright habit. It is therefore incumbent on us to take steps in order to imitate nature, and thus induce in some plants a tree growth, instead of a bush form, which is not their natural condition.

THE ARAUCARIA.

Certain coniferous plants are not in the least injured by a free use of the knife, while with others, it is well known that they will not stand it in the slightest degree. The *Araucaria* is very susceptible of injury if its juices are interfered with, either by cutting or bending, and I feel almost persuaded that the excessive injury done to the *Araucaria* during the severe winter of 1860-61, was in a great measure due to the excessive bending of the points of the branches under the weight of snow which prevailed at the time, thus rupturing the upper tissues close to the stem, and thereby exposing them to the severe frost which at that time prevailed, aided, no doubt, by the long continued moist autumn which preceded. Injury is often wrecklessly done to the tops of *Araucarias* by breaking them off, as is well known to the cost of some nurserymen. With such mutilated plants, one of the side shoots composing the upper whorl is not unfrequently tied upright so as to form a leader. Instead of tying up one of these side branches, a slight bending down of the upper whorl of branches is preferable; by doing so, two or more leaders will be produced from the centre. The superfluous ones are to be removed, not by direct cutting off, but by twisting a piece of very fine wire tightly round them, leaving the strongest one untouched. This wire will cut them through in a short time; they can then be removed without injuring the plant. The shoot unwired will soon become a good leader. If a leader is ever formed by the tying up of a side branch, it will be difficult for such a plant ever to assume a uniform shape.

THE SHAWDON HOLLIES.

THESE deserved to be associated with the big and beautiful trees to which you have lately directed attention. Shawdon Hall lies about seven miles north-west of the ancient town of Alnwick, in the lovely Vale of Whittingham, and owing to its somewhat secluded situation, these beautiful hollies are little known beyond the neighbourhood in which they grow. They stand in two parallel rows, running north and south, about eighty yards in length, and about twelve feet apart, the trees originally, apparently, having been planted about ten feet asunder in the rows. Several of them are now wanting, having been blown down at different times by high winds.

The row facing the west is composed principally of the golden-edged holly. One of the largest of this variety measures six feet two inches round the bole at four feet from the ground. The height of this tree is forty-five feet; all the others of this sort are about the same height. The row facing eastward consists wholly of the common green holly, and has the advantage over the variegated trees of a few feet in height, and of possessing more bulk of timber in the boles, which are bare of branches to a considerable height. Their great, heavy tops are swayed in all directions, and amongst them are several specimens of natural inarching. Two of the trees, at thirteen feet from the ground, are joined together in most perfect union, the stem of each being free from branches below the point of junction. This intimate union and callusing together lasts for about two feet, then they branch out into a fine head. In the top of another large tree there is a perfect union between two large limbs, the only thing remarkable about which is, that a third branch has become imprisoned, and so fixed into the point of union as to lie across the two principals, somewhat like the transverse beam of a cross.

I may remark that the last tree, at the northern end of each row, is a fine yew. The southern end of both rows is occupied by a noble pine (a real *Abernethy*, a local variety of *Pinus sylvestris*), which, at two feet from the ground, measures nine feet three inches in girth, and at five feet, eight feet four inches. As near as can be calculated, there is about seventy-five feet or eighty feet of saleable timber in the bole of this tree.

My first impression with regard to these fine hollies was,

that they had been planted with the intention of forming a walk or avenue to an old keep; but, the fact of the pine-tree to which I have referred being planted right in the centre of both rows, makes this supposition untenable, for, had the pine been planted there after the walk was no longer wanted, the hollies must be of very great age indeed. Upon the whole, I am inclined to think that both pine and hollies are coeval. The row of green hollies has probably been planted as protection from the east winds, and as shelter for the golden-edged ones. The yews at the northern end serve as a shelter from the northern blasts. The pine may have been a rarity, as we have only four trees of this variety in the park, all planted, seemingly, at the same time.

There may be many larger holly trees dispersed over this country than the Shawdon Hollies, but I question if there is so striking a group to be found anywhere else. When the lawn is covered with snow, the variegated trees form quite a picture, that, once beheld, is not soon forgotten. Their pendulous branches of green and gold are set off in what appears, at a little distance off, to be a framework of dark olive green; for the branches of the common hollies, laden with crimson berries, overtop them by a few feet.

I am unable to form any conjecture regarding the age of these fine hollies; but, judging from the appearance of the golden-leaved variety, they are destined to be trees of beauty when the green trees are no longer to be seen.

I have thus minutely described these lovely trees, in the hope that planters may be induced to use them more extensively than has hitherto been done; for, if planted with care and judgment, they will leave behind them a monument of beauty "that will be a joy to generations yet unborn."

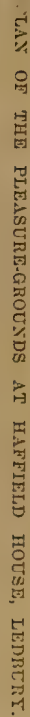
JAS. THOMSON.

GARDEN DESIGN.

THE GARDENS AT HAFFIELD, LEDBURY.

THE garden, a portion of which we this week engrave a plan of, is chiefly distinguished by the presence of the nobler members of our garden flora. It is the reverse of the system now so often seen, of placing the beds for summer flowers in crowds near the house. By this plan, we usually get formal masses of wet mould in winter, and very little else. Of course, the presence of such a noble series of plants and trees as those shown in our plan does not prevent the fullest justice being done to the flower garden. In a larger place, it would be desirable to preserve a little more breadth around the house; but this is a point which must be regulated entirely by the size of the place and local circumstances.

The drive from the principal entrance on the Gloucester Road leads through a well-timbered park to the mansion; the latter is situated in a valley, with gently sloping banks rising gradually on the north and north-east side, clothed with forest trees in great variety, which afford good shelter. The aspect of the house is nearly south, and from some of the principal rooms a good view of the neighbouring hills is obtained. The pleasure-ground is about ten acres in extent. On the east side of the house is the entrance, in front of which, at some little distance, the sloping bank has been cleared of soil and *débris*, so as to form a rock-garden, clothed with suitable plants and shrubs, such as *Yuccas*, *Araucarias*, alpine plants, ferns, and creepers. The peculiar beauty of this garden cannot be well given in a bird's-eye view. It rises to a height of thirty-five feet, and forms a good contrast to the other parts of the grounds. On the south side of the house is a nice piece of sloping lawn, kept entirely free from geometrical disfigurement in the way of flower-beds. On this stands a fine *Araucaria* that was planted in 1842, and which now measures thirty-two feet in height, and bears cones every year. The girth of the trunk of this tree at a foot from the ground is four feet two inches. A fine *deodar* may also be found here that was planted in 1852, and which is now forty-five feet high, with a trunk six feet in circumference at a foot from the ground; likewise two *Cryptomerias*, planted at the same time, thirty feet high, with stems four feet in girth; an *Abies pinsapo*, *Thuja aurea*, and other fine coniferous plants.



Between the house and conservatory stands a remarkably fine Douglas fir, seventy feet in height.

The following were lost during the severe winter of 1860-61, viz., *Pinus insignis*, forty-five feet in height; *P. macrocarpa*; *P. patula*, twenty feet in height; *P. Sabiniana*, *Cupressus Lambertiana*, and many others.

A group of *Magnolias*, consisting of the following kinds, viz., *acuminata*; *conspicua*, *macrophylla*, *tripetala*, *Thompsoniana*, and others, is an object of interest to visitors; who also find much to admire in the way of hardy trees and shrubs of different kinds, growing singly and in masses, as notified in the plan, in which the names of the fine specimens of *Araucaria* have been omitted by our draughtsman.

THE BOTANIC GARDEN, REGENT'S PARK.

I AM glad you have given a plan of this really tastefully laid-out garden—so far as essentials are concerned. If any person doubt what may be done by tasteful planting, I know of no place where he can have his doubts removed so soon as in these gardens. Originally a flat, this ring of ground has been made to look as sweetly diversified as any rural spot; but it is not its diversity I so much wish to call attention to, as the artistic way in which the slender belt of boundary plantation is managed; so that the garden merges into the surrounding scenery imperceptibly, and looks far more extensive and refreshing than if planted after any fashion of formal planting whatever. What a pity it is that in nearly all our great public gardens there is scarcely any trace of good design!

H. VINER.

THE FRUIT GARDEN.

WALL TREE PROTECTION.

WE place trees against walls that they may derive more heat, and to do so we incur a great deal of expense and trouble; but after all this is done, we very often fail to give them the most necessary of all attention—protection when in flower. Hence fruitless walls and empty fruit rooms. Depend upon it, the chief of the evils from which our fruit trees suffer is lack of temporary protection in spring, when leaves and flowers and fruits are young, tender, and perishable. Frost is almost as antagonistic to these as is the rising sun to the dew drops. A few mild and sunny days occur in spring; the flowers open, and the little leaves "put forth their hands into the ray," when suddenly a sharp frost comes and takes all parts in its grip; the rising sun throws its rays right against the frozen tree before it has had time to thaw, and then farewell to the flowers and fruit for one year, or perhaps the health of the tree for life. You may drain as well as it is possible to drain; you may choose the best soil, the best kinds, the most suitable stock, and prune at all times on the best methods; and yet little but disappointment and disaster will occur unless effectual means are adopted to protect the trees from their chief enemy in our changeable climate—severe frosts in spring. Doubtless the process is the cause of some little trouble as a rule; but as it is frequently a matter of crop or no crop, a little consideration should convince us of the necessity of perfect protection to the flowers in spring. It is true protection is often so badly given that no better result is attained than by leaving the trees fully exposed on the walls; but if they are well protected there can be no doubt that we may gather as full crops and as fine fruit as could be desired.

When the changeableness and severity of our climate are considered, it is astonishing how few and insignificant are the means taken to protect the trees. One of the first considerations in growing fruit trees out of doors should be the providing of an efficient coping or projection of from six inches to ten inches, at the very top of the wall, to throw off cold rains, sleet, and to a considerable extent protect from frost itself. This coping may be made of bricks, though not very effectively, of cement or concrete, of slate, tiles, thin stone, or any like materials. If it were merely to throw off to some extent the destructive rains of hail and sleet, it will be generally admitted that this is a good and simple protective agent; and yet we see peach culture attempted without a particle of coping in many gardens abundantly supplied with means and labour.

In such cases the tree is really as much exposed to danger as it would be away from the wall: it gets more heat afterwards, but the main point is to secure the setting of the crop. However, many take care of their walls, as regards the most permanent coping, but in very few gardens do we see an attempt at a much more desirable kind of protection—a wide, temporary coping throughout the time when the trees are in tender blossom, or likely to incur the least danger. This would effectually throw off frozen rains, prevent radiation, and, except on walls facing the east, suffice to guarantee a crop and the health of the trees. This temporary coping should be about eighteen inches wide, and made of light wooden frames covered with tarpaulin. Wooden shutters may also be used; but the light, cheap frames covered with tarpaulin are undoubtedly the neatest, lightest, and, after all, the cheapest, things that can be used for this purpose. They should be placed under the permanent coping. By placing iron rods under the permanent coping, with a slight turned up catch at the end, at about five or six feet apart, these temporary copings may be slipped into their places and firmly fastened there till all danger is past. This may seem a good deal of trouble to take with wall trees; but when it is considered that efficient protection of walls would save us building houses for hardy fruit, nobody should begrudge attention. When once you build houses for growing hardy fruit, there is no knowing where the expense may end. Fire heat, repairs, daily care, both for ventilation, watering, and the numerous attentions that houses require, soon run up a bill to which any expense devoted to outdoor fruit-growing is insignificant. The reason why the temporary coping advocated is so desirable is that it protects the trees efficiently when they most require it, and does them no injury at any other time. If a too deep permanent coping be adopted, it has some disadvantages; it prevents the trees being washed by the refreshing rains of summer, and, by depriving the upper portion of light, prevents growth—unless that coping were of glass fixed in a light and cheap iron frame; and why should it not be so? Under a very deep permanent coping the trees refuse to grow to the top of the wall, but keep a respectable distance from it; but the moment the temporary coping is removed, the foliage more immediately under gets full light and air, and perfect development over all parts of the wall is the result.

In cases where this wide and excellent temporary coping is not adopted, and, indeed, sometimes where it is adopted, it is desirable to screen the face with cheap canvas or woollen netting, hung so that it may be moved to and fro at pleasure. A temporary coping of glass is perhaps better than any, but it should be removed when danger of frost is past. When danger is past, canvas or netting and their appurtenances should be carefully dried, and stored for another year, as should the tarpaulins before alluded to. In cases where none of these protecting agents can be spared, some good may be done by merely placing the boughs of any evergreens to be easily splayed among the flowering spray of the wall tree. These will protect from the cutting blast, and even from frost, to a much greater degree than might be supposed. But let it not be supposed that any protection is really efficient which does not protect from rain during the period of flowering. It is not that rain itself kills, but if tender young leaves and flowers are saturated with rain they are then thoroughly prepared to be quickly encased in ice.

There is another sort of protection on which I should like to say a few words—guarding the trees against the effects of very severe frosts before the flowers open, and when they are generally supposed to be perfectly safe. It used to be a practice, and indeed it still is here and there, to expose both vines, peaches, nectarines, &c., in houses to the action of the frost in winter. The houses used to be stripped for that purpose. I have lived a long time in gardens, and more than once have seen much mischief done in this way. After the severe frosts of 1813-14, 1821, and 1837, I witnessed much destruction from the killing effects of frost on the wood. The trees perished altogether, or only existed in a ghostly state. The vine succumbs to a milder degree of cold than the peach or nectarine, but we now and then have frosts which destroy even these, and in my opinion these very severe frosts ought to be guarded against. Of course nobody would now willingly expose house trees to the frost, but those on walls are invariably exposed. Now it

occurs to me that if some efficient covering were placed against them, when once the wood is well ripened, it would entirely prevent frost from injuring them during the severest seasons, and might in all prove useful in retarding the bloom. The kind of covering is not so easy to determine. Nothing should be used that would encourage vermin near the trees. I would remote it when the opening flowers imperatively demanded it, and not before. Rough wooden shutters would probably be the best things, and they might be utilised for other purposes once the trees began to flower. Of course I would not recommend this in districts where the peaches and nectarines were never liable to be injured by frost; but, as I have several times seen fine peach walls utterly ruined by a hard winter, I trust I shall not be considered fastidious or unpractical for recommending that they should be saved from such a disaster, as well as from loss of crop and health by spring frosts. Protection given to guard the trees themselves against severe frosts, would have the good effect of keeping them dormant till a later period; an advantage of course. Our illustration shows the careful way a skilful market-grower at Montreuil protects his peaches in early spring by means of temporary and wide wooden copings. The form of tree may seem strange to many, and the wall may seem very bare; but in early summer the whole will be well covered by the numerous shoots sent out by the rather closely pruned shoots of the past year. If these walls were deprived of this simple and capital temporary protection the crops would be invariably lost.

J. B.

"Oh, but," exclaims Mr. Straightedge, "who could have a lot of nasty straw littering about his garden?—it would be an intolerable nuisance." Well, just so; but, so far as the future is concerned, that sword has two edges. With those who have thought upon the subject, the opinion very generally prevails that the union which has so long existed between the fruit and the vegetable garden should be dissolved. The proper growth of the latter is certainly inimical to the cultivation of the former, the deep digging and rich manuring necessary for vegetables being decidedly injurious to the cultivation of a large proportion of fruit trees; therefore, I say, have your cabbage garden in any sheltered and convenient place where the deep and highly enriched cultivation so necessary for perfect success may be carried on without injury to anything, and place your fruit garden so that it shall form an integral and important element of the ornamental grounds. Here concentrate your glass erections, forming them, if need be, so that they may afford a continuous promenade, whereby in the coldest day in winter the "tour round my garden" may be made with ease and delight. Instead of sup-
plicating for the questionable shelter of a dreary quadrangle of perpendicular walls for your fruit trees, place them under glass, through the transparent walls of which the adjacent garden may be surveyed. Of course, I shall be told the fruit crops even in glass houses fail sometimes. Yes, and so do all mundane things; but, properly understood and managed, the climate of Madeira or the South of France under glass will be more likely to ensure regular crops of fruit than the exposure of a tree to the pitiless pelting of the storm upon a wall outside. Upon this I think there cannot be a second opinion.

W.

[We quite disagree with our correspondent, one of the best prac-



Peach Tree at Montreuil, under a Wide Temporary Wooden Coping.

AN ENEMY TO WALLS.

GARDEN WALLS are things of the past—ugly and needless incumbrances of the ground, which ought not to be tolerated except in some outlandish wild where evergreen trees will not grow. In such a place there may be an excuse for walls; but, associated with a modern mansion, I can only regard walls as a relic of the barbarous ages in horticulture, when glass, if not unknown, was little used. If you talk of early crops, I point you to those gardeners who supply the markets of London and other centres of population; they get little aid from bricks and mortar, and yet their crops are ready for the market, and early peas are down to 9d. and 1s. per peck almost as soon as the walled garden begins to afford the first dish. Of course, I am aware that only special and favoured localities can do this early work; but they do it by the acre and by the field, while we "lesser men" are raising a single row or two. The aids to cultivation which the market gardener brings to bear upon his produce, quite independently of wall protection, are quite worthy of serious study, and, attentively examined and described, would form a most interesting handbook on the production of early crops. Look at the manner in which he throws his ground into narrow ridges, sloping to the south or south-west, planting or sowing on the sunny side, where the crop is of course protected from those prosecuting "north-easters." See again the acres of radishes, rhubarb, early potatoes, &c., that are nightly sprinkled over with clean litter, to be cleared away the next morning. Observe the almost perpendicular ridges upon the top of which tomatoes are planted and trained downwards, and produce splendid crops, when the operator in a walled garden is complaining of the unfavourable season and his tomatoes not ripening.

tical gardeners in England, as to the value of garden walls. Even if all lovers of a garden could erect orchard houses by merely wishing for them, garden walls would yet have their important uses in all parts of these islands.]

INFLUENCE OF VIOLET LIGHT ON VINES.

IN April 1861, cuttings of vines of some twenty varieties, each one year old, of the thickness of a pipe-stem, and cut close to the spots containing them, were planted by General Pleasonton, of Philadelphia, in the borders inside and outside of a grapery, on the roof of which every eighth row of glass was violet-coloured, alternating the rows on the opposite side. Very soon the vines began to attract notice from the rapid growth they were making. Every day the gardener was kept busy in tying up new wood which the day before had not been observed. In a few weeks after the vines had been planted, the walls and inside of the roof were closely covered with the most luxurious and healthy development of foliage and wood. In September of the same year Mr. Robert Buist, from whom the General had procured the vines, visited the grapery. After examining it very carefully, he said:—"I have been cultivating plants and vines of various kinds for the last forty years; I have seen some of the best vineries and conservatories in England and Scotland; but I have never seen anything like this growth." He then measured some of the vines, and found them forty-five feet in length, and an inch in diameter at the distance of one foot above the ground. And these dimensions were the growth of only five months!

In March 1862 they were started to grow, having been pruned and cleaned in January of that year. The growth in this second

season was, if anything, more remarkable than it had been in the previous year. Besides the formation of new wood and the display of most luxuriant foliage, there was a wonderful number of bunches of grapes, which soon assumed the most remarkable proportions—the bunches being of extraordinary magnitude, and the grapes of unusual size and development. In September, when the grapes were beginning to colour and to ripen rapidly, Mr. Buist visited the graperies again, and estimated that there were 1,200 pounds of grapes.

During the next season (1863) the vines again fruited, and matured a crop of grapes, estimated, by comparison with the yield of the previous year, to weigh about two tons; the vines were perfectly healthy, and free from the usual maladies which affect the grape. Many cultivators said that such excessive crops would exhaust the vines, and that the following year there would be no fruit: as it was well known that all plants required rest after yielding large crops. Notwithstanding, new wood was formed this year for the next year's crop, which turned out to be quite as large as it had been in the season of 1863; and so on, year by year, the vines have continued to bear large crops of fine fruit without intermission for the last nine years. They are now healthy and strong, and as yet show no signs of decrepitude or exhaustion.—*André Poëy, Paris, in "Nature."*

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Select Pears.—Will you kindly give me the names of a few really good pears suited for our climate, a choice selection from the many score kinds grown?—E. S.—[The following are best calculated to suit the London district; they are arranged in the order of their ripening.—Mr. Ingram's selection, in a recent number of THE GARDEN, will suit more northerly and cooler districts. Other situations may have other wants:—

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| 1. Doyenné d'Été, July | 10. Flemish Beauty, Sept. | 18. *Doyenné du Comice, Oct., Nov. |
| 2. Jargonelle, Aug. | 11. *Marie Louise, Sept., Oct. | 19. *Glout Morceau, Nov. |
| 3. William's Bon Chrétien, Aug., Sept. | 12. Thompson's, Oct. | 20. Winter Nelis, Nov., Dec. |
| 4. Louise Bonne of Jersey, Sept. | 13. Beurré Bosc, Oct. | 21. *Beurré Rance, Dec., Jan. |
| 5. Jersey Gratioli, Sept. | 14. *Duchesse d'Angoulême, Oct. | 22. *Josephine de Malines, Jan., Feb. |
| 6. Fondante d'Automne, Sept., Oct. | 15. Beurré Diel, Oct., Nov. | 23. *Bergamotte d'Espercen, Jan., Feb. |
| 7. Suffolk Thorn, Sept., Oct. | 16. Beurré Hardy, Oct., Nov. | 24. *Easter Beurré, Feb. |
| 8. Seckel, Oct. | 17. Marchal de la Cour, Oct., Nov. | |
| 9. Comte de Lamy, Oct. | | |

Those marked * will grow larger and handsomer against a wall, but will be better flavoured (if smaller) if grown in the free air. Marie Louise will do as a full standard; the others as low trees only, pyramids, or trees on trellises.]

Grapes in Bottles (see p. 189).—Will Mr. Tillery oblige by telling us what size bottle he uses for this purpose, and the average temperature required? Would a dry cellar, or an upper room in a loft, answer? Are the bottles corked, or left open at the mouth?—W. H.—[The bottles used here are about three inches in diameter at the bottom, and ten inches in height, made of clear glass, and will contain nearly a pint of water. At first I used pint porter bottles, and they answered very well; but this year clear glass bottles are used, on purpose to see if the water is clear, as small pieces of charcoal are put in the bottoms of the bottles to keep the water sweet and clean. The temperature of the room must be kept as low as possible, just to exclude frost in severe weather, and never to get higher than 50° when the weather is dry and open. This could be best attained in an upper room in a loft, where proper ventilation could be given in dry days, and where a fire or flue could dry the damp in wet weather. The bottles are not corked, but left open at the mouth.—WILLIAM TILLERY, *Welbeck.*]

Fruit on Railway Embankments.—We noticed in THE GARDEN of the 27th ult., an article on railway-side fruit culture, in which it is shown that fruit trees do grow on railway embankments. Our experience is the opposite. Fourteen months ago we planted one thousand raspberry canes on the side of an embankment, and all of them have died, the reason, in our opinion, being, that they had not sufficient soil in which to take root. It must be borne in mind that such embankments as you mention are mostly composed of sand or gravel, especially in this country. We would like to know if anyone has tried the experiment of growing fruit trees on embankments in Great Britain, and with what result?—M., *Aberdeen.*—[There is abundance of good soil along many of our railways which might be utilised, if not for fruit for some other product of use to the community.]

New Fruit Label.—M. Ed. Pynaert, of Ghent, has just invented a new kind of label for marking fruits. It consists of small squares, like postage-stamps, on which the names of fruits are printed. They are in sheets of fifty labels, which are perforated at the edges like postage-stamps, and, like them, gummed on the under surface. These sheets are either special or general. In the former case, the fifty labels of the sheet all bear the name of the same kind of fruit; in the latter, the labels all bear the names of different kinds. The cost is very trifling: ten labels for a half-penny; a sheet for a penny; one thousand labels, in eighty varieties, or according to choice, half-a-crown.

FOUNTAINS.

We are highly adverse to fountains in gardens of any kind, in consequence of the great expense of constructing and supplying them, and also of the very unhappy effects they often produce from being placed in positions entirely unsuited for them. For instance, nothing can be in much worse taste than the water squirts at the head of the Serpentine; and those in Trafalgar Square, as already noticed in the columns of THE GARDEN, are feeble and ineffective. Of fountains out of place, we have recently seen no example worse than that in the centre of the exhibition tent in the Botanic Gardens, Regent's Park. We think it wrong to place a fountain of any



kind in the picturesque garden, and it is better not to meddle with them in the geometrical one, unless a graceful design and a suitable position for them be secured. Fountains are seen to best advantage in open dusty spaces, small squares, &c., in hot countries. In all cases where expense is incurred for them, concise and well executed designs like the one in the accompanying illustration should be the aim. At the head of the Serpentine, and in many other places we could name, the artist has been ambitious in attempting to make a regular garden of fountains, and the result is

poor indeed. Even if there were such a pleasing design as that in our illustration, its effect would be to a great extent marred by surrounding it with a number of meaner ones, and with much rough and unsatisfactory stone and stucco work. We hear with regret that the Metropolitan Board of Works contemplate the erection of a costly fountain in one of the small gardens on the Thames Embankment. To do this well would require as much money as would suffice to let the sun and a few green leaves gladden the eyes of the dwellers in some pestilential nook of Bethnal Green. But if people persist in spending money on fountains, they can hardly be excused for making them decidedly ugly when happy examples occur in many not distant cities.

SEED COVERING IN THE AMERICAN'S GARDEN.

If there is one fault above another in all the gardening books, it is the lack of those simplest of directions and suggestions, without which the novice is utterly at fault. Thus, we are told in what month to sow a particular seed; that it must have a loamy soil; and are favoured with some special learning in regard to its varieties, and its Linnæan classification. "Pat," we say, "this seed must be planted in a loamy soil." Pat (scratching his head reflectively): "And shure, isn't it in the garden thin, ye'd be afther planting the seed?" Pat's observation is a just one; of course we buy our seed to plant in the garden, no matter what soil it may love. The more important information in regard to the depth of sowing it, the mode of applying any needed dressing, the requisite thinning, the insect depredators, and the mode of defeating them is, for the most part, withheld. That the matter is not without importance, one will understand who finds, year after year, his more delicate seeds failing, and the wild and attentive Irishman declaring,—"And, begorra thin, it's the ould seed." "But did you sow it properly, Patrick?" "Didn't I, faith? I byried 'em an inch if I byried 'em at all."

An inch of earth will do for some seeds, but for others, it is an Irish burial—without the wake. The conditions of germination are heat, air, and moisture. Covering should not be so shallow as to forego the last, nor so deep as to sacrifice the other essential influences. Heat alone will not do; air and moisture alone will not do. A careful gardener will be guided by the condition of his soil, and the character of his seed. If this have hard woody covering like the beet, he will understand that it demands considerable depth to secure the moisture requisite to swell the kernel; or that it should be aided by a steep, before sowing. If, on the other hand, it be a light fleecy seed, like the parsnip, he will perceive the necessity of bringing the earth firmly in contact with it.—*My Farm of Edgewood.*

THE KITCHEN GARDEN.

SEEDLING SEAKALE FOR FORCING.

I HAVE noticed that many excellent gardeners practice, and recommend, the plan of propagating this indispensable vegetable by planting pieces of the roots, about two feet apart and the same distance asunder, between the rows—thinning out the thicket of crowns each root is sure to make, to two or three. Later in the season they pick out the seed-stalks, which the latter generally show from time to time during the summer, seldom getting roots fit to force till the end of the second year.

Now, with all deference to the opinions of others, I venture to assert that all this trouble during two years is not needful, not to speak of having to grow two breadths of Seakale—a forcing and succession stock—by the above system. It is a well-known fact that seedlings, as a rule, always furnish the most vigorous plants, and if any one will grow two batches of Seakale—one from chopped roots and the other from seed—I am sure they will verify the truth of this assertion to their complete satisfaction.

Seakale, sown in March or April in well-prepared ground, will yield crowns fit for forcing in November equal to plants from cuttings at the end of two years. I will not say that each seedling plant will furnish as many crowns—not more than one, in fact; but a square rood of seedlings, judiciously cropped and thinned, &c., will yield as many, and as good, crowns as the same extent of two-year-old plants from cuttings. I have sown a pound of Seakale seed annually for these last seven years, and have never failed but once in having an excellent supply of plants, the whole of which have always been forced the following winter and spring. The failure referred to was caused by an overdose of salt administered inadvertently by one of my men.

I am aware that forcing seedlings the first year is not a new plan; but I also know, both from reading and experience, that it is an economical and satisfactory system very rarely adopted; and I wish to convince your readers that they may sow and clear their ground of Seakale nearly within the year, instead of always having two quarters of the kitchen garden occupied by it.

J. SIMPSON, Wortley.

NEW VEGETABLES OF THE PAST YEAR.

AMONG the new vegetables of 1871 we find new names to be legion. It is, however, always a difficult matter to decide as to what is truly a novelty or new variety, and what is merely a new name given, it may be, to a greatly improved stock, but still essentially the same. Our vegetables are improved, or kept up to the standard, by selection far more than by the efforts of the hybridizer or introducer, as in the case of fruits and flowers. Peas, however, yield us real novelty. Mr. Laxton, to whom we have already been indebted for several important additions, is now about to outdo himself by giving us, all at once, six new varieties—to wit, Superlative, having great pods like a broad bean, fully seven inches in length, which, whatever its quality be, will be a glorious pea for exhibition; Griffin, early as Sangster's, of a deep grassy-green colour, a great desideratum in an early pea; Popular and Omega, two wrinkled marrows; Evergreen and Conquest, the former a smooth pea, said to be of fine colour when cooked, the latter a green wrinkled. In addition to this, we have Emperor of the Marrows, from Mr. Williams; White Gem, First Crop Blue, from Messrs. Carter & Co.; Best of all (Maclean), from Messrs. Sutton & Sons, which last, if it prove true to its name, will be good indeed. One more must be noticed, viz., Canadian Dwarf, from Messrs. Finney, which is of great promise as an extraordinary cropper, and of fine quality; and there are still more candidates. Of onions we have many claiming notice of late. At present we may allude to the New Red Marzago, the Neapolitan Marzago, and the Red Mammoth Tripoli, all very large, of the Tripoli type. Amongst cucumbers there are also many aspirants, but the best which we have seen is Douglas's Tender and True. For the lovers of large cucumbers, we may indicate the Marquis of Lorne. In tomatoes we have gained a good variety in Defiance; as among lettuces we have also in the Kingsholm Cox. In radishes we have a welcome addition to our winter salads in the Largo White Californian, no doubt of Japanese or Chinese extraction, introduced by Mr. Robinson, which grows to a large size, resembles a great white Sablons turnip, and is of good quality. Lastly, among potatoes, we

have so many to choose from, that we are at a loss which to select. Lee's Hammersmith Early Kidney is very fine in appearance; but it would be invidious to name others from amongst so many. It is satisfactory to know, and highly gratifying to feel, that the past season, although an unpropitious one for gardening generally, does not show any falling-off of energy amongst gardeners, but a quiet progressive improvement.—A. F. B., in "Florist and Pomologist."

AN OLD TEMPLE GARDEN ELM.

THE Benchers of the Middle Temple have just cut down an Elm which was sacred to the musings of Charles Lamb and the kindly fictions of Charles Dickens, for it was under the shade of that tree that "Elia" walked, and that pretty Ruth Pinch kept her tryst with honest John Westlock. Who has not read with a brightened eye and a cheerier heart that chapter which begins, "Brilliantly the Temple fountain sparkled in the sun, and merrily the idle drops of water danced and danced, and peeping out in sport among the trees plunged lightly down," &c.? "A pleasant place, indeed," said Ruth; "and so shady!" Shady no more; there lies the old elm along the side of the Hall, sound to the core. *Cui bonis?* The Benchers of our Inns of Court may build halls and pull down old erections, but once cut down a fine old tree, and no man can replace its beauties. Let those who may be misled by the plea that the old tree was dying pay a visit to its mutilated body by the side of the Hall, and observe, at the same time, the gap made in the little community of timber, and then say, as they will do, "Why cut it down; it numbered not the ground?"—B. F., in "Times," Feb. 3rd.

To the above, the following reply has since appeared in the same paper:—

The legal barbarity imputed is exclusively my own. *Audi alteram partem.* The tree was a decaying institution. It had perished at the root, and nodded to its fall. It was condemned to fall, that it might fall safely and not be a fatal tree. I am a planter and not an uprooter of trees. I know the obloquy which attaches to all uprooters and shakers of that which is planted in the soil too well to venture rashly to remove a tree. As to such an one, public opinion would deem him fit to be suspended on a bough of its neighbour tree; but would it very much astonish the writer to hear that in lieu of this one elm half a score plane trees are about to be planted on that spot, and that I hope our venerable buildings, under my renovating hand, which is thought to be the hand of a legal barbarian, will flourish in a green old age? Trees, like men, we all wish to see planted and retained in their proper places. I read that some mischievous persons are destroying the trees on the Thames Embankment. The Commissioners threaten to remove the rest. In mercy, great Commissioners, execute your threat, for instead of the beautiful river, with its moving and sparkling waters giving animation to our thoughts by all it carries on its course—instead of the noble architectural beauties which the sight now takes in—we, if we live so long, shall otherwise see hereafter a long avenue of green foliage, and guess at a river which that foliage hides. Pardon me for this heresy, which, as it comes from a legal barbarian, may possibly be pardoned.—Laurence Peel, Athenæum Club, Feb. 5th.

DAMAGING TREES ON THAMES EMBANKMENT.

AT a recent meeting of the Metropolitan Board of Works a report was received from the Parks and Open Spaces Committee, stating that certain of the trees on the Victoria Embankment roadway had been maliciously cut, and recommending the Board to offer a reward of £20 for information which would lead to the conviction of any person damaging the trees. The chairman said he had been to the Embankment to ascertain the facts, and he found that these trees had been deliberately injured, and that it had been done with skill, as some instrument must have been put through the fencing for the purpose of damaging them as much as possible.—*Daily Paper.*

[Our own reporter, who has inspected the Embankment, states that the damage committed occurs in the line of trees next the river. A few yards to the right of Waterloo Bridge, looking towards the Surrey side, one of the trees has been cut completely through, about three and a half or four feet from the ground, with, apparently, a strong knife or a small hatchet, the top having been left, as it was growing, between the supporting stakes. A little further on, towards Westminster, another tree also bears marks of injury, an attempt to heal which has since been made by covering the wound over with clay, and keeping it in its place by means of a bandage. A few yards further on another tree appears to have received a knock from some blunt instrument, probably the back of a hatchet. This also has been dressed with clay. This last tree has been damaged higher up

the stem than its injured neighbours, the wound it has received being about four and a half feet from the ground. The Embankment gardens, say the daily papers, are to be ornamented with evergreens on the occasion of the Queen's passing that way to or from St. Paul's Cathedral on the 27th instant, and already some five thousand laurels, hollies, box, firs, &c., bought at different nurseries for that purpose, are being planted in conspicuous positions. How long they will withstand the change from pure air to our smoky atmosphere remains to be seen.—Ed.]

THE AMATEURS' REMEMBRANCER.*

Flower Garden and Shrubbery.—Trees and shrubs prune, removing all decayed and unsightly branches, and thinning and regulating where overcrowded. Alterations bring to a close quickly. Flowers like deep and porous borders; but they should not be made too rich, as in that case the plants, especially in rainy seasons, run too much to leaf.

Pits and Frames.—Plants in these examine, freeing them from dead or decaying leaves, stirring the surface mould, and otherwise keeping them clean. Auriculas, top-dress with rich soil, and young plants in small pots shift into larger ones, and as the plants start into active growth increase the supply of water; protect from heavy rains, and give air on all favourable occasions. Calceolaries, shift, and keep in a genial moist atmosphere. Sow mignonette on a slight bottom heat, in rich soil. Re-pot stocks, and encourage them; some ten-week stocks may also be sown. Carnations, clear of dead foliage, and stir the surface soil. Ranunculuses, sow in pans, and place in a cool close frame.

Indoor Plant Department.—There will be no difficulty now in keeping conservatories and greenhouses gay and attractive, seeing that hyacinths, tulips, and other early flowering plants, are coming so freely into bloom. As the days advance in length and warmth, more encouragement may be given to regular occupants of these structures. Plants for successional blooming should be introduced into the forcing-pit, such as Lilacs, Ghent Azaleas, hybrid Rhododendrons, &c. Room must also be found for Chinese Azaleas, Roses, and bulbs. Dipladenias, Allamandas, Ixoras, and Stephanotis, for stove ornamentation, should also be started if wanted early; and the various kinds of Achimenes, Gesneras, Gloxinias, and other bulbous stove plants must likewise receive attention. Tea, China, and Bourbon-Roses may now be increased where the stock of such things is deficient.

Indoor Fruit Department.—Shift some of the best succession Pine-apples into their fruiting-pots; keep the root temperature from 80° to 85°, and the atmospheric about 65°. Take suckers off old stools with a "heel," and pot at once into seven or nine inch pots. Vines breaking require a moist atmosphere, and those in bloom a rather dry one. As soon as grapes are set, thinning must commence, and admit carefully as avoiding cold draughts. Peaches and nectarines set, will require thinning, and also syringing morning and evening in favourable weather; disbud and keep them free from insects. Figs like plenty of water and frequent syringing; pinch out the terminal bud at the fifth joint. Cherries keep cool till set, and water very moderately; temperature 45°, and admit air freely. Of strawberries keep up successions, and remove such as have fruited. Tomatoes sow in three-inch pots, and push on in heat. For cucumbers, prepare succession beds, and plant those already made, keeping the plants about six inches from the glass. Shift seedlings into three-inch pots when they have made the third leaf; afterwards pinch the leading shoots. Melons sow in small pots and when they make two rough leaves, shift; when they make three or four rough leaves, pinch; night temperature 60° or 65°, day temperature, by sunheat, 80°; keep the atmosphere moist. Mushroom beds, when about 60°, spawn. Radishes sow in gentle heat. Mustard and cress sow successively once in ten days. Capsicums and chilies sow in strong heat, and prick off as soon as up, an inch apart. To potatoes under glass, admit air freely; water only the soil, and top-dress with light mould. Of rhubarb bring in successional plants for forcing. Seakale, lift and place in a mild temperature away from light, to blanch. Kidney Beans sow in pots for succession; pinch off the top shoots, and syringe frequently. Asparagus add fresh linings to, maintain a temperature of 60° or 70°, drawing off the sashes in fine days. Celery sow on a slight hot-bed, or in boxes or pans.

Hardy Fruit and Kitchen Garden.—Trenching and manuring finish as early as possible. Prune outdoor vines. Plant and prune bush fruits. Scions for grafting put in by the "heels" till required, and head back stocks to receive them. Orchard trees thin where crowded. Finish training and nailing, especially on south walls; and syringe peach trees afterwards with sulphur and water. Of strawberries, make new plantations if necessary. Of beans sow a general crop, also a second crop of tall and dwarf peas. Of potatoes a full crop may now be planted. Some early turnips sow on a warm border. Of parsley sow some of the best curled, in drills a foot apart. Of cauliflower make a small sowing, prick out those in boxes or pans, and plant out some strong well-hardened plants of autumn sowings. Carrots sow a few Early Horn on a warm border. Of cabbage sow an early variety on some warm spot, and transplant autumn sown. Of broccoli sow Walcheren on a warm situation. Radishes sow both long and turnip-rooted, protecting should the weather become severe. Garlic plant in drills two inches deep, nine inches from each other in the row, and the rows twelve inches apart.

* Complete monthly calendars, written by some of our ablest gardeners are published in THE GARDEN in the first issue for each month.

NOTES AND QUESTIONS ON PUBLIC GARDENS.

Victoria Park.—We understand that the thirty acres of reserved land have been secured for the public. Mr. Lowe and Mr. Ayrton have agreed with the Board of Works as to terms. This is a satisfactory termination of a gallant fight, which seemed almost hopeless when Mr. Lowe gave the adverse answer to the deputation which waited on him a few weeks since. It was Mr. Reed, M.P., who on that occasion, if we remember rightly, proposed, as a last resort, to appeal to the Board of Works in the matter, and the result has been a success obtained in the eleventh hour.

Public Park for Ashton-under-Lyne.—The Earl of Stamford and Warrington has generously proposed to give a tract of land, lying between the towns of Ashton-under-Lyne and Staleybridge, of the value of upwards of £10,000, for the formation of a public park for the district, on the condition that the inhabitants will subscribe the necessary funds for laying out the park and its approaches. Mr. Danton, solicitor, and the ex-mayor of Ashton-under-Lyne, has also offered to convey a plot of land, containing about nine and a half acres, and also a large mansion thereon, known as the "Highfield estate" (late belonging to Abel Harrison, Esq.), to form part of such park, for the sum of £2,000. The Highfield estate is subject to a yearly chief rent of £131, payable to Lord Stamford, which his lordship has also generously consented to forego.

The Alexandra Park Company.—The winding-up matter of the Alexandra Park Company was before Mr. Church, the chief clerk at the Rolls' Chambers, this week. The official liquidator said it had been mentioned in the public press that the creditors would be paid in full. Already they had been paid 17s. 4d. in the pound. All that was expected further would be twopenny in the pound. The chief clerk said he wished that all public companies that came before him paid 17s. 6d. in the pound. He allowed the matter to be adjourned.

"Pour les Dames."—What must foreigners think of our mock-modest style, where health is in many unavoidable cases sacrificed for appearance sake? Why are our large parks and promenades so destitute of accommodation for women, and why is the little that exists so carefully hidden from knowledge as well as sight? Why should private individuals be left to provide for so great a public want? Such provision must always be inadequate, more particularly so when payment is demanded for that which vestries ought to supply and care for gratuitously. Retiring places, *pour les dames* should be erected in convenient corners, and one section should be free, whether in park, or street, or railway-station. The sterner sex has less to complain of, but a comprehensive system might be instituted that would provide for all requirements, without being indelicately obtrusive.—*Lantern*, in "Builder."

COVENT GARDEN MARKET.—February 10th.

Flowers.—These consist of Hyacinths, Tulips, and Crocuses, Callas, Heaths; common and Chinese Primulas; Cyclamens; Azaleas, both Indian and Ghent; Camellias; *Dentia gracilis*; Laurustinus; Acacias; *Thyracanthus rutilans*, one of the most striking of winter-flowering plants; *Dielytra spectabilis*; Bouvardias; Pelargoniums; Cytisus; the sweet-smelling *Daphne indica*; Fuchsias, Lily of the Valley, Violets, Mignonette, Wallflowers, Begonias, Christmas Roses, Lilacs, Tea and China Roses, Snowdrops, Arabis, *Spiraea japonica*, Cinerarias, Winter Aconites, Hepaticas; and some cut flowers of Orchids, such as *Dendrobiums*, *Odontoglossums*, *Zygopetalums*, and *Cypripediums*. Among berried plants are Solanums, Ardisias, and Aucubas.

Prices of Fruit.—Apples, Dessert, 2s. to 4s. per dozen.—Cobs, per 100lbs., 60s. to 65s.—Filberts, per lb., 8d. to 10d.—Grapes, per lb., 5s. to 10s.—Lemons, per 100, 7s. to 10s.—Oranges, per 100, 6s. to 10s.—Pears, per dozen, 3s. to 8s.—Pine-apples, per lb., 6s. to 10s.—Pomegranates, each, 4d. to 8d.

Prices of Vegetables.—Artichokes, green, each, 6d. to 8d.—Asparagus, per 100, 8s. to 10s.—Beet, per dozen, 1s. to 2s.—Broccoli, purple, per bundle, 10d. to 1s. 3d.—Brussels Sprouts, per half sieve, 2s. to 3s.—Cabbages, per dozen, 10d. to 1s. 3d.—Capsicums, per 100, 6s. to 2s.—Carrots, per bunch, 5d. to 7d.—Cauliflowers, per dozen, 2s. to 6s.—Celery, per bundle, 1s. to 2s.—Chilies, per 100, 1s. 6d. to 2s.—Cucumbers, each, 1s. to 2s.—French Beans, new, per 100, 3s. to 4s.—Herbs, per bunch, 2d. to 4d.—Horse Radish, per bunch, 3s. to 5s.—Leeks, per bunch, 2d. to 4d.—Lettuces, per score, 1s. 6d. to 2s.—Mushrooms, per pottle, 1s. to 2s. 6d.—Onions, per bunch, 4d. to 9d.—Parsley, per bunch, 2d. to 4d.—Radishes, per bunch, 2d.—Rhubarb, per bundle, 1s. 6d. to 2s.—Salsafy, per bundle, 9d. to 1s. 3d.—Scorzonera, per bundle, 9d. to 1s. 3d.—Seakale, per punnet, 1s. 6d. to 2s.—Shallots, per lb., 8d.—Spinach, per bushel, 3s. to 4s.—Tomatoes, per small punnet, 3d. to 6d.—Turnips, per bunch, 3d. to 6d.

Part I. of THE GARDEN, containing 6 Numbers and upwards of 80 Illustrations and Plans, may now be had, price 2s. Part II. is also now ready, price 1s. 5d., and may be had through all booksellers and newsagents, and at the railway stalls.

All communications for the Editorial Department should be addressed to WILLIAM ROBINSON, "THE GARDEN" OFFICE, 37, Southampton Street, Covent Garden, London, W.C. All letters referring to Subscriptions, Advertisements, and other business matters, should be addressed to THE PUBLISHER, at the same Address.



"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

Readers who may find it difficult to procure **THE GARDEN** regularly through the newsagents, may have the numbers sent direct from the office, at 19s. 6d. per annum, 9s. 9d. for six months, or 5s. for a quarter, payable in advance. All the back numbers may be obtained through all newsagents, at the railway book-stalls, and from the office.

THE HOUSEHOLD.

THE GIANT PUFF-BALL.

(*LYCOPERDON GIGANTEUM.*)

THERE is no deceptive puff about the Puff-Ball here figured—in fact, it needs no puffing; for its character, like its unsullied snow-white coat, is purity itself. These delicious puff-balls are nature's real "lumps of delight," and may be purchased everywhere in every field and pasture of autumn, for nothing an ounce. These are the proper "balls" for young and old to study. It is far better to be dancing over



A.—The Giant Puff-Ball. B.—Section of ditto.
C.—Spores enlarged 700 diameters.

the September meadows after such epicurean treasures as *Lycoperdon giganteum* & Co. than to be capering with the light fantastic toe over Turkey carpets during the small hours of morning. As for other "balls," such, for instance, as those the Prussians and French have familiarised us with in their fields and cities, why, they are too frightful for Fungologists to think over for a moment; better study at once, and forever, the "terrestrial globes" here illustrated, the pleasures of which are warranted never to cloy.

Dr. Bull states that the Puff-Balls are edible when young; and we consider the Giant Puff-Ball to have a great pre-eminence over all the others. It may be at once known by its great size, commonly measuring a foot in diameter, its snow-white colour, and its texture like the finest white kid leather,

with the skin frequently breaking into minute areas. It grows with great rapidity, and is common in rich pastures, gardens, and orchards, usually irregularly scattered, but occasionally growing in enormous fairy-rings. When the interior of the Puff-Ball is perfectly white and firm, it is fit for the table. We consider the allied species not worth experimenting upon; these may be small, and found growing upon stumps, palish brown in colour, or large, and covered with warts. Our plant is different in all these characters.

Boys take an especial delight in kicking these great puff-balls to pieces. Undoubtedly, they are very alluring, and present just the same temptation to boys as the venerable bald human head does to the irate Irishman, inasmuch as the damage can be so clearly seen after the first hostile blow from the foot or shillalah—both are so easily "caved in."

It generally happens that a single good-sized puff-ball is far too large for a single day's consumption. Should the plant, therefore, be found growing in a garden or any similarly convenient place, the better plan is to cut a few slices off the living plant, and let the bulk remain growing (just as the horse's haunches were treated in the apocryphal traveller's tale); by these means, as Vittadini says, one may have a *frittura* every day in the week.

The best authorities agree in stating that no French omelette is half so good in richness and delicacy of flavour as the Puff-Ball omelette. Dr. Curtis, of South Carolina, calls it the "South Down" of mushrooms, and says, "it has a delicacy of flavour superior to any omelette ever eaten."

Cut slices a quarter of an inch thick, and fry with butter; then spread over them raspberry jam or jelly, or any similar sweet, and serve hot. For fritters, cut slices half-an-inch thick; dip in yolk of egg; sprinkle with pepper, salt, and sweet herbs; fry in fresh butter, and serve hot. The Giant Puff-Ball is one of the lightest, most digestible, and delicious of all fungi.

W. G. SMITH.

THE KITCHEN GARDEN.

KITCHEN GARDEN ROTATION.

WITH reference to farm crops, it is only in exceptional cases where two white straw crops can be taken profitably in succession; and so injurious has the practice been found to be to the land, that most proprietors covenant that a proper and customary rotation shall be observed in the cultivation of the soil. Hence the origin of the two, three, or four course systems of cultivation, and hence, also, the rotation of crops. Before this system was introduced, land used to lay fallow every three or four years in order that it might be cleared of weeds and properly cultivated; but now, by the alternations of straw and green crops, fallows are rendered altogether unnecessary, except in cases of gross neglect where perennial weeds have been allowed to accumulate in a very undue manner. Now in the management of a garden we have always found it necessary to divide the area, be it large or small, into five equal portions. One is devoted to perennial or permanent crops, such as Asparagus, Seakale, Rhubarb, Horse Radish, and the like, and once properly planted, these, beyond the ordinary rules of manuring and cleaning from weeds, require little attention. Strawberries we suppose to be grown upon the wall tree borders, and fruit trees are cultivated in single lines running parallel with the walks. This leaves the four equal proportions which we have specified open for a specific rotation, which may be carried out in a systematic manner. Now, of these crops we have what may be called deepeners, cultivators, and exhausters. Thus Celery, Cardoons, and early Potatoes in trenches may be called deepeners, inasmuch as they necessitate the shifting of the soil to a considerable depth, both in forming trenches and earthing. Surface crops are called cultivators, because the frequent hoeings necessary for the destruction of weeds exposes a large surface of the soil to the action of the atmosphere; and exhausters are such root crops as Potatoes, Parsnip, Carrots, and the like, which scourge the ground of its manure and make it poor indeed, and consequently it is necessary that such a rotation should be observed that the deepeners follow the exhausting crop. To this end we make the deepeners Celery, &c., our leading crop. Therefore Plot 1 will be

planted with Celery, heavily manured, and also with Potatoes in trenches on hot dung, and this plot will also contain the Cucumber or Vegetable-Marrow ridge. Plot 2 will be planted with Onions, Cabbage, early Cauliflower, and Carrots. Plot 3, summer Spinach, Turnips, and dwarf French Beans, followed by Broccoli and Brussels Sprouts for the winter; and No. 4, the general crop of Potatoes, interlined with Brussels Sprouts and Winter Greens, or manured after the Potatoes are taken up and planted with autumn Coleworts. By this succession there is no vacant ground; each crop falls systematically into its allotted space, the ground by the preceding crop being properly prepared for its reception. Thus after the exhaustion of the soil by the root crops upon Plot 4, Celery and its companion crops step forward from No. 1, and by the deep trenches and heavy manuring restore its lost properties. Onions and Cabbage follow, which delight in deeply cultivated and highly manured soil, and these are followed by crops which rejoice more in surface cultivation. In this manner the round of the cropping may be kept on for a century without the soil being deteriorated, always premising that it receives manure with a liberal hand, and that no opportunity of trenching and ridging the ground as frequently as the absence of the crop renders such treatment practicable is neglected. It will be observed that in this rotation I have not said anything of Peas and other tall-growing leguminous crops. I suppose them to be grown in rows, eight, twelve, or fifteen feet apart, and that the minor vegetables are grown between them; always, of course, taking care that they do not stand upon the same ground two years in succession. Thus, if around the plot you have pyramidal Apple, Pear, or Plum trees, and bush fruit, Gooseberries and Currants, planted alternately, say six feet apart, the Peas this year will come opposite the tall trees, while next year their station will be opposite the bush fruit. By this system of cropping I have always realised the most complete success in the cultivation of vegetables of all kinds. Now, in the cultivation of the permanent crops, if it is customary to take up Asparagus, Seakale, or Rhubarb for forcing, I always contrive to have an improving crop upon the space. Thus, after Asparagus, I would have a ridge of hot dung and garden refuse for the cultivation of early vegetables or Cucumbers or Vegetable Marrows, and that trenched up and well incorporated with the soil would make a fit preparation for Asparagus in the following season, and by the same rule trenches for early crops assisted by hot dung would prepare the Seakale and Rhubarb ground for succeeding crops. Of Strawberries and such light crops as Lettuce and other salads, I say nothing, as I suppose them to be confined to the wall tree borders, and to such aspect as the varying seasons may render necessary.

P. A. W.

HARD GROUND FOR BROCCOLI.

In penning a few notes on this esteemed vegetable, I have little new to offer, but merely purpose to describe a practical method of treatment, which, if carried out, cannot fail to give satisfactory results. Just now (December) we have a good stock of Walcheren broccoli, well covered with fern—the best of all protectors for outside things, to be followed by Snow's Broccoli, also covered up.

For my first crop of Walcheren, I sow the seed about the middle of August, and plant (under hand-lights) in the first week of October all the larger plants, reserving the small ones for three-light boxes, which gives me a succession from the first week in June until the last in July. These are followed by a pinch of seed sown inside in February, which comes into use in August. In March we make a sowing on a south border, and another the first week in May; and by picking out all the best plants first, leaving the smaller fry for the last batch, we are enabled to keep well on until Christmas.

The land cannot be too highly tilled for cauliflowers, trenching and manuring being the order of the day; but for spring broccoli the case is different. We want good stocky plants. They are the following crop after the early potatoes are cleared, and the firmer the land the better. We strike the lines three feet apart, and plant two feet six inches apart in the row, one man making the holes with a crowbar, and another dropping in the plants. The only planting required is to well wash the dry earth into the holes, filling them level with the ground; and they seldom require any more water. We never lift or lay in our broccoli, the plants being sturdy and hardy; but in severe weather we cover with fern, the wind, rain, &c., washing it down to the neck, and thus preserving them.

The following varieties keep us supplied with broccoli nearly the whole year round:—Snow's Winter White; Osborn's, a really good thing; Early Malta; Frogmore Improved, for early spring, say January to April, when we have Elletson's White Protecting, Hibbie's Royal Alfred; and for latest of all, Cattell's Eclipse, the best of all broccolis for late work.

As an illustration of broccoli-growing in firm land, I may mention that when taking charge of these gardens three years back, I found a quarter which had been occupied by strawberries for eight years. The crop of fruit being cleared, I had the plants all chopped up close to the surface, the land, which was as dry as snuff, raked over, and the plants planted in the manner above described; and I never saw so fine a piece of broccoli stand before the sun. High manuring and deep digging give foliage three feet long; but this is not wanted. What is required, is to give plenty of room, and grow the plants stiff and firm. I sow my early broccoli the first week in April, and the late the first day of May.—R. Gilbert, *Burghley, in "Florist and Pomologist."*

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Thin Seeding.—Crowding is one of the sins of the small gardener. Because he is pinched for space, he must crowd his plants, forgetting that every living thing must have room to grow, and if it has not, attenuation must be the consequence. Of this there can be no doubt, and yet so covetous are many, that a man with a few score plants more than he has room for would rather spoil the lot than give or throw them away. With good seed thick seeding is waste, and the neglect of timely thinning must result in the injury of the crop. Where there is time, as is generally the case with amateurs, it is a capital practice to drop the seeds of onions, carrots, and the like at those distances apart which they require for full growth. Three or four seeds in each patch will be quite sufficient, and, as the distance admits of thorough cultivation around the plants, superior growth is the consequence. This is something like dibbling the corn crops, a pint or two of seed upon properly prepared ground producing as great a return as when two or more bushels are sown. With scarce or expensive seeds, dibbling is a decided advantage.

Garden Allotment Agreements.—As agent for the Hon. Mark Rolle's South Devon estates, I beg to say, in answer to "Kestrel's" inquiries, that I have let several hundred allotments with the best results, and without the loss of a shilling of rent, on the following terms:—1. All allotments 20 perches in extent. 2. Rent (generally 5s.) payable in February in advance. 3. Ploughing and subletting prohibited. 4. Landlord reserves power to resume possession any February without notice, on paying for crops and unexhausted manure. 5. Landlord pays all rates, taxes, and tithes. The allotment field should be as close as possible to the village, and, if not naturally dry, should be drained; accommodation roads or tracts should intersect the field, so as to give access to all the allotments; numbered boundary stakes should define limits, and, to avoid jealousy, applicants should, in the first instance, draw lots. I believe that allotments are great enemies to publicans, and that if any notorious offence forfeits a man's allotment, the effect is good; but I have very rarely had to resume possession. If "Kestrel" wishes to make money by allotments, he will find that in most villages labourers will give 10s. for 20 perches of fair arable land on the above terms; but, perhaps, like my employer, he is ready to accept 5s., and so show the labouring man that there are advantages in living under the wing of a large landed proprietor. Allotments give an agent some trouble, especially at the outset; and that, I am afraid, is the reason why they are the exception in country parishes rather than the rule.—R. H. Lyscombe, *East Budleigh, Budleigh Salterton.*

Foolish Trenching.—For a good garden, as I have said, a deep rich soil is essential; and to this end trenching is desirable; but trenching will not always secure it, for the palpable reason that subsoil is not soil. I have met with certain awkward confirmatory experiences, where a delicate garden mould of some ten inches in depth, which would have made fair show of the lesser vegetables, has been, by the frenzy of trenching, buried under fourteen inches of villanous gravelly hard-pan, brought up from below, in which all seeds sickened, and all plants turned pale. Whatever be the depth of tillage, it is essential that the surface show a fine tilth of friable, light, nuctuous mould; the young plants need it to gain strength for a foray below. And yet I have seen inordinate sums expended for the sake of burying a few inches of such choice moulds, under a foot-thick coverlid of the dreariest and rawest yellow gravel that ever held its cheerless face to the sun.—*Ik. Marvel.*

The Plough in the Market Garden.—Many, without pretensions to that nicety of culture which is supposed to belong to spade husbandry, so overstock their gardens with confused and intercepting lines of fruit shrubbery, and perennial herbs, as to forbid any thorough action of the plough. By the simple device, however, of giving to the garden the shape of a long parallelogram, and arranging its trees and walks in lines parallel with its length, and by establishing easy modes of ingress and egress at either end, the plough will prove a great economizer; and, under careful handling, will leave as even a surface, and as fine a tilth as follows the spade. I make this suggestion in the interest of those cultivators who are compelled to measure narrowly the cost of tillage, and who cannot indulge in the amateur weakness of wasted labour.—*My Farm of Edgewood.*

THE ART OF GRAFTING.

(Continued from Page 258.)

GRAFTING UNDER GLASS.

GENERAL DIRECTIONS.—Certain plants require to be propagated under the shelter of a cloche, frame, or greenhouse. Such are evergreen trees and shrubs, tender, rare, or new plants. Evenness of growth and equability of temperature, keeping the subjects from exposure to the air or other adverse influences, very much promote the union of the graft. The stock is a young plant which has been potted, and allowed to grow in the open air for about a season. When it is time to graft it, it is put under cover. There are, however, certain shrubs which may be grafted at the time when the stock is potted; such as the Holly, Rhododendrons, dwarf Biotas, and most shrubs the roots of which readily group themselves into a ball. The best seasons for grafting under glass are from January to March, and from July to September. Beyond the shelter of the greenhouse or other covering, no artificial heat from manure, hot-air or hot-water pipes will be required; and as the stocks are not exposed to the action of the sun, frost or other atmospheric influences, the grafts will not need the protection of grafting-clay or wax. In times of great heat, the glass of the house, frame, or cloche is covered on the outside with a mixture of the colouring-stuff called "English Green" and whiting, or simply with whiting dissolved in water or milk; mats, canvas, or screens made with twigs or small branches of broom, heath or birch may also be used for this purpose. These, if steeped in a solution of sulphate of copper, will not so soon decay.

GRAFTING UNDER THE CLOCHE.—This is the most simple method of grafting under glass, no house, or other shelter than that of the cloche being required. A quadrangular bed of river sand is made sufficiently broad to contain two or three rows of ordinary cloches. In February or March, sometimes in July, the stocks are grafted in pots, and plunged in groups in the sand under the cloches.

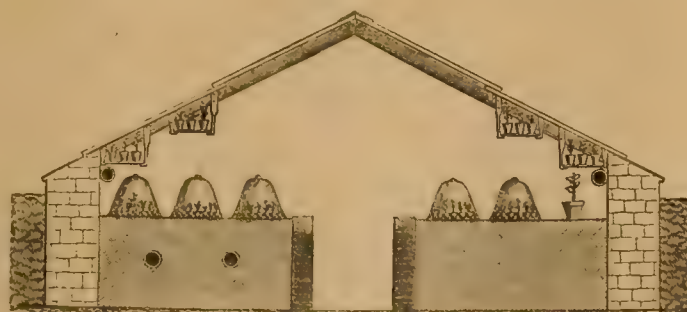
The rim of the cloche is sunk in the sand, so as to exclude the air completely from the plants, and they are left so for six weeks. By that time the union of the grafts will be perfected. The cloches are then gradually raised for a week, after which they are removed altogether; but the young plants are kept shaded with canvas or other screens. These are at length removed altogether, before planting the subjects out. The stocks are raised in pots before hand. They may also be sometimes grafted at the same time that they are potted. Evergreens also, which can be taken up with the roots in a ball, are often grafted after they are taken up. They are then planted under cloches, in a compost of good soil, and not potted until two months afterwards, when the cloches are dispensed with. Autumn-grafting under the cloche does not succeed so well, and involves a greater amount of care and attention. During winter, the rows of cloches are covered with dead leaves and straw mats; but it is very rare that severe winters do not leave their marks behind them. The amateur who desires to try grafting under glass, may satisfy himself at trifling expense, by operating in spring with the cloche, and in open ground or nearly so.

GRAFTING IN FRAMES.—The frame consists of a wooden box, set in cement or brickwork about two feet high, and sunk in the ground to one-half its depth. If the height of the stocks requires it, the soil should be excavated from the bottom to a suitable depth, leaving the height of the frame over ground as it was. The frame may be about 4½ feet wide, and should be covered with glazed lights. The interstices between the lights and the frame should be stuffed with moss, in order to exclude the air. At the bottom of the frame is placed a layer of sand,

tan, cinders, or even of ordinary soil, in which the subjects are plunged as soon as they are grafted. August is the best time for grafting under glass. The stocks should be grafted in the propagating shed at that time, or from the latter part of July to the commencement of September, and placed immediately in the frames. Spring is also a suitable time for this mode of grafting. As the perfect union of the parts does not take place sooner than five or six weeks after grafting, the air should be thoroughly excluded from the frame during that time. Then the lights should be slightly raised for a few hours every day, when the weather is warm. Should the sun be powerful, tender plants must be shaded with screens or canvas spread over the lights, or by whitewashing the glass. But during the first weeks the frames should be covered with straw-mats.

GRAFTING IN A HOUSE.—The propagating-house here represented is of very simple construction. It is sunk to about from twenty inches to three and a quarter feet under the surface of the ground. The bottom is kept dry by a layer of four to six inches of sand and cinders. The outer walls are sixteen inches thick; the height inside from floor to roof is six and a half feet; and the glazed roof is about four and a half feet wide from the top to the sides. Two raised beds, each three feet wide, are separated by a passage twenty-eight inches wide, and in these beds the stocks are planted as soon as they are grafted. These beds are filled with tan, sand, cinders, or ordinary soil. Instead of one of the beds there might be a shelf, which could be used for holding the potted stocks which are ready for grafting.

When the beds are used for raising cuttings, or receiving plants that have been bud-grafted, or for some winter operations, a layer of dung-heap manure mixed with dead leaves should be applied. The leaves serve to maintain the heat in the manure, an object which also may be effected by a mixture of fragments of cotton waste. Artificial heat is not required in grafting under glass. When the stocks are grafted, which may be done either inside



Propagating-house.

or outside of the house, they should be arranged on the bed or shelf in groups, keeping similar kinds as much together as possible. They are then covered with cloches, which exclude the air, and under which they are kept for six or eight weeks. Every five or six days the condensed vapour on the inside of the cloche should be wiped off, and the cloche carefully replaced over the plants so that the air may not enter. The omission of this precaution would be more dangerous than neglecting to wipe the condensed vapours from the interior of the cloche. During periods of great heat, the cloches should be covered with leaves of grey paper or the glass of the house whitewashed. Conifers are more hardy than evergreens, and for them this will be superfluous. As soon as the union of the graft is complete, which will be in the space of six or eight weeks, the cloche is removed and the plant left without it for three or four weeks, but still under the shelter of the house; or, should the house be required for any other purpose, the plants may be removed at once to a frame and covered with the lights.

TREATMENT AFTER GRAFTING UNDER GLASS.—After grafting, the subjects are left for six or eight weeks cut off from the external air. As soon as the union of the parts has been established, the plants are still left under glass, but partially exposed to the air in the frame or house, by removing the cloches. If the grafting has taken place in autumn, the plants already grafted in frames are left there, and those which have been grafted in the house are also put under frames, where they will remain during the winter. When spring comes, the lights are raised in the day time; in the month of May the plants are removed into the open air, and should be placed at the north

side of a building or evergreen hedge. If the grafting has been done in spring, the plants which have been grafted under cloches or frames, and which have been already partially exposed to the air, should be put out in the same way in the shade. Plants grafted in a house should be put for a month under a frame, the lights of which should be raised in times of great heat; after this they are put out for a while in a shady place before they are finally committed to the open ground. In nurseries, this shading quarter is formed by a row of evergreens of compact and well-clipped foliage. The Chinese Arbor vitæ (*Biota orientalis*) is generally used for this purpose, planted from east to west, so as to afford a full north aspect, and at a distance of two feet from each other. For stocks as tall as five or six feet, a row of trees planted at least six and a half feet from each other will afford an excellent shade. The higher the shading is required to be, the greater should be the distance between the trees which form it, in order to admit a free circulation of air. When the plants are placed in the shade they should be moved into larger pots, and should be plunged in groups in beds at the foot of the shading trees, where they are to remain a year or two in the same pots. When sufficiently grown they are again moved into larger pots. According to their nature they may be subsequently planted permanently in shade, or in the open ground, or in the intermediate position known as the parasol. The parasol is a row of deciduous trees planted similarly to the evergreen shading trees. Every time the plants are moved, whether in pots or not, their roots should be surrounded with a compost approaching in character the soil in which they are to be finally planted. Peat soil mixed with river sand is best for the first stages. Woody plants prefer a substantial kind of nutriment to manures that will ferment and whose action is temporary. Pots with longitudinal grooves in the sides answer well for raising trees and shrubs. After the grafted shrubs have thus gone through the different phases of treatment, which finally conduct them to open-air growth, they thenceforward come under the common practice of the management of hardy plants.—*C. Bultet, "L'Art de Greffer."*

(To be continued.)

THE FLOWER GARDEN.

THE WHITE LILY.

I AM happy to be able to endorse, from a practical point of view, all that "Flos" (p. 239) has so charmingly written concerning this lily. It is peerless in purity, beauty, and fragrance, while it lasts. Like a good many old things, it need not be discarded for newer beauties. It is as effective for back rows of ribbons, centres to foliage, and other plants as on the old herbaceous beds or borders. It is, indeed, worthy of a place of honour in every garden; it is readily increased, and easily cultivated; it flowers best, however, if not too frequently disturbed. You have shown what it is in a mass, with an architectural setting; it is well nigh as effective in lines—and though it may seem presumptuous to write it, after Shakespeare's reference to the futility of gilding refined gold, yet have I seen the effect of the lily heightened by being fronted with scarlet and backed with blue *Salvia patens* in the rear. For many years a line of lilies has been queen of a ribbon border here throughout the month of June. For the time they fill all eyes, and, as it were, obscure, by their superior beauty, all else. When the lilies fade and die, a strong row of the dwarf *Dahlia alba multiflora* takes their place, and well occupies the ground the lilies have left vacant. We have other lines, groups, and patches of white lilies in various positions, and everywhere they flourish.

It would be quite possible to work the grand golden, and other lilies into our bedding arrangements in a similar manner, and by such means to add new interest and beauty to our grouped flowers. Besides, in every garden of any extent lilies and other old-fashioned favourites might have separate beds, borders, and gardens wholly, or chiefly, to themselves.

D. T. F.

CHEAP ROSES.

"I AM only a Dog Rose, and as such, cannot expect much attention; nevertheless the stock from which I sprang lay claim to having been the progenitors of the Queen of the Floral World; a

position, however, untenable without the assistance of my humble brotherhood. This I should not object to, could our aid be given without torture in the shape of mutilation. First our lower extremities are cut off until we have not a toe on which to support ourselves; then our heads are ruthlessly removed; we are set in rows uncomfortably close; and almost as soon as we begin to assert our natural rights, we are subjected to the drudgery of having to support some of our royal relatives. If we have an eye to growth it is ruthlessly put out—in fact we are simply made use of, in the full acceptance of the term, and have little to thank the world for. True, on one fine June morning, when a number of our family who had taken up their abode in a quiet corner were decked out in their delicate blush robes, I once heard a young lady remark how beautiful we looked; but this was an exceptional occurrence. There are comparatively few nowadays who can appreciate natural beauty. But I am digressing. My business has reference to our royal relatives. Recently another member of our family, who has shared a great deal of the torture inflicted upon ourselves—Miss Manetti is her name—came amongst us, her countenance radiant with joyful intelligence, which was, that an individual who signed himself 'Y,' and who appears to take an interest in our common family, had signified that he had discovered a method by which the royal section of our family could be upheld in their present position of honour; nay, could even be made to increase their number and dominion to an unlimited extent without our assistance, thereby sparing us the grievous mutilation already complained of. Imagine our joy at such good news. We were all ready to burst our buds with expectation, which was heightened by the question being publicly asked of 'Y.' what his method was; the querist being 'T. D. F.,' who takes an interest in our well-being, and, if report is correct, is remarkable for his kind disposition; though, in truth, I must say that hitherto, in displaying his loyalty to the Floral Queen, he has acted towards us just as hard-heartedly as the rest of his species. Yet I have no doubt he and others would be only too glad to be able to spare us the bad treatment necessity has hitherto compelled them to inflict. We naturally expected that 'Y.' would have revealed his secret, and so put an end to all our trouble. Imagine our dire disappointment when we learnt that he refused to disclose his secret. There was mingled disgust and resentment in every countenance. I believe the spines on some of the young and vigorous of our community grew at least half an inch longer in no time; and the general expression of all was such, that if 'Y.' had been within hearing, he would never have forgotten it. A general consultation was held as to what punishment he was deserving of, when it was proposed that if it were possible to find him, he should receive a sound castigation with half-a-dozen of the strongest spined young briars, until not a thorn remained upon them. The proposition was carried by acclamation, and all expressed their conviction that 'Y.'s' secret would do him no good, as it, or something equal to it, was sure to come out that would be a general relief to us Dog Roses."

Happening to be in an outside corner of the garden, where a number of briar and Manetti stocks are planted, I overheard the foregoing recital, and promised the stocks that if I could in any way assist them, I would do so.

There is a method which I have tried years ago, and by which, with proper attention and well-directed practical skill, ten out of every dozen roses will strike root with a little practice in selecting the cuttings. After blooming, about the end of July, when the wood is about half ripe, select your cuttings, put them in pots, but not too thickly; give them a good watering, and then place the pots as closely as they will stand in cold frames under a north wall; keep the frames shut; in about three weeks the cuttings will have callused; then plunge the pots in a nice bottom heat, and very few will fail to root in a very short time. They can then either be kept in the pots through the winter, or they can at once be placed singly in three-inch pots, and wintered in pots where frost is excluded. As will be seen, the secret in this method is simply callusing the cuttings before they are put in heat to strike. If the cuttings are at once placed in heat as soon as taken from the tree, great numbers of them damp off. The number of plants that can be propagated by the above method is only limited by the cuttings available.

Southgate.

T. BAINES.

Will you kindly inform "Y." (the cheap rose-grower) that I think it is rather too bad, after making people's mouths water by telling them that "rose cuttings" could be "struck like willows," to withhold his secret.—G. S., *Cheltenham*.—"We feel ashamed of anybody who wishes to hide any new pebble he has found on the shores of "thy great ocean, Truth." We believed in the existence of such poor beguiled creatures, but scarcely thought they would have the hardihood to announce in one note, "We have it," and in the next, "You shan't see it."]

TOBACCO IN THE FLOWER GARDEN.

This is truly a fine foliaged plant, of goodly stature and right royal mien, and one well suited for our modern style of gardening. There are several varieties of it, varying chiefly from another in the stoutness and height of their stems, and in size of leaf and flower. But these variations are also largely dependent on cultivation. The deeper and richer the ground, and more sheltered the position, the larger tobacco plants become in all their parts.

The variety represented is probably the very best in habit and general characteristics for what is termed sub-tropical gardening. It is simply a variety of the common Virginian tobacco (*Nicotiana virginica*); the leaves are of medium size, and the habit branching. For a large sort of tobacco to contrast well with this, *Wigandioides* is a grand plant. Pushing up a huge stem to a height of from six to nine feet, with numerous broad, woolly leaves, it forms a grand background to Cannas, Castor-oil plants, or *Wigandias*. The flowers are also larger and much more conspicuous than in other kinds, and they stand well up on the crown of the stems. Than these, scarcely any plants are more useful in leaf gardening, though, indeed, it is hardly fair to call these tobaccos foliage plants only. The long tubular blossoms are highly novel in appearance, resembling somewhat at a distance long, narrow foxglove flowers on slender foot-stalks.

Scarcely any plants equal the tobaccos in rapidity of growth. They form noble groups of themselves, and they mix kindly and congruously with most other fine-foliaged plants. They are great eaters; indeed, it is almost impossible to overdo them with food, solid or liquid. If every smoker had to grow his own tobacco with his house slops, the sewage nuisance would be much abated, if not wholly cured. The stronger the drink, and the more of it, the faster tobaccos grow. Try them, if possible, in a deep soil, rich in vegetable and animal remains, near the margin of a lake or stream, and note how they grow. They form capital backs to masses of reeds, Pampas grass, bamboos, rushes, or semi-aquatic vegetation of various other descriptions.

They are tender, but not so much so as *Solanums* or Castor-oil plants. Sow them in February in heat, prick off as soon as the plants appear, and pot and grow them in a genial heat of, say, 60°. This will enable you to turn out, from six or eight inch pots, fine plants about the end of May. They will start off at once, and will not cease growing until frost comes. I seldom, however, leave them to become food for frost. Towards the end of October gather the leaves, pile, dry, and press them. Then dry afresh, and put them aside for dealing death to the aphides. Pull up the stalks, hang them up in bundles to dry in any out-of-the-way place under cover, and use them also, chopped up, for fumigating the houses. Thus it will be seen that tobaccos are useful as well as ornamental.

D. T. F.

PEGGED-DOWN ROSES.

BY C. J. PERRY, THE CEDARS, CASTLE BROMWICH.

THERE is, unquestionably, no mode of growing roses so effective as that of pegging them down. Many of our best rosarians, both amateur and professional, have expressed astonishment at the beauty and luxuriance of my beds grown on this plan, and have confessed that they had no idea such effects could be produced in that way even with the Queen of Flowers. It should also be borne in mind that rose beds when once formed and properly attended to are everlasting. There is no dying away every few years, as with roses on the briar or Manetti; and no permanent damage results from frost. Those who grow for purposes of exhibition should never be without such beds; they prolong the "showing" season, and often furnish blooms so grand as to delight even the most enthusiastic exhibitor. I do not say that we should depend

entirely on these beds for show flowers, as by so doing we would be debarred from showing new roses; as at least three years must elapse before the plants could produce fine blooms. Still, exhibitors will find them at all times handy auxiliaries. The first-prizes gained by me during the past year at the Crystal Palace, Leeds, York, Wolverhampton, Taunton, and Castle Bromwich, were won mainly by means of blooms cut from my rose beds grown on their own roots.

I am now daily engaged, whenever the weather is favourable, in pruning and thinning out the rods, which this season are the finest I have ever had, many of them being eight or nine feet long, and not in the least damaged by the winter. I therefore expect next summer to have the finest display of flowers I have yet had. Any time between October and March answers for forming beds for pegging down; the ground should be deeply dug, well dressed with frame manure, and drained if necessary. The plants should be obtained as strong as possible, and must be on their own roots, and, if possible, struck out of doors. They should be planted three feet from each other, and should be cut down to three eyes early in April or in the last week in March. Some

blooms will be produced the first season. In February the next year, one of the strongest shoots from each plant may be pegged down, and all the weaker shoots should be cut close to the ground. This season some fine rods will be produced, and the beds will begin to be effective. A good dressing of rotten manure should be given in November, and dug in previous to the pegging down in February. A quantity of stout pegs should be chopped from old pea sticks during the winter, so as to be in readiness for use during dry days in this month, when the pegging should commence. All the shoots should be cut away from every plant, with the exception of three or four of the stoutest, which should be shortened about a third of their length and then carefully bent down so that the points may touch the ground or nearly so. Care must be taken in bending the shoots or they will split off at the base, and in inserting the pegs so that they may not fly out of

The Tobacco Plant (*Nicotiana virginica*).

the ground. Every winter a dressing of manure should be given, and all the wood that has been pegged down cut away, and the strongest of the young shoots only pegged down as before. Many of the pegs can be used a second year; they should, therefore, not be thrown away, but put in a dry place until required.

I must again impress upon growers the necessity of planting only such roses as are on their own roots; all others will be a source of continual annoyance, for no matter how well the stocks may be prepared, the bending down of the shoots will cause suckers to spring up, which cannot be eradicated, and will much interfere with the growth of the plants. A friend of mine, anxious to possess a bed of pegged roses, last year ordered from a nurseryman a quantity of dwarf roses for the purpose. He could not supply them on their own roots, so sent them on the Manetti. One day last May, my friend called on me to say how beautiful her rose bed looked, and wished me to see it when I came that way. Accordingly, about the first week in June, I had a look at this bed, and, to my astonishment and my friend's annoyance, I at once saw that the winter had killed the greater portion of the roses, and that each root had thrown up a quantity of vigorous Manetti shoots, which certainly made the bed look green and luxuriant, but not one shoot in twenty was what it ought to be.

Most of the vigorous growing kinds of roses will answer pegged down, except teas and noisettes, which should never be used in that way.

The following sorts I have thoroughly proved to be good bedders, and can safely recommend them for that purpose:—

Alfred Colomb	Dupuy-Jamain	Madame Clemence Joigneaux
Antoine Duchere	General Jacqueminot	Madame de Cambacérès
Baronne de Wassanaër (moos)	Gloire de Vitry	Madame Rivers
Baronne Gonella	Horace Vernet	Madame Victor Verdier
Camille Bernardin	Jean Gonjon	Monsieur Boncenne
Caroline de Sansales	John Hopper	Prince Camille de Rohan
Charles Lefebvre	Jules Margottin	Senateur Vaisse
Charles Rouillard	La Duchesse de Morny	Souvenir de Charles Montaut
Comtesse de Chaibrillant	La Fontaine	Thorin
Dr. Andry	La Ville de St. Denis	Vicomte Vigier
Duc de Rohan	Lord Clyde	Victor Verdier
Duchesse de Caylus	Louise Peyronny	William Griffiths
Duke of Edinburgh	Madame Charles Verdier	Xavier Olibo.
Duke of Wellington	Madame Charles Wood	

CLIMBING DEVONIENSIS ROSE.

I AM glad to find Mr. Reynolds Hole standing up in defence of this rose. Most of those who possess it speak of its superior hardiness, compared with that of the old variety. Its thorny habit indicates a hardy constitution, and it is rightly considered to be nearly as hardy as Gloire de Dijon. I have known it to stand 16° or 18° of frost, wholly unprotected, on garden arches, away from any house or wall. The flowers of Climbing Devoniensis are identical with those of its parent in size, shape, colour, and perfume, and, under proper management, its powers, both of growth and blossoming, are wonderful; one plant of it, which was put in four years ago, almost covers the south front of a villa here. Throughout April and May during the last two years this tree has been literally a rose show in itself. Five hundred of its lovely flowers were counted on it at one time, more than a hundred of them measuring five inches in diameter, and some even more.

Climbing Devoniensis requires a dry, well-drained soil to assist it in ripening its luxuriant wood. The early, strong, sappy wood should be pinched or stopped when about a foot in length, in order to cause it to break into several shoots, which ripen better than the single rods would do if left unstopped, and which almost invariably flower at each point the first season. For spring flowering the following year, these shoots should be trained laterally and downwards, and little or no pruning is needed beyond thinning out portions of the old scrubby wood in February. Thus treated, Climbing Devoniensis is the best white climbing rose in cultivation.

With respect to the old Devoniensis, our gifted and well-beloved rosarian, Mr. Hole, has allowed a highly treasonable thought to escape him when he says, "I do not believe that Devoniensis was of Anglican origin." "Devoniensis," says the late Mr. E. W. Foster, "was raised by my brother, the late Mr. George Foster, of Otland, near Devonport, a genuine lover of horticulture, and a true florist."* Mr. Geo.

* See Letter of Mr. Foster in "Beauties of the Rose," 1850.

Foster's opinion was that it was produced from the Yellow China fertilised by the Yellow Noisette Smithii, which was growing alongside of it, as he was constantly in the habit of fertilising his roses. One of some seeds saved at the same time produced a rose much like the Yellow Noisette, but greatly inferior to Devoniensis. The latter flowered the first year from the seed-bed, but was small and weak; and the second year, on being budded on a strong stock, it grew so as to be a very fine flower. In the following year, Mr. Pince, of Exeter, offered twenty guineas for it, and it then passed into the hands of Messrs. Lucombe & Pince. It is perfectly hardy, but requires a rich, strong soil. At a flower show at Liskeard last summer, I had the pleasure of meeting a nephew of Mr. Foster, who is a clergyman in Cornwall. We had some conversation respecting Devoniensis and its raiser, his uncle. That uncle has passed away, also Mr. E. W. Foster, and, still more recently, Mr. Pince, who had the honour of bringing this grand rose before the public. But I am glad to have been afforded the opportunity of thus reviving the facts of its English origin. It has achieved many a triumph in its onward course. I remember exhibiting at one of the old Chiswick fêtes, nearly thirty years ago, four hundred specimen blooms of it; and shall not readily forget the late Dr. Lindley's appreciation of their fragrance and beauty.

Heartily do I unite with Mr. Fish in his warm praise of Devoniensis. It is not only the pride of Devonshire, but of the world, and worthy to be the emblem rose of England's royalty.—HY. CURTIS, *Devon Rosery, Torquay.*

ROSE DEVONIENSIS was raised by Captain Foster, a gentleman living at Stoke, near Plymouth, in Devonshire, about thirty years since, the parents being Smith's Yellow Noisette and the Yellow China. After the second time of flowering, the late Mr. Pince bought it, and I believe I am right in saying the sum he paid for it was £40. It was sent out by that gentleman at 21s. per plant. I have not the least doubt that the climbing Devoniensis Rose has originated in more than one place.—T. BROWN, *Tooting.*

SOUVENIR DE LA MALMAISON AND CLIMBING DEVONIENSIS ROSES.

A THOUSAND thanks to the Rev. Mr. Reynolds Hole for his courteous and satisfactory answer to my queries respecting these roses. I shall try Souvenir de la Malmaison again on its own roots. I do not quite despair of it now, because I remember having a few passable flowers of it late in the autumn. Can it be that the sun is too much for it early in the season? I shall also give the Climbing Devoniensis the shelter of glass, though I do not expect ever to love the daughter as I do the mother. Bath is not Bury, but a correspondent writing from that favoured district as to climate, after praising the other good qualities of Climbing Devoniensis, says:—"It is very hardy, having withstood the severe winter of 1860-61. It grows in almost any soil or situation, even in thickly-built parts of Bath, amidst smoke and dust, where it thrives and blooms in great perfection. So highly esteemed is this variety that there is scarcely a villa residence in this neighbourhood (Bath) where one does not find this rose, and no amateur considers his collection perfect without it. Its blooms are of large size, some of them measuring six inches in diameter, and the shape is most perfect. This is, in fact, one of the best light-coloured exhibition roses in cultivation." There; have I not made the *amende honorable* to the daughter, for the sake, however, of the mother, and the marvellous faith I have in Mr. Hole's judgment? I confess I have never seen it anything like what our Bath correspondent has described it, though I hope to do so some day in that genial home of the Queen of Flowers—Caunton.

D. T. FISH.

A GARLAND OF SPRING FLOWERS.

IF I could be well-assured that in the procession of the seasons, hoary Winter would not again interpose his unwelcome visage; that February, satisfied with the state of the dykes, would think her mission performed, and give us bright and cheering days to compensate us for pluvius skies and stormy winds; and that blustering March would do his spiring gently, I should hail with a perfect pleasure, unalloyed by any taint of fear or uncertainty, the bright and fragrant flowers which the soft and steaming weather has tempted to burst into bloom,

even before the shadow of winter has left us—even so early as the first week in February. It is, perhaps, as unwise to anticipate sorrow as it would be to refuse to be charmed, or to accept the gracious gifts which are proffered to us by our precocious flowers of spring. Let us, then, "take the good the gods provide us" joyfully and thankfully, and weave a garland of these the first gifts of the year.

We will take our first bunch of bloom from *Jasminum nudiflorum*, which has this year produced a profusion of its bright yellow blossom, which, though otherwise charming, yet lacks the merit of fragrance; and so we will associate it with the winter Honeysuckle, so unobtrusively delightful, and which combines the odour of orange blossom with that of its own species, *Lonicera fragrantissima*, which should be in every garden. With this we may place the highly perfumed *Chimonanthus fragrans*, and the aromatic and brilliant flowers of *Rhododendron dauricum atrovirens*, and its fair cousin, *R. precox superbum*; and with these we will associate the lowly *Polygala Chamebuxus* and *Erica herbacea*; and now, stooping to the very ground, we may gather the winter *Heliotrope*, *Tussilago fragrans*, the Christmas roses, *Helleborus niger* and *purpurascens*. Handfuls of Russian and Czar Violets are afforded by the plants transferred from their summer nurseries in November and planted on half sheltered banks. At the feet of the great forest trees, and partly protected by their fallen leaves, we find the golden clusters of the winter *Aconite*; and, not far off, the pensive and chaste *Snowdrop*. A few *Primroses* have coyly appeared, and, more bold, the double *Daisies* present their bright pink-cushioned heads of bloom. The white *Arabis* is slowly expanding its blooms, and with the lilac *Aubrietia* will add variety to our garland. The hardy and handsome *Cliveden Blue Pansy* has not ceased to present its blossoms during the winter, and gives the tint of blue we have so long missed in the sky. The dwarf yellow *Wallflower* has anticipated the sunshine of spring, and enables us to add its rich orange-coloured blooms to our wreath. A few sprigs of *Lamium maculatum* and the small *Periwinkle*, both gemmed with blossoms, will give graceful variety to this collection, culled in a short morning's walk amongst the spring flowers; and to the above we have just added *Anemone blanda* and *Scilla sibirica*.

Those of your readers who cannot indulge in the luxury of conservatories, may thus, by establishing a collection of hardy and early blooming spring flowers, enjoy the delight of gathering daily bouquets, even in February, fresh and sweet and charming from the bosom of mother earth.

WILLIAM INGRAM, *Belvoir*.

[These remarks were accompanied by a box containing specimens of all the lovely spring, say winter, flowers named above, in fine flowering condition—a greater variety than could be culled at the same date in most greenhouses. Really we are too hard upon our "dreary climate," and too neglectful of its capacities.]

WILD FLOWERS FOR GARDENS.

THERE is an indescribable beauty in the woods and wilds which you wish to transplant into our gardens, and the materials are unlimited and cheap. I have myself had a beautiful bit of bog garden, wherein I succeeded in growing everything I planted; and I have just finished another bog garden ready for planting. What a grand plant *Parnassia palustris* is for a bog! as are also the double blossomed *Caltha palustris*, *Campanula hederacea*, *Anagallis tenella*, *Epipactis palustris*, *Orchis maculata*, and others. I grow most things in fibry, sandy peat; and right sure am I that a good bog garden is extremely interesting. *Osmunda regalis*, *Lastrea Oreopectis*, and *L. Thelypteris* do admirably; and what a charming plant is *Saxifraga cymbalaria* all the year round, either for the greenhouse or out of doors! *Silthorpa europæa* is a gem for running over moist sand-stones or hanging over moist rocks. The greatest difficulty I meet with is finding working men who will take notice of these plants. They seem to think them too common; yet, who in his rambling over moor and upland has not been entranced with the gems springing up by mossy ripples in sheltered corners? I have often sketched little bits of Nature's gardening in Derbyshire and Yorkshire, and longed for the means to come home and imitate them; and I am certain that many of these charming nooks and corners, that give the true lover of Nature such indescribable pleasure, from the stately foxglove to the tiny moss that gladdens

the sight during the winter months, can be imitated. People seem to know little nowadays of decoration, beyond the few gaudy plants that fashion has employed for these last thirty years. All credit is therefore due to some of our nurserymen for keeping alive many gems, in the way of alpine plants, which otherwise must have been lost. In my plant-collecting rambles, I have picked up the following variegated forms:—

<i>Lamium maculatum</i>	<i>Phleum pratense</i> , var	Six vars. of <i>Arum maculatum</i> variegatum
aureum	<i>Melica uniflora</i> alba	A new variety of <i>Lily of the Valley</i>
<i>L. album plenum</i>	M. " aurea	<i>Sedum acre</i> elegans
<i>Thymus citriodorus</i>	<i>Lolium perenne</i> , var	<i>Rumex obtusifolius</i> variegatus
aureus	<i>Poa annua</i> , var	And, best of all, <i>Rumex crispus aureus reticulatus</i> ; this is a gem
<i>Malva sylvestris crispata</i>	<i>Gemum urticatum</i> , var	Also many others
M. " variegata	<i>Matricaria</i> , var	
<i>Stellaria aurea</i>	<i>Spiræa Umaria</i> , var	
<i>Geranium molle aureum</i>	<i>Orchis maculata</i> alba, very fine	
<i>Holcus lanatus</i> , var		
<i>Alopecurus pratensis</i> , var		

Beechmont, *Sydenham*.

WM. ELLIOTT.

BLUE-FLOWERED HYDRANGEAS.

DURING the summer of 1869, I saw in Ireland, in three several localities, very fine examples of blue-flowered *Hydrangeas*. The first was in the neighbourhood of Lismore, at a small wayside place not far from Lismore Castle, and almost by the side of the River Blackwater. I was told of these blue *Hydrangeas* at Fermoy, and went to see them. The plants were of immense size, and had been planted over forty years, and the flowers were richly tinted with ultramarine blue. They opened pink, but soon became blue, and as they decayed assumed the pink tint again. These blue *Hydrangeas* were the talk of the districts, and many persons had obtained cuttings, struck them, and had grown them on as pot plants, only to find them produce pink flowers. When turned out into the open ground, blue flowers would invariably appear. There seemed to be a great deal of oxide of iron in the soil; and to the presence of this, the blue tint, was no doubt traceable. At Castle Martyr, the seat of the Earl of Shannon, near Cork, and again at Muckross, the Hon. Captain Herbert's residence at Killarney, nice young bushes of *Hydrangeas*, growing in the open ground, were literally covered with huge trusses of blue flowers, the effect of which was quite startling. I am sure I shall never forget them.

R. DEAN, *Eating, W.*

LICHEN AND MOSSES.

WE have found beauty in the tree yielding fruit, and in the herb yielding seed. How of the herb yielding no seed, the fruitless, flowerless lichen of the rock? Lichen and mosses (though these last in their luxuriance are deep and rich as herbage, yet both for the most part humblest of the green things that live)—how of these? Meek creatures! the first mercy of the earth, veiling with hushed softness its dintless rocks; creatures full of pity, covering with strango and tender honour the scarred disgrace of ruin—laying quiet finger on the trembling stones, to teach them rest. No words that I know of will say what these mosses are. None are delicate enough, none perfect enough, none rich enough. How is one to tell of the rounded bosses of furled and beaming green—the starred divisions of rabied bloom, fine filmed, as if the Rock Spirits could spin porphyry as we do glass—the traceries of intricate silver, and fringes of amber, lustrous, arborescent, burnished through every fibre into fitful brightness and glossy traverses of silken change, yet all subdued and pensive, and framed for simplest, sweetest offices of grace? They will not be gathered, like the flowers, for chaplet or love token; but of these the wild bird will make its nest and the wearied child his pillow.

And, as the earth's first mercy, so they are its last gift to us. When all other service is vain, from plant and tree, the soft mosses and grey lichen take up their watch by the headstone. The woods, the blossoms, the gift-bearing grasses, have done their parts for a time, but these do service for ever. Trees for the builder's yard, flowers for the bride's chamber, corn for the granary, moss for the grave.

Yet as in one sense the humblest, in another they are the most honoured of the earth-children, Unfading as motionless, the worm frets them not, and the autumn wastes not. Strong in lowliness, they neither blanch in heat nor pine in frost. To them, slow-fingered, constant-hearted, is entrusted the weaving of the dark, eternal tapestries of the hills; to them, slow-pencilled, iris-dyed, the tender framing of their endless imagery. Sharing the stillness of the unimpassioned rock, they share also its endurance; and while the winds of departing spring scatter the white hawthorn blossom like drifted snow, and summer dims on the parched meadow the drooping of its cowslip-gold—far above, among the mountains, the silver lichen-spots rest, star-like, on the stone; and the gathering orange-stain upon the edge of yonder western peak reflects the sunsets of a thousand years.—*John Ruskin*.

RHUBARBS AS ORNAMENTAL PLANTS.

IN this genus, the grand typical plant, at least for the garden, is still *in nubibus*. Yes; it is still among the clouds that cluster round the lofty peaks of the Himalayas; and, by way of showing that such does really exist, and that, too, under the very appropriate name of *Rheum nobile*, permit me to quote the following description of it in Dr. Hooker's own words. He says, in his "Himalayan Journal":—"On the black rocks the gigantic Rhubarb forms pyramidal towers, a yard or more high, of inflated reflexed bracts that conceal the flowers, overlapping one another like tiles to protect them from the wind and rain. A whorl of broad green leaves, edged with red, spreads on the ground at the base of the plant, contrasting in colour with the transparent bracts which are yellow margined with pink. This is the handsomest herbaceous plant in Sikkim."

These remarks will suggest to all the query, Why has it not yet been introduced? Seeds were indeed sent home by Dr. Hooker, but none of them vegetated, owing to a considerable delay which took place in their despatch homeward, and also to their being sent *via* the Cape, thus receiving a double dose of the tropics, which is most detrimental to all albuminous seeds. I hope, however, with the now improved and rapid mode of transit, we shall be able to succeed in introducing this and many other plants that are to be met with on the Himalayas, such as the glorious species of *Meconopsis*, its close ally *Cathcartia*, and others.

Rheum Emodi (syn., *aus-
trale*), the subject of the accompanying engraving, is a Nepal plant, which, besides yielding the valuable drug in its most concentrated form, is so remarkably distinct in general appearance from other forms of Rhubarb with which we are familiar, that it deserves more than a passing notice. When growing vigorously it produces enormous leaves, measuring between seven and eight feet in circumference, with a perfectly plane margin, and a corrugated surface; the colour being of an unusual tint of green. Both upper and under surfaces, as well as the footstalk, are covered with projecting papillæ of a rigid character, that render the whole plant rough to the touch. The flowers are of a deep chocolate colour, and arranged, unlike those of all its congeners, in the form of a spike, with a few secondary branches given off here and there along its extent. I am inclined to think that the species known by the name "spiciforme," said to be a Himalayan plant, will prove nothing more than this plant under another name. This is a noble plant worthy of a place in every pleasure-ground, either isolated on the turf or in groups of plants of a similar character.

Rheum palmatum, a native of Chinese Tartary and the north of Persia, gets its appropriate title from the palmately-cut character of its leaves. As it is usually seen, it is small in stature; but I have a notion that if fair justice were done to it as an ornamental plant, it would receive more general culture. With that object in view, I purpose giving it a trial, having got a plant established in a favourable position.

Could we but dissociate our minds from the culinary

character of Rhubarb, and prize it purely on its ornamental merits, the verdict would unquestionably be in favour of its nobility as an instance of fine vegetable development. The large masses of foliage, beautifully crimped, and undulate as regards the margin, with their dark-green glossy surface, show the effects of light and shadow in a wonderful manner; nor is the intense crimson tints of the seeds, shaded off to yellow, to be despised as objects of beauty.

JAS. C. NIVEN.
Botanic Gardens, Hull.

PUBLIC GARDENS AND WAR.

ONLY a week ago, in writing about the aspect of Paris on the fête of the Jour de l'An, we were speaking of the rapid recovery made by the French capital since its investment, and of the extraordinary faculty of recuperation which belongs to the character of the people. There are places around the gay metropolis, however, where the sorrowful memorials of the desperate calamity which has befallen France will not soon be obliterated. It may be easy to patch up the shot-holes in a wall, and ingenious workmen even resorted to the

device of hiding the ravages made by cannon-balls by means of strong paper covered with plaster of Paris, or a coat of Roman cement; but where you have a bare, melancholy waste of country, with the earth, that once formed grassy slopes or trim shrubberies, all heaped in tumuli and dotted with objects that look like graves marked by rude monuments; where the great trees, that once whispered pleasantly to holiday-makers who sought their shade, are cut down, their blackened, rotting stumps only remaining; where the ornamental lake oozes sluggishly in the thick weedy grass till it becomes a mere pond full of that renewal of life which we call decay—no temporary expedients suffice to conceal such ravages, and the whole place is one sad monument of defeat and melancholy remembrance. In a word, it would be possible to rebuild all the palaces in the world, but nobody can make a great tree grow again. One is impressed with this reflection on taking a stroll towards the spot where the grand old oaks with mighty trunks and spreading branches—themselves remains of the evil days of 1815—have disappeared, and the destruction of the charming suburban retreat has been completed



Nepal Rhubarb (*Rheum Emodi*).

by the invasion of 1870. This portion of the Park of Princes was the most charming and picturesque spot of the whole wood, full of verdure and brightness. In other places a good deal of French decorative or operatic picturesqueness has been added to it; and, though nature can often even compensate for this sort of interference, we want to escape from it at intervals and seek some remoter shade, some lodge in a wilderness more or less vast. This was to be found in the beautiful coppice near the pool of Anteuil, now, alas, a wilderness. The fresh oasis, far from the dust and turmoil of Paris, is but a dismal swamp. A few surviving trees appear on the horizon, like the last survivors of a brigade cut down on the field of battle. No fair Amazons canter gaily among the open space; no promenaders appear on what once were pleasant walks. When we were last there, one solitary little woman in a white bonnet, represented the throng that once resorted to the pleasant spot, and she seemed to be looking into the gloomy pond, as though she could see reflected there the picture of the melancholy events that had transformed the spot to its present dreary condition.—*Illustrated Times.*

ASPECTS OF VEGETATION.

RIVER SCENE IN GUIANA.

HEAT without water is a destroyer. Heat and abundant moisture are the magicians that populate the earth with stately and beautiful life. On the banks of such rivers as this they hold court. Giant grass and stately palm, and torturing liane and sturdy fig, and broad-leaved Arum and lady-like tree ferns, swarm on the brink of the noble river as if to cool their thirst. The slim branches and light foliage of the willows that follow the fresh waters through almost every vale and by every river over the vast areas of northern Europe, America, and Asia, are seen no more. In their stead are stately trees of the loveliest tropical forms, and the very water weeds are giants. In the foreground of our picture is a fleet of vegetable boats—more carefully built than ever was clipper on Clyde, or Hudson, or Thames. In our northern willow land we have our tiny water

In the noble Victoria, which, under the kind protection of some of our gardeners, has grown and bloomed so fairly in our hothouses, and even in the open air in heated water, we see the Water Lily of these hot and fertile regions. One of the water birds, so abundant in all waters of the American continent, rests on a leaf; but that gives no idea of the supporting power of each fully-grown leaf, which bears a heavy boy without sinking.

W. R.

THE SIX OF SPADES.

CHAPTER III.

SITTING next to Mr. Chiswick, whose dark-brown locks contrast with Mr. Oldacre's silvery hair, like *Perilla nankinensis* with *Cineraria maritima*, my gardener puffs his pipe. Silent and thoughtful, as one who is wise at whist, he knows every trick in spades, and holds winning cards in his hand. We



Aspects of Vegetation.—River Scene in Guiana.

weeds—also with their fleets of little boats—like the frog bit, the Villarsia, and the water lily, with its sturdy flotillas. But here we have a plant which is not putting forth all its strength even when its leaves are as large as a drawing-room table.* It seems a relic of some old time, when the spirit of vegetation arose upon the waste of waters and appointed this to cover them with verdure while the trees were in their infancy. It is Nature's own aquarium—vast, varied, inexhaustible. The same clear moon and the glory of the heavens that we sometimes see in the murky cities of men (glorious sights, of which we have not yet succeeded in depriving ourselves!), throw their divine radiance over the view, and help to make one wish that so long as men and gardens remain upon this tiny globe of ours such scenes may never perish, but remain to teach us noble lessons. How refreshing is the abounding sense of the majesty and inexhaustible riches and mystery of the vegetable kingdom that such scenes as this puts before us!

* Leaves of the Victoria in this country have measured eight feet across.

have scored the honours, have we not, old friend, in many a floricultural rubber, and proved our capabilities (dare I say our silver cup-abilities?) on many a board of green cloth. Trained in no ducal gardens, taught in no colleges of science, you have learned your lesson, slowly but surely, from the greatest teacher of your art, Experience, bringing to her school that love which she delights to instruct, and which alone can master her laborious tasks. There was never, assuredly, a good gardener yet, who was not first of all a gardener at heart.

My earliest associations with horticulture, recalled as I look upon that old familiar face, were not of a jubilant kind. I have to confess that, at the premature age of five, I gave lamentable proof of my descent from Eve by strong yearnings after forbidden fruit; and that at six, I was an experienced felon—no, not a felon, for his crimes meet with capital punishment, and mine were avenged elsewhere—but, at all events, an artful thief. Neither so expert nor so shrewd, however, as to escape discovery and a just disgrace. My chief strategy,

when, a tiny brigand, I prowled the earth for prey, was to enter the kitchen gardens as unconcernedly as possible, and then to call loudly, "Dardner! Dardner!" If he responded, I would favour him with one of those spirited comments upon the weather in which we English are so happy, even from childhood, or would make inquiries of a most affectionate (and affected) order as to the condition of his bodily health; and it was, "How do, Dardner? Fine day, Dardner! Dud morning, Dardner dear!" But if there was no respondent in the case, I, the appellant, immediately resolved myself into a Fruit Committee (all articles to be tested by flavour), and proceeded zealously to business.

One dismal day, no reply having been made to my accostals, I had reached the Gooseberries, and had taken up my position as a Squatter in (the vicinity of) the Bush, when I suddenly heard with horrible amazement a rustling sound among the Scarlet Runners, and, like a tiger from the jungle, sprang the dreadful Dardner on his prey!

How vividly I recall that awful capture!—the tedious procession to the house, which I did my best to enliven with brisk but ineffectual kicks; the astonished horror of the under-nurse, who immediately foretold my speedy translation to a penal settlement, and could not have expressed herself more severely if I had shot the bishop of the diocese; the trial by Fury, for such the head-nurse seemed to me in her wrath; the solemn sentence, "Put him to bed!" Undressed accordingly (I flatter myself that the operation was attended with some difficulty; there were buttons on the floor, I remember; and the Judge's cap was considerably rumpled), imprisoned, "cribbed, confined," I dreamed a memorable dream. I was in a garden, and a sweet little fairy invited me to climb the magic Beanstalk. Glorious music from the silver horns of Elfland sounded softly around us as we reached the summit and as we wandered among the most beautiful flowers and the most delicious fruits. No Dardners marred the prospect; and the fairy pressed me to refresh myself, with an earnestness which I was unwilling to offend. I was regretting, over my fourteenth Peach, the lamentable escape of juice, which is so inevitably connected with the outdoor fruition of this fruit, and was meditating a transfer of my attentions in the direction of some white Nectarines, when all at once the sunlight faded, and the music was drowned by a thunderous bellowing which shook the "Royal Georges" from their trees. A giant's hand was laid upon my throat; and I awoke to see Nurse at my crib-side, standing before me, as Queen Eleanor before Fair Rosamond, with a cup in one hand (rhubarb and magnesia), and a dagger in the other, to wit, a dry old finger-biscuit, which I was graciously privileged "to take after."

You feel for me, reader;—don't you? I make no attempt, you will observe, to disparage the seasonable use of physic; I know that Nemesis is the sworn friend of Pomona, and that he who robs the orchard feels justly her avenging gripe; I could forgive Dardner for catching me at the Gooseberries; for smiling many a time, as I have no doubt he did, when the doctor's gig drove up the avenue; for the remark he made, on the occasion of my reappearance after a somewhat serious surfeit, that "he was afraid the pretty bird who ate his Morello Cherries, had hurt his little beak against the stones;" I could forgive him so far, and I could forgive Nurse for putting me to bed; but to make me swallow that vile nauseous mess, as an antidote to a perfectly impossible stomach-ache, to treat me as one surcharged and plethoric, when I was as hollow, sir, as my own drum; you must agree with me—although the mixture did not—that no insult could have been offered to me with a worse taste, and you will be glad to be told hereafter that I had my revenge. And here, as the champion of injured innocence, I protest solemnly against that flaunting display of the Family Medicine Chest, which I have noticed in some nurseries. The position of our own was fulsome. Each morning it met my awaking sight, with its hard, cold stare of brassy insolence; and it shone in the firelight, when I lay abed at eve, as though polished with the Oil of Castor. The expression of countenance with which the nurses pointed to that box was fiendish; and the way in which they unlocked it, and loitered over the preparation of its doses, was worthy of the Inquisition in its best and happiest days. Somebody filled the keyhole, on one occasion, with an unusual but ingenious combination of coal-dust

and batter-pudding; and somebody chuckled in his crib, you may be sure, when Nurse broke both lock and key.

Now let me propose briefly to my brother Spades and others a thought or two concerning the treatment of little children in gardens.

With regard to flowers, let children be taught from the very first to admire, to love, and to cherish them, not to regard them as temptations to mischief, and to connect them only with uneasy recollections of punishment. When Master Johnny decapitates his first Tulip, or brings in his first Hyacinth, roots and all, from the borders, don't treat him as an abandoned ruffian, and make him frightened at flowers for life; but show him with a calm and gentle tenderness the perfect beauty which his hands have spoiled, and tell him reverently Whose work he has undone. Let him draw near and gaze, where he may not gather; point out to him the symmetry, the tints, the perfume; remember that there are organs of Benevolence and Veneration, of Form, Order, and Colour, in the cerebral development of that curly pate, as well as of a Covetous and Destructive tendency; appeal to his higher, holier self, converse with the Christian that is in him; ignore what is evil (for he will understand your tacit abhorrence) until there is stern need of open censure; trust, instead of suspecting; talk to him of prizes, instead of prisons, patting his back with your open hand, instead of shaking your fist at him; and, as surely as Love and Truthfulness are better and stronger than Deceit and Hate, you shall find in that little heart such a sympathy with all things pure and beautiful, as shall bow your head in shame.

With regard to fruit, I should be inclined, I think, to deal with little children, as confectioners and grocers are said to deal with their newly entered apprentices, and to give them a free range. I should, simultaneously, forewarn them thus:—"Ladies and gentlemen, you are now at liberty to make yourselves as ill as you please. These sour Apples and unripe Plums are absolutely at your disposal. You will oblige me by abstaining from the green Gooseberries, until I have withdrawn a space, as the *cranch* is painful to my nervous system; but, subsequently, every bush is yours. Your meal will be followed by a variety of aches and pains, for which you have to swallow some of the nastiest medicines known. These Nurse shall bring to you in a large teacup. If you would prefer to wait until dessert-time, you can have some nice ripe fruit with Papa and Mamma, and a glass of Cowslip wine instead of Black Dose; but pray please yourselves. Good morning."

They would attend dessert, ultimately at all events, to a man. Bolts and bars tend only to enhance our longings, to excite suspicions in our naughty little breasts that fruits which are so strictly guarded must be of the most delicious order; and each small conspirator whispers to his brother, "It's rubbish, Tommy, about their being unwholesome: they only want them for themselves."

S. R. H.

(To be continued).

A Deadly Grass.—One remarkable fact connected with Queensland botany is, that a grass, which grows locally abundant in the more northern portions of the colony, *Aristida hygrometrica*, (R. Br.), is fatal to sheep, by reason of its long sharp tripartite awns getting entangled in the wool and ultimately piercing the skin and penetrating to the viscera of the thorax and abdomen.

Influence of Green Light on the Sensitive Plant.—An interesting experiment in the effects of green light upon plant growth is reported in the *Chemical News*. In order to test the effect of green light on the sensitiveness of the *Mimosa*, M. Bert placed several plants under bell-glasses of different coloured glass, set in a warm greenhouse. At the end of a few hours a difference was already apparent: those subjected to green, yellow, or red light had the petioles erect, and the leaflets expanded; the blue and the violet, on the other hand, had the petioles almost horizontal, and the leaflets hanging down. In a week those placed beneath blackened glass were already less sensitive; in twelve days they were dead or dying. From that time the green ones were entirely insensitive, and in four days more were dead. At this time the plants under the other glasses were perfectly healthy and sensitive; but there was a great inequality of development among them. The white had made great progress, the red less, the yellow a little less still; the violet and the blue did not appear to have grown at all. After sixteen days the vigorous plants from the uncoloured bell-glass were moved to the green; in eight days they had become less sensitive, in two more the sensitiveness had almost entirely disappeared, and in another week they were all dead. Green rays have no greater influence on vegetation than absence of light, and M. Bert believes that the sensitive plant exhibits only the same phenomena as all plants which are coloured green, but to an excessive degree.

THE INDOOR GARDEN.

PALMS FOR THE GARDEN.

(Continued from page 218.)

CHAMELIDOREA GEONOMEFORMIS (MEXICO).—A stiff plant, not very ornamental. Fronds, entire, wedge-shaped, nine inches by six, bilid.

C. GLAUCIFOLIA (MEXICO).—Fronds, regularly pinnate; pinnae, drooping, fourteen to eighteen inches long, curving up and down, acuminate; those at the point shorter and broader than the others. An extremely graceful and ornamental species, light and airy in appearance, and when mixed with plants having large foliage its effect is striking and beautiful.

C. GRAMINIFOLIA (GUATEMALA).—Allied to the last, but more slender in leaf and stem; foliage, very narrow. An extremely elegant species, but scarcely dense enough for general purposes.

C. LINDENIANA (NEW GRANADA).—Fronds, regularly pinnate, four feet long; pinnae, an inch and a half wide. A very beautiful plant, with gracefully arching fronds, suitable for central positions.

C. CASPERIANA (MEXICO).—Allied to the former, but differs in the fronds being more erect and leaflets longer. A good and noble species.



Chamedorea elegans.

C. CRUCIFOLIA (MEXICO).—Fronds, finely pinnate; pinnae, twelve to fifteen inches long, half an inch wide. An extremely elegant plant for table decoration, or for breaking the view without obstructing light.

C. DECKERIANA (SYN., STACHYOPHORE; MEXICO).—Leaf, simple, wedgeshaped at base, bilid at apex, thirty inches long; veins, prominent. Stiff-looking, but useful for mixing with fine-leaved plants.

C. ELATOR (MEXICO).—Fronds, pinnate; pinnae, drooping, acuminate, regular, nearly one foot long; upper side, convex, shortening towards the point; stem, slender. An elegant plant for pillar ornamentation, or for decorating walls, the stem being flexible.

C. ELEGANS (MEXICO).—Fronds, pinnate; pinnae, regular, ten inches long. A fine decorative table plant; the fronds forming a beautiful dark green head.

CERVOLORIS CONCOLOR (SUMATRA).—Fronds, recurved; pinnae, regular, dark green on upper side, under side, white, margin, tinted with a slight metallic hue; the fronds decrease in size, until at the

apex they are merely recurved spines; leaf-stalk clothed at base with sets of sharp thorns that decrease in number and size as they approach the top; stem, slender. In general appearance this palm resembles some of the species of *Calamus*, but it is coarser, and pushes up suckers from the base in tolerable abundance. Good-looking plants, but not suitable for moving about, as their spines catch hold of other plants and tear them.

C. GLAUDESCENS (JAVA).—Allied to the last, but larger. All the species are fond of heat and water.

CHAMLOPS. The whole of the species belonging to this genus are greenhouse palms, and may be distinguished from *Latania*s by the stiffness of their general aspect and the netted fibre at the base of the petiole.

C. LANCEOLA (SYN., *ELATA*; CHINA AND JAPAN).—Fronds, fan-shaped, cut nearly to the base; petiole, unarmed; stem clothed with strong brown fibre. A compact plant, and very suitable for conservatory decoration.

C. FORTUNII (N. CHINA).—Fronds, erect, stiff, forming the fourth of a circle, and bright-green; fibre at base of petiole, very dense. This palm has the character of being hardy, and in sheltered positions in our southern counties it will live out of doors; but in exposed situations it looks starved and miserable. As a greenhouse plant it is very ornamental, and in summer it may be exposed to any extent.

C. HUMILIS (S. EUROPE AND N. AFRICA).—Plant, erect; fronds, forming one-third of a circle; petiole, with small spines on margin. The whole aspect of this palm is greyish-green; it throws out shoots from the base in numbers sufficient to make it a dense bush. Single stemmed young forms of it make good plants for window and table decoration. It is nearly hardy.

C. HYSTRIX (SOUTHERN U. S. AMERICA).—Foliage, dense, dark-green, erect, cut nearly to the base; fibre at the base of the petioles very strong, terminated by a row of stiff bristles. A dwarf plant, of very stiff habit.

C. MARTIANA (NEPAL).—Erect and stiff, bearing considerable resemblance to the last-named species, except a little difference in the spines at base of petioles.

C. PALMETTO (SYN., *CAROLINIANA*; SOUTHERN U. S. AMERICA).—Fronds, forming half a circle, cut nearly to the base, glaucous; petioles, unarmed. A lax grower, and not very ornamental.

C. SERPULATA (SOUTHERN U. S. AMERICA).—Grows about two feet in height; fronds, glaucous, short, and stiff. Not a good palm for purposes of decoration.

C. STOURACANTHA (SYN., *MACROCARPA*).—There is a plant in gardens under this name, but it looks very like *C. Martiana*. J. CROUCHER.

(To be continued.)

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Climbers for Rafters and Walls.—Can you favour me with a list of really good climbers for both a stove and greenhouse, to grow up the rafters, or be trained on a wall? N. B. — The following are among the loveliest of known plants, and bloom freely with very simple culture: Greenhouse Climbers—*Acacia Ricena*, *A. dealbata*; *Cobea scandens* variegata, *Habrothamnus elegans*, *Kennedy* *Marryattae*, *K. nigricans*, *K. rubicunda* *superba*; *Lapageria albiflora*, *L. rosea*, *L. r. splendens*; *Mandevilla suaveolens*, *Passiflora Campbelli*, *P. Clowesiana*, *P. Imperatrice Eugenie*; *Plumbago capensis*, *Rhynchospermum jasmynoides*, *Solanum jasmyniflorum*, *Taeson* *Buchanii*, *T. ignea*, *T. Van Volkenii*; *Tecoma jasmynoides*, *Stove Climbers*—*Allamanda*, in var., *Bignonia venusta*, *Bougainvillea speciosa*, *Cissus discolor*, *Clerodendron Balfourii*, *Dipladenia amabilis*, *Hexacentris mysorensis*, *Hoya carnosa*, *Passiflora amabilis*, *P. princeps* (racemosa), *P. quadrangularis*; *Stephanotis floribunda*, *Thunbergia Harrisii*, *Ipomoea Bona Nox*.

Plants for a Greenhouse with a North Aspect (see p. 223).—Your correspondent "F. S." is quite justified in asking advice before he builds a greenhouse with a north aspect. My advice to him is, instead of one, to build two small houses, one a stove, the other a greenhouse; then, whatever kinds of plants he has they will succeed as in the stove he will have plenty of heat in which to grow them; and, as they come into bloom, he can remove them to the greenhouse. In the case of bulbs, how nicely he could get them into bloom at three different times, so as to prolong their flowering season; and the same may be said with reference to all other classes of plants. Of course, he would require one hot-water pipe in the stove more than in the greenhouse; so, rather than select a list of plants for a greenhouse, I would advise him to build a stove and greenhouse combined, then go to some nursery, and select plants to suit both houses. As to naming plants that would thrive in shade in a greenhouse, that, with the exception of Ferns, would only end in disappointment.—T. SOUTHWORTH, *The Gardens, Castle Head*.

GREAT GARDENS OF EUROPE.

VERSAILLES.

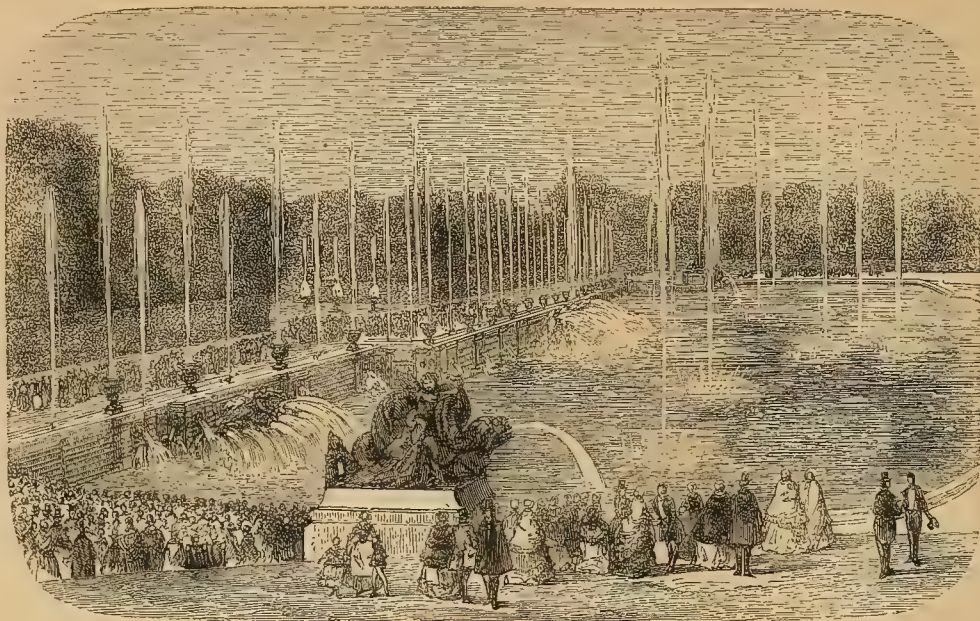
BY NOEL HUMPHREYS.

(Continued from p. 217.)

THE fountains of the celebrated Basin of Neptune are invariably those which on great occasions are the last set in action, and, enriched as they are by the most profuse and costly adjuncts of architecture and sculpture, they form the most splendid series of jets, cascades, and other devices that can possibly be conceived. A view of this grand final outburst of waters, which is always reserved as the bouquet for the close of the general display, may be best obtained from the back of the Fountain of the Dragon, as shown below, and may serve to convey some idea of the extent and magnificence of some of the effects produced when the *grandes eaux* are exhibited at Versailles, which never fail to produce upon all who have had the good fortune to witness the display, an impression of costly magnificence of which no spectators

been undertaken upon false calculations; and the great arches of the incomplete work now form a picturesque modern ruin. If, however, the project had proved successful, it is calculated that all the fountains at Versailles might have been kept playing every day from morning till night; but the royal intentions were frustrated by insurmountable obstacles. The smaller supply which was eventually obtained from the reservoirs at St. Quentin, Trappe, Peray, and other places, on the same high level as Versailles, and which is principally the collected result of an extensive system of superficial drainage, only enables the great series of fountains to be set in action for a very few hours at a time, and at certain periods only. The whole of those reservoirs, when at their fullest, are said to contain nearly eight million cubic metres of water; the average being something more than five millions. Of this supply nearly half is now required for the town of Versailles, the remainder only being available for the grand hydraulic displays in the gardens of the palace.

Of the restless constructing and destroying that took place, Saint Simon thus speaks, in relation to the expenditure at



Basin of Neptune, Versailles.

have ever denied the charm, however much it may have impressed upon them that the whole thing was in a spurious and semi-barbaric taste which they ought not to endorse. It must, in fact, be admitted that grand and impressive effects may be produced by various kinds of art, even those which modern theories cannot but denounce as spurious.

That such hydraulic displays, enhanced in effect by the adjuncts of elaborate sculpture, costly masonry, and plantations intended solely to increase the effect, were deemed the most princely kind of decoration by means of which royal gardens, and those of persons exalted by wealth or rank, could be rendered magnificent, may be conceived by the realised example afforded by Versailles. It is still more fully proved by the gigantic efforts of human labour and lavishly extravagant waste of millions which were expended in the futile attempts to bring the waters of the Eure to Versailles—a wild project which was attempted by means of the aqueducts of Maintenon. More than 30,000 soldiers were at one time employed on those vast works, which, when half completed, were found to have

Marly, which was almost as extravagant as that at Versailles:—"Great trees," he says, "were brought at enormous cost from the forest of Compiègne, and other places still further off, of which three-fourths died, which were immediately replaced by others. These were again sacrificed to make a space for new lakes, where courtiers amused themselves with Venetian gondolas, and the lakes were again transformed back into full-grown forests, which were expected to yield deep wooded shades, the very day they were planted." It was the same at Versailles. The celebrated Labyrinth (a description of the original state of which was given in a previous number of THE GARDEN) was an extravagantly costly gee-gaw designed by the great painter, Le Brun, while Benserade furnished the inscriptions; yet it had to make way in 1755 for newer and still more costly objects, which were fortunately conceived in a somewhat simpler and better taste.

To describe all the other works, almost equally important, is not possible in an article which only pretends to afford a rapid glimpse of the general characteristics of the gardens of

Versailles, and to point out the defects of such a system of garden-making, as well as its excellences, when they occur. There is, however, one more of these elaborate and costly decorations which cannot be passed over without a brief notice, as it is one of the most pleasing, and, to use a much abused term, much more gardenesque in character than most of the others. It is the Bosquet de la Colonnade and its architectural features that are here alluded to. This bosquet is an open space surrounded by a dense wall of foliage, in the centre of which rises a graceful circular colonnade, one hundred feet in diameter, every available portion of which is elegantly enriched with sculpture. These light arcades of white marble define themselves with charming effect against the dark background of foliage; and when jets of water are thrown up from the vases which alternate with the columns, and the scattered spray produces a slight mist which blends the forms of the edifice with those of the surrounding foliage, the effect is very fascinating.

There are not many instances in the formation of these gorgeous gardens in which the living greens and leafy forms of the trees are made to play an important part in the design: water, and marble wrought by the mason or sculptor, having the principal parts assigned to them in the vast composition. Those small portions of the plan which may be strictly called garden design, are extremely devoid of anything like inventive taste, and display a positive absence of any kind of natural effect, good or bad. To attempt descriptions of the Salle de Bal, the Queen's Bosquet, the Basin of the Mirror, the Saloon of Chestnut Trees, the Green Circle, the Etoile, the Domes, and other objects of analogous character, would only be a repetition of what has been said before. Immediately below the terrace are the geometrical parterres, which, however, perform a very secondary part among the fountains; and beyond these parterres extends the long green lawn known as the Tapis Vert, flanked by straight gravel walks of the same length. Beyond these, of equal breadth with the straight lawn, extends the equally straight canal, enlarged at each end and in the middle by formal basins, and crossed at right angles by another canal of somewhat wider dimensions. Parallel with the Tapis Vert and its lateral walks, other straight walks are formed behind the plantations, on either side; and there are transverse walks at right angles, cutting the plantations into large square patches, termed indiscriminately "bosquets." Each of these bosquets has some central object, such as the colonnade above described, a fountain, or a group of statuary, towards which diagonal walks converge; and this kind of disposition is again and again repeated where the breadth of the ground permits.

Below the Tapis Vert, after the canal commences, diagonal paths diverge through the plantations, as shown in our plan (p. 216), while in the grounds of the Grand Trianon the formalisms of the "bosquet" system are repeated, with little or no variation. The gardens of the Little Trianon, however, are in a totally different style, and will require a few words in our next issue in addition to what has been said of them in the first portion of this article.



The Colonnade at Versailles.

THE PROPAGATOR.

HYBRIDIZING PANSIES.

I HAVE been a grower of Pansies for many years, and my experience in regard to their improvement, by means of fertilization, may perhaps be useful to beginners. I select the best varieties I can find, and those most likely to yield something good and distinct for parents. I make my bed at the end of August, in front of a hedge facing the south-east. This bed is for early bloom. I cause it to be dug a spit deep, breaking up all lumps, and giving it at the same time a liberal coating of well-rotted horse-dung and road-sand. These, when well mixed, are dug in. In planting, I make a hole about a foot deep, and put into it about a handful of charcoal or cinders, as drainage. When the plants are well established, about November, I surface-dress with cocoa-nut fibre. This will be found invaluable for protection, and the plants will root into it in spring. This bed will produce fine early blooms, and if a few are required for exhibition, some old lights should

be propped over them to throw off heavy rains.

For a later bed, I choose a piece of ground by the side of a hedge facing the north-east. I make the bed of yellow loam, or the nearest approach to it I can get. I dig it well, and break all lumps; then I dress it with decayed leaves and rotten horse or cow-dung: the last is best, if it can be had. These should be dug in and well mixed. The bed must be well drained, and not in a low situation. If the latter, use charcoal or cinders as directed in the case of the last bed. This bed will be found to be a fortnight or three weeks behind the other, but the quality and colour of the flowers will be superior to those in the early bed.

For the purpose of hybridizing, I select the best and earliest flowers I can find, and taking care not to injure any of the other organs, I remove the anthers from such flowers as I select to breed from. The flowers to be fertilized should be young, and the operation should be performed before the pollen grains show themselves, otherwise fertilization may take place while the anthers are being removed, and which is best done in damp weather. With a brush made of a few hairs out of a rabbit's tail, on a sunny day, I take the pollen grains from the flowers I wish to hybridize from, and apply them to the pistil of the flowers from which I have removed the anthers. When fertilization is finished, the flowers

should be, if possible, kept dry and free from bees or flies. The best plan is to cover them with a piece of thin muslin. All the flowers operated upon may not "take," but in a few hours those that have "taken" will be distinguished by a peculiar twist which the petals always assume. When the seeds come to be ripe, sow them immediately in pans well drained with charcoal, and in fine soil, with plenty of sand and leaf-mould in it. Keep them in a shady, cool place, and plant out as soon as the plants are large enough to handle. When the flowers are opening in spring and before any of them are fertilized, it is a capital plan to dust the bed with lime, which keeps off slugs and other pests, and thus often saves a pet flower from injury. Success, however, wholly depends on the care bestowed upon the plants, and none need expect to grow Pansies well unless more than ordinary interest is taken in their culture. In making beds for pansies some put a thick layer of cow-dung under the surface soil so as to form a cool bottom for the roots to run in, a practice which succeeds admirably in warm dry situations; but in cold damp places it is apt to sour, and render the plants unhealthy.

E. S.

PROPAGATING YUCCAS.

In this operation it is best to begin with a good plant. If a large one is lifted out of the ground, it will be found that the root portion is studded with numerous elongated fleshy tubers, varying from three to five inches in circumference. All the exposed ones may be removed from the thickened root extremities without the least injury either to them or the parent plant. The specimen, after being denuded of its root-buds, can be again planted in good soil, and will go on thriving as if nothing had been done to it. It is not, however, necessary that the plant should be taken out of the ground for the purpose of removing these fleshy tubers. It can be done by simply baring the roots on opposite sides, and cutting the tubers off with a knife. These fleshy root-buds, after their removal from the plant, can be potted, and placed in a gentle heat, keeping the apex a little above the soil, when they will soon develop a healthy crown from the extremity, also rootlets from the sides. After the tops have pushed a few inches, they should be removed into a cold pit or frame, and afterwards planted out in open-air beds, where they will soon mature themselves.

Another method of propagating the Yucca is by sections of the stem. When a plant branches, from the effects of flowering or by an injury, one of the branches may be cut off, and its stem cut into transverse sections, from one inch to one-and-a-half in thickness, and partially dried on the cut surfaces, by placing them upright in an airy position. They must afterwards be laid on the floor of a hot propagating pit, which has been previously covered with a layer of soil, over which a covering of sand has been placed, and afterwards kept partially moist. In a few weeks it will be found that the dormant buds round the cut section will swell, and finally push out into young growths, and roots will protrude from the lower side, which will penetrate the sand into the soil. After a few months the central portion of the section will decay, and the young plants will be left independent. When this takes place, they can be put round the inner surface edge of pots in good soil, where they will soon come forward, and, when strong enough, may be planted out in open-air beds.

The stems of Yuccas are formed by the decaying leaves annually falling, or what is more frequently the case, being pulled off. At the base of each fallen leaf, on the stem, will be found a scar; on the edge of each scar a slight swelling is observable, which, when detached, will develop into a young plant. On a free-grown stem, a section one inch thick will generally contain two dormant buds, and half an inch thicker will have about three buds. When cut thicker more buds may be given out; but they are not so easily handled as those produced from the thinner slices. While in very old, slow-grown stems, the scars are much closer together; and although the dormant buds are numerous, many of them never come forward. The development of these scars will not take place on the plant so long as the top remains; but if the top happens to be removed, it will be found that several of the scars nearest the upper end will develop into shoots. The superfluous ones can be removed, and treated as cuttings; they will soon root, and form independent plants.

When an old plant is furnished with numerous branches, it is easy to remove any of them in a state fit to grow, merely by cutting a notch about half an inch deep round four-fifths of the stem. After the cut becomes a little dry by exposure to the air, roll a quantity of damp moss round it, keeping it both above and below the notch. The under edges of the upper portion will soon callus over, and roots will be produced into the moss. When the roots are sufficiently strong, the stem may be cut on each side a little below the half-inch notch. In time the top may be cut off, and inserted either into a pot or in the ground. It will thus be seen that a few plants possess greater propagating powers than the Yucca.

In this country, so far as I am aware, the Yucca has never been known to produce seed, although seed is not unfrequently sent over from the southern States of America. Seedlings when procured, however, take a long time coming forward, compared with the methods of propagation just given. This is one of the not unfrequent cases in which a plant does not produce seed, but where nature has provided other means of increasing it.—J. McNab, in "Villa Gardener."

NOTES AND QUESTIONS ON PROPAGATING.

Anomalous Grafting.—In your number for December 30, 1871, p. 122, I find the following passage:—"Whoever wishes to study grafting in the works of celebrated ancient authors on horticulture, will find a string of absurdities, some of which we will mention. Virgil speaks of a plum-tree which bore apples after having been grafted, and recommends the grafting of the pear on the ash." I am unable to verify the first

assertion, as I cannot discover the passage; but is it an established fact that a plum-tree cannot be grafted on the apple? As regards the second assertion, Virgil does not seem to "recommend" the grafting. He merely states (Georg. II., 71) that the *Ornus*—most probably *Pyrus aucuparia*—will produce the white flowers of the pear tree. Both these trees belong to the order Rosaceae, as does also the almond, whose interbreeding with the pear *M. Baltet* appears to doubt.—W. O. CLEAVE.

Roses on Orange Trees.—Have you ever seen rose trees united to orange trees, and both flowering together? I used to manipulate them with success, and astonished our greatest botanists, who could not make out how roseworts could be united to citronworts. Should any of your correspondents like to know the method I employ, I will send it with pleasure, as I hate selfishness in all matters of horticulture.—J. S. [We shall be greatly obliged if you will describe your plan.]

The Ash on the Oak.—The articles on grafting which have appeared in THE GARDEN have induced me to forward you the following account of what has come under my notice:—It has always been an axiom that there must be a close affinity between the stock and the scion. I accepted that without question till last summer, when my attention was called to a remarkable tree—in fact, a fine young ash which had been grafted on an oak. This had been done about two feet from the ground, and the line of separation was sharp and distinct between the two barks, although the character of the ash bark was slightly changed, seeming more rigid and unyielding than the ordinary condition; while both bark and wood had acquired the astringency of the oak, and when put in water, tinted it blue; and while the common oak trees were full of fruit, this was entirely destitute. Whether it ever blossoms, I cannot say, as I have not yet visited it at the proper season. The habit of the tree also seems modified, and, I think, improved, being more compact; the wood is much harder, though it does not seem to differ in structure. This tree is growing at Highlands Farm, Ilford, Essex, and may be fifty years old, or probably more. Whether anybody at the farm knows the history of it, I cannot say. I have called your attention to this, so that you may invite some of your practical contributors to give the results of any experiments they have made, such as the grafting evergreen plants on deciduous, or the opposite process.—ALFRED GRUGEON.—[What proof has our correspondent that the tree is grafted on the oak?]

Grafting Bignonia radicans on the Catalpa.—A correspondent of the *Horticulteur Français* announces the successful grafting of *Bignonia radicans* on the *Catalpa*. Some of the branches were headed back, and the *Bignonia* scions inserted by cleft-grafting. The result was, that from the midst of the luxuriant foliage of the *Catalpa* emerged numerous flowering branches of the *Bignonia*.

Preparations for Grafting.—Professional French grafters who make tours amongst the farmers, often find prepared grafts dried up or otherwise injured. To avoid such accidents the following plan has been adopted with excellent results:—The cuttings are first wrapped in rags, in order to prevent the soil from mixing with the scions, and attaching itself to their bark, and then the packets are buried in a cold spot, to the north of a wall, at a depth of eight or nine inches; and, in order to prevent the scions from being injured when unearthed, a few branches are laid upon them. Scions thus treated, whether cut in autumn or in February, will keep perfectly till the end of April, if not later. The rule is, that at the time of grafting the sap should be rising in the stock, and about to do so in the scion; if the latter is cut at the moment of grafting it may be more forward than the stock, in which case the graft will fail. By cutting the scions previously the movement of the sap is stopped, and if they are then laid under ground the retardation may be carried to such an extent that they may be applied to stocks already in leaf, which is a great advantage where many graftings are to be made, whereas if the buds of the scions are much developed success is very doubtful.

Seeds and Weeds.—So full of seeds of various kinds is the ground in spring that when we sow a crop of any good seed, flower or vegetable, it is sometimes difficult to distinguish the crop from the weed, and both are allowed to grow up together. To obviate this, seeds should not, as a rule, be sown broadcast, but in drills or little lines or circles, according to kind and taste, and then, when they come up, it is easy to separate the sheep from the goats.

Raising Seeds.—Do such seeds as *Aralia*, *Canna*, *Cassia*, *Chamerops humilis*, &c., *Chorozema*, *Chamaepeuce*, *Solanum*, *Dracænas*, and ferns, quoted in catalogues as greenhouse plants, require a stove to start them, or can they be grown in a small greenhouse?—R. W. PARKY, JUN.—[All, except the ferns and the *Chamaepeuce*, would be the better for being started in a hotbed or warm propagating house or stove, although some of them grow very rapidly, as the *Cannas* and *Solanums*; *Chamaepeuce* raise with the half hardy annuals; ferns raise in a moist shady stove, unless they are hardy kinds, in which case, a moist frame or pit will suit them.]

A New Cure for the Currant Worm.—Our friend Hick Cupps, Esq., of Harfseysover, drops us a tear and a line, enclosing this paragraph:—

"A Connecticut man has found a sure cure for the devastations of the currant worm. He sprinkles his bushes with whiskey; the worm becomes drunk, gets to fooling around, and finally falls off, and either breaks its neck outright, or cripples itself so that life becomes a burden."

He says this is a melancholy waste of whiskey to preserve a few berries capable of producing nothing better than currant wine. In his own remarkable words, it is "throwing a sprackerel to catch a mat (sic)."—FEN.

GARDEN DESTROYERS.



THE PINE-BORING BEETLE.

(HYLURGUS PINIPERDA.)

THIS is a small, purplish-black beetle, which, both in its larval and perfect state, does much injury to different species of pine trees. It is to it that the brown and withered leaders and shoots which are often to be seen on these trees are generally due. In the north of Europe it ravages the woods of *Pinus sylvestris*. In the department of the Landes, where the *Pinaster* (known there as the Maritime Pine) predominates, it specially attaches itself to it. In this country we know that it attacks various kinds of pine. *Pinus austriaca*, for example, is preferred to the Scotch fir; and *Pinus insignis* is liked better than either. It has also been observed, either in this country or in Belgium, upon *Pinus pumilio*, *P. laricio*, and *P. brutia*, and no doubt also on others which have escaped record. This is the earliest of the Xylophagous beetles. In the north of Europe, according to Ratzeburg, it appears in the month of March. In the south of France it is to be seen in the first fine days after the depth of winter; and from the month of January, after two or three days of sunshine, one is certain of finding it already occupied in boring the bark of pines that have been felled or are sickly, as well as stumps remaining in the ground. Here it is little seen before May. It discloses its presence on the trees by the little heaps of rotten wood which the larva casts out of its galleries. It is the fresh liber of the plant that forms its food, consequently those trees whose liber is too much dried up are disregarded. Those which they attack are sometimes so full of sap that an abundant flow of the resinous juices follows their boring; which hardens into the form of tubes of greater or less thickness around the orifice of invasion. It is indifferent as to the age of the trees. From their tenth or twelfth year, until their most advanced age, they are subject to its attacks; but it is rare to meet with it in trees under ten years old, the reason of which, without doubt, is that these do not offer sufficient space for the development of the insect.

GALLERIES.

The hole by which it enters is oblique, and the principal gallery, always simple—that is to say, without ramifications—extends longitudinally above and below this entrance hole, forming at the furthest end at each side a small curve, whence it proceeds in a straight direction. It is supplied with from one to four air holes. We usually find both the male and the female in this gallery; but never more than one individual of each sex, and rarely the female alone. The eggs are deposited in little notches like those of the *Bostrichi*, and the galleries made by the larvæ are winding and transverse, except when the diameter of the tree is considerable, when they end by becoming oblique or longitudinal. These galleries are hollowed out, like the gallery for eggs, in the liber in contact with the cambium, which, however, they never touch. They detach the bark completely, making it easy to lift it in large sheets. It is unnecessary to remind our readers that the cambium and liber are the layers which separate the wood from the bark, the cambium being the layer outside the wood, and the liber that inside the bark. The metamorphosis into the pupa takes place in the bed of liber or in the bark.

LAYING AND HATCHING OF EGGS.

As soon as it appears after winter the *Hylurgus piniperda* invades the trees or timber which it selects to nourish its offspring. The gallery for the eggs is pretty quickly hollowed out; but the emission of the eggs rarely follows very soon after the completion of this work. The occurrence of warm days in spring often determines the laying of the eggs, but the cold and varying weather which frequently succeeds keeps the hatching back, and when at last the larvæ do come out, the recurrence of similar causes may retard their development. It is not until the month of May or June that the development becomes rapid, seconded as it then is by the length of the days and the higher temperature. The grubs then grow quickly, pass into the pupa stage, and the perfect insect takes to flight in June or the beginning of July.

PROCEEDINGS OF PERFECT INSECT. TERMINAL SHOOTS ATTACKED.

Next comes the time when it forces itself on our attention by destroying the young shoots of the trees. Hitherto it has not touched them. It has been occupied with the food under the bark of solid, thick trunks or branches. Now, in the perfect state, the liber which served for a sumptuous diet to the larva, is not good enough for it. It must have the fine pith of the young shoots still in the herbaceous

state. It has been said that it sometimes will go farther back on the branch, and begin at the two or three year old part. But this must, we think, be a mistake. Its gourmand proceedings soon show themselves, and the brown, withered, hanging, or broken shoots disfiguring our trees tell us that their enemy has been at work. This continues during the whole summer until September.

When we come to examine the mischief, we may generally perceive one of those short stalactites of hardened resin which are produced by the exudation from tissues ruptured by insects. If we search for the cause, we find that these withered shoots or twigs are hollow, the medullary substance having been eaten out. In the interior of the tunnel so made, which is frequently prolonged to the terminal bud, we may generally find a *Hylurgus piniperda*. If it is found to be



The Pine-boring Beetle and Grub.

empty, it is because the insect has left it; but, in that case, we may sometimes notice below the entrance hole another by which it has made its exit. More frequently there is only one hole; which goes far to prove that the insect has both entered and gone out there. It is not unusual for two individuals to establish themselves in the same twig. There are then two orifices for entrance at different heights, and the two galleries do not usually communicate with one another, because the lower *Hylurgus* stops its work before breaking through into the upper tunnel.

The insect seems to pass freely up and down its tunnel—and, indeed, it keeps it clean swept and garnished; and this furnishes the easiest and simplest test by which we can distinguish its work in these young shoots from the work of some species of small moths that attack the pine shoots in the same way. Curtis quotes an observation of Dr. Lindley on the mode of the *Hylurgus*'s work, which illustrates this:—"For the purpose of observing its proceedings more narrowly, I placed a shoot of the Scotch fir under a glass with the insect. In about four hours after, its head and thorax were completely buried in the shoot, and it had thrown out a quantity of wood, which it had reduced to a powder, and which nearly covered the bottom of the glass. In sixteen hours more it was entirely concealed, and was beginning to form its perpendicular excavation, and was busily employed in throwing back the wood as it proceeded in destroying it." Consequently, in the bored shoots formed by the *Hylurgus piniperda*, there is no detritus or excrement; whereas, in the shoots bored in a similar manner by the *Tortrices*, the gallery is encumbered with excrement. And the reason of this is not any greater love of cleanliness and tidiness on the part of one insect than the other, but simply that, in the case of the *Hylurgus*, the tunnel is excavated by the perfect insect itself, and not by its grub; whereas, in the case of the *Tortrix*, it is the grub that makes the excavation. The former has greater freedom of action. The grub, as usual, eats straight forward, choking up the passage behind it with the detritus and debris of its workings, so that returning would generally be as tedious as beginning afresh.



Shoot Bored by Pine Beetle.

The excavation of the shoot is one of the points in the history of the *Hylurgus* on which it is common to hear a difference of opinion. Is it really done by the perfect insect, or by the grub? Certainly, it is by no means an uncommon thing to find a grub in the perforation; but then that fact is not enough. The perforated shoot may not be the work of the *Hylurgus*, or the grub may not be its grub. It may be that of the *Tortrix* or something else. One of our friends, a very acute observer, states that he has frequently found two grubs in the same tunnel, and he thinks even more. Equally strong is his statement that he has frequently found the pupa in perforated shoots. But then the pupa was not the pupa of a beetle, but of a moth. There are other collateral circumstances which are opposed

to the idea of the grub of the *Hylurgus* attacking the terminal shoots.

INJURIOUS EFFECT OF LEAVING THINNINGS, ETC., LYING ABOUT.

One circumstance is that it has been observed that the insect is much more frequent and destructive in woods where recently cut wood, or thinnings or prunings, are left on the ground, and that the same result follows the putting up of palings of Scotch fir, recently cut and not dried or seasoned. The grub, as already mentioned, feeds on the liber of the pine while fresh and fall of the natural sap of the plant. As the reader knows, this continues fresh and liquid for a considerable time in the pine (at least twelve months), and it is better adapted for the use of the insect during these one or two years than either before or after. After it has turned into actually dead wood, it will not do at all: their food is fresh meat. While still part of a healthy and vigorous tree, it suits them better, but not absolutely, for the resin is apt to overflow them and drown them. Into the bark of such trees the *Hylurgus* is slow to enter, and where it has done so the observer will find specimens embalmed in resin. They are free from such an inconvenience when the connection with the seat of life and growth is severed (but not too long severed), as in recently-felled trees and pruned branches, or where the health of the tree is retrograding and its circulation languid, and such form a suitable nidus for the insect—a sure focus of infection—the centre from which the insect spreads around. This is well recognised among foresters.

Thus we have a communication from a correspondent near Ware, Herts, who says:—"There is no grub in the young plantations here, though there are many Scotch firs and austriacas as well; but then there is no fir used for fencing in this place."

Another correspondent remarks, that while his plantations have suffered from the *Hylurgus*, it does not appear to have attacked much larger woods which surround his property. But his plantations are almost part of the shrubberies and garden around his house, and are much cared for, carefully thinned and pruned, and there is always some dead timber thus provided for them as a nidus, while in the larger woods around him there is nothing of this provision.

Again, "The beetle has invariably decreased with us (Warbrook, near Eversley, Hants) after the clearing away of the old dead wood, and where no trees have been taken down it has not appeared."

M. Perris cites a similar illustration. He says:—"Around a recently constructed limekiln, a very considerable quantity of recently felled pines were stored which were severely attacked by *H. piniperda*. By the side of the limekiln there was a group of pines about fifty years old, separated by a distance of from three to four hundred yards from the neighbouring forests. The pines, which had served for the propagation of the *Hylurgus*, gave innumerable swarms of these insects, which, having at their door the pines of which I spoke, threw themselves upon them *en masse*, attacked almost all the branches, and produced such an effect that in the month of August the trees appeared dried up, and after a storm the ground was strewn with broken twigs and the branches fringed with them. I was then consulted, and I confined myself to advising the proprietor of the limekiln and the pines not to store up wood which had not been felled more than a year, or remove the bark of that which had been felled more recently. These precautions having been taken, the mischief was not repeated in the following year, but the trees showed only a languishing vegetation and gave very little resin. The year after they were rather more vigorous, but it was easy to see that they were merely in a state of convalescence. I consider it a piece of good fortune that they escaped the attacks of the *Xylophages*, and that the proprietor had not to suffer from his imprudence."

It has been a question with some authors whether, or not the *Hylurgus* passes the winter in the perforated young shoots, but it has been definitely resolved in the negative. Ratzeburg, Chevandier, and Perris, all assure us that they have found the insects sometimes in great numbers gathered together round the neck of the roots of large living trees. They hide in the crevices of the bark, or bore as far as the liber, only to make themselves a shelter.

DESCRIPTION.

The grub is about three lines in length, whitish or yellowish white, except the mandibles, which are ferruginous, turning into black at the tip. Its body is curved, and thickest at the thorax. It has no eyes and no legs or feet, but in their place two series of retractile nipples under the three thoracic segments, and a double little tubercle along each side. The number of its stigmata is nine pair.

The perfect insect is black or purplish black, unless when newly or prematurely disclosed, when it is chestnut coloured, or more or less pale. Our illustration represents it, and therefore renders a detailed description unnecessary.

The prevention and cure of this insect has been pretty clearly indicated by the details we have just given. The prevention is obviously to be careful to leave no recently cut pine wood or branches littering the ground. Palings made of fresh cut pine wood with the bark on ought to be eschewed. Old wood seasoned and barked is harmless, and when the insects have reached the perfect stage and attack the young shoots they should be picked and burned or otherwise destroyed. A. M.

NOTES AND QUESTIONS ON GARDEN DESTROYERS.

Town Garden Plagues.—I have a garden about half an acre in extent in the centre of a town, and this little oasis, which has been trenched and manured until the soil is extremely fertile, is infested by the following plagues:—First of all, hundreds of cats make it their rendezvous, and, in the spring time, sharpen or clean their claws in the hearts of my finest cabbages. Every butterfly within five miles concentrates her reproductive powers on the leaves of my plants, which are, consequently, a mass of insects as soon as they show a leaf. Chaffinches and sparrows in clouds descend upon the early peas, pick off every cotyledon as it shows itself, and root up sometimes the seed from the earth. The only certain crop is that from the gooseberry bushes; but even on these the points of the berries are mostly covered with aphids. I have slain so many cats, that I can scarcely find room for their carcases.—W. M.—[A good way of keeping cats out of town gardens has been given at p. 114 of *THE GARDEN*.]

Worms on Lawns.—"J. B." (p. 255) should keep a pair of Green Plovers (Peewits). I have found these birds a sure remedy; they hardly ever cease eating whilst a worm is to be seen; they must be driven in at night, or the cats will come after them. In the day time there is not much fear; for if puss comes too close, they will call out loudly for help. When worms are scarce, put near their water-trough a little chopped meat, or some bread-crumbs mixed with hot dripping—one wing must be kept clipped. In addition to their very active services, these birds would be interesting and attractive pets for many years; they cost about three shillings and sixpence each.—G. T.

CONSERVATORIES IN THE NATURAL STYLE.

A COOL HOUSE.

IN a preceding article (p. 181) we have given consideration to the laying out of a winter garden or conservatory for plants belonging to the warmer regions of the world, and have grouped together such representatives of tropical vegetation as can exist in the same atmosphere. The only exceptions which we have made to this rule is in the case of some greenhouse kinds which acquire larger dimensions under the influence of a more intense heat than they would in a cooler atmosphere, such as certain Palms, *Aralias*, &c. For instance, the Rice-paper plant, which grows in the open air in the south of France, acquires gigantic dimensions in a hothouse. A specimen of it, thus treated, measured thirteen feet two inches high, and threw out magnificent leaves, exceeding six feet six inches in length, including their stalks.

In most cases, nevertheless, the plants named for a greenhouse suffer under too high a temperature. Besides, the cool winter garden is still more valuable than that which we have already placed before our readers, inasmuch as it is as rich in ornamental specimens, and more within the reach of moderate means. Very little artificial heat is enough to keep the temperature in winter at a minimum of three degrees above the freezing point, which is quite sufficient for the period of repose which is required for many of the plants from Australia, China, Japan, New Zealand, and mountainous tropical regions, &c. One can hardly believe what numbers of plants there are, often supposed to belong to tropical climates, with which a cool conservatory can be furnished. Numbers of our beautiful Palms would yield to cool treatment; and hundreds of Ferns require no better situation than the shelter of glass. The *Dracenas*, *Agaves*, *Acacias*, *Dasyliirions*, *Ficus*, *Aralias*, *Banksias*, tender conifers like the Norfolk Island Pine, *Yuccas*, *Grevilleas*, *Rhopalas*, and the *Cactuses*, would certainly submit to the same treatment, without mentioning the smaller kinds, which only thrive under a low winter temperature.

The experience acquired of the natural style of arrangement in conservatories during fifteen years in Europe, enables us to recommend it with confidence. The treatment carried out in reference to some tropical species has often no relation to the altitude at which the plants naturally grow. Should a plant



COOL CONSERVATORY IN THE NATURAL STYLE.

arrive from Mexico, it would naturally be placed in a warm conservatory. But as regards the Ferns of that country, they are found between 3,000 and 6,000 feet above the sea level, that is to say, at the limit where begin the Pines and Heaths of the sub-alpine region; and it is at this height that the magnificent *Alsophilas* spring up.

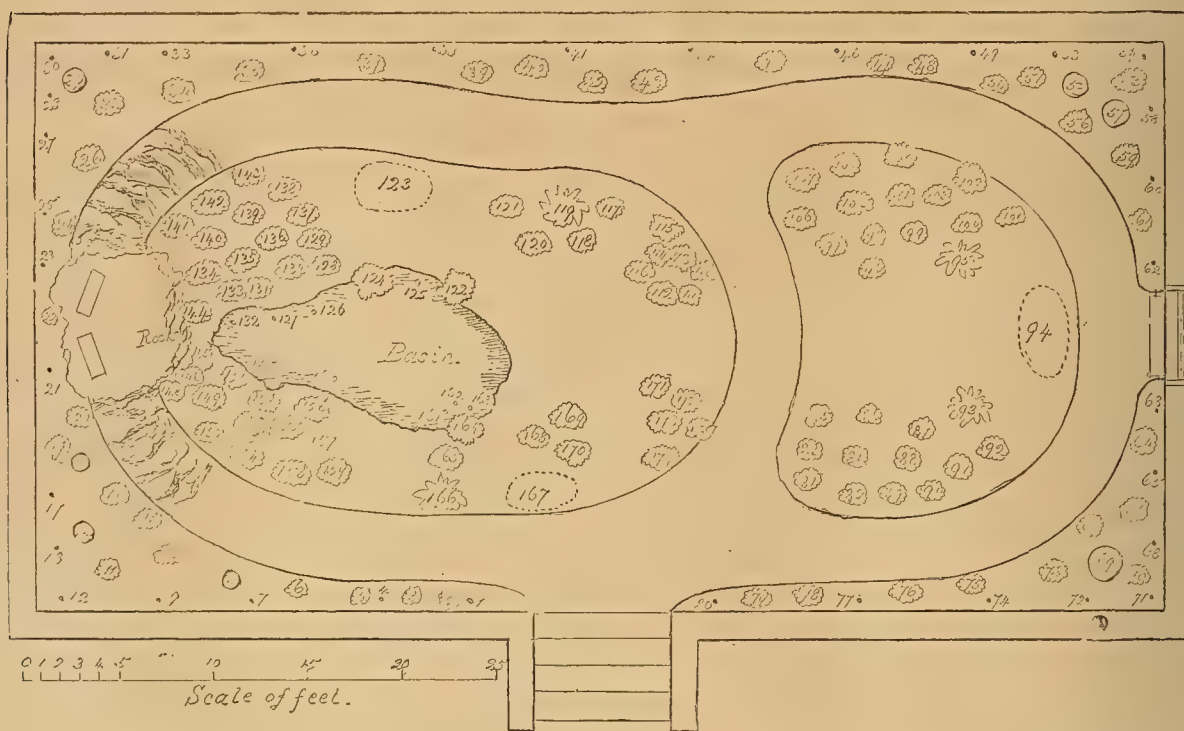
More than thirty Palms now flourish in our cool houses. A great number grow in the cold regions of tropical mountains, such as the *Ceroxylon andicola*, which is found at 10,000 feet and upwards. The *Oreodoxa frigida*, and several kinds of *Chamaedorea*, rise up to the Pine region; the *Areca humilis* reaches to 8,000 feet in Java; the *Chamaerops Martiana* to 7,800 feet in Nepal; the *Phoenix humilis* to 6,000 feet; without reckoning the *Chamaerops excelsa* of China, the *Rhapis flabelliformis* of Japan, *Corypha australis*, &c.

Let us now proceed to plant a cool house on the plan already used in the case of a warm conservatory. By the aid of numbers, we can at once show the different types of vegetation that may be used in each case. Our large illustra-

Permit me now to give a list of plants with noble leaves, and of stately port, that thrive well in a cool house:—

67. <i>Chamaerops stour-</i>	90. <i>Oreodoxa frigida</i>	136. <i>Scaforthia gracilis</i>
cantha	173. <i>Phoenix tenuis</i>	142. <i>Chamaedorea glauci-</i>
15. <i>Chamaerops excelsa</i>	169. <i>Cocos Romanzoffii</i>	folia
32. <i>Corypha australis</i>	159. <i>Areca Sapidu</i>	137. <i>Chamaerops Martiana</i>
56. <i>Jubaea spectabilis</i>	166. <i>Glaziova elegantis-</i>	119. <i>Phoenix sylvestris</i>
102. <i>Sabal palmetto</i>	sima	105. <i>Cocos australis</i>
105. <i>Phoenix reclinata</i>	154. <i>Ceroxylon andicola</i>	95. <i>Phoenix farinifera</i>
95. <i>Rhapis flabelliformis</i>	156. <i>Calyptrogyne elata</i>	105. <i>Chamaerops humilis</i>
93. <i>Livistona sinensis</i>	149. <i>Scaforthia elegans</i>	102. <i>Brahea nitida</i>
84. <i>Scaforthia robusta</i>	134. <i>Brahea dulcis</i>	

Here, then, are twenty-six kinds of Palms, more or less high, which will thrive perfectly under the temperature that has been named, and which will form a background of foliage of supreme elegance. We speak of such only as have been proved to succeed; and if the altitudes at which they grow spontaneously are compared, it will be seen that a conservatory with a minimum of 38° Fahr. is all that they require. It is known that for every six hundred feet of altitude above the



Ground Plan of a Cool Conservatory in the Natural Style.

tion will convey a faithful picture of the general aspect of vegetation that may be obtained in a large, slightly-heated structure. We will first give a list of climbing plants, without which no such structure can be properly adorned:—

1. <i>Rhynchospermum jas-</i>	25. <i>Mandevilla</i>	53. 54. 58. <i>Aristolochia</i>
minoides	lens	ciliosa
4. <i>Plumbago scandens</i>	27. 28. 30. 31. <i>Senecio</i>	60. <i>Kenedya Martiana</i>
7. <i>Passiflora cerulea</i>	mikanoides	62. <i>Tropaeolum sjcciosum</i>
9. <i>Mikania scandens</i>	33. <i>Tropaeolum spiffire</i>	63. <i>Tropaeolum pentaphyl-</i>
12, 13. <i>Solanum jasmim-</i>	36. <i>Passiflora edulis</i>	lunum
oides	38. <i>Akebia quinata</i>	65. <i>Bignonia Cherere</i>
17. <i>Cobaea scandens varie-</i>	41. <i>Aristolochia semper-</i>	69. 71. 72. <i>Tacsonia Van</i>
gata	virens	Volxemii
21. <i>Thunbergia laurifolia</i>	44. <i>Clianthus puniceus</i>	74. <i>Lapageria alba</i>
23. <i>Kennedya violacea</i>	46. <i>Fuchsia coccinea</i>	77. <i>Hoya carnosu</i>
	49. <i>Lapageria rosca</i>	80. <i>Clianthus Dampieri</i>

It must be here observed that, for a conservatory of the size named, the number of plants given would be too extensive, and would darken the house too much during winter. We only give the list entire for the use of a conservatory large enough to contain them; for example, from 100 to 150 feet in length, with a proportionate width and height.

sea, the mean temperature decreases one degree. But, if it be admitted, as is generally the case, that the mean temperature of the tropics is 80° at the sea level, at six thousand feet it would be only 65°, and at ten thousand feet, 50°, that being equal to the mean temperature of southern England. It is not, therefore, very extraordinary that the Palms of these high regions, as in the case of the *Chamaerops excelsa*, can live out of doors in those climates where they have nothing to fear but exceptional winters (such as the intense cold of December 1871). If we have not certain data as to this mode of culture, it is because Palm trees have hitherto been too costly to risk their sacrifice in the open air.

The Cycads, although generally less hardy than the Palms above-named, are still available for the conservatory, where a low temperature for a short time would not be prejudicial, but where they would suffer by prolongation of that temperature. Thus we would advise the following specimens to be planted as named hereafter:—

85. <i>Bowenia spectabilis</i>	169. <i>Encephalartos Alten-</i>	134. <i>Dion edule</i>
96. <i>Cycas revoluta</i>	steinii	120. <i>Zamia australis</i>

Among the Tree Ferns, the following are suitable for the conservatory:—

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|---------------------------------|----------------------------------|------------------------------|
| 124. <i>Alsophila australis</i> | 116. <i>Alsophila ornata</i> | 170. <i>Cyathea dealbata</i> |
| 82. <i>Blechnum brasiliense</i> | 149. <i>Balanium antarcticum</i> | 151. <i>Todea australis</i> |

With plenty of space one might add:—

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|-------------------------------|---------------------------|----------------------------|
| <i>Alsophila excelsa</i> | <i>C. spectabile</i> | <i>Lomaria cycadifolia</i> |
| <i>Balanium Calcutta</i> | <i>Cyathea medullaris</i> | <i>L. gibba</i> |
| <i>B. Sellowianum</i> | <i>C. Smithii</i> | <i>L. discolor</i> |
| <i>Blechnum Rio-grandense</i> | <i>Dicksonia fibrosa</i> | <i>L. magellanica</i> |
| <i>Cibotium regale</i> | <i>D. squarrosa</i> | |

The following plants, though not so important, deserve a place by the side of these, such as:—

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|----------------------------------|--------------------------------------|---------------------------------|
| 106. <i>Cordyline indivisa</i> | 107. <i>Camellia japonica</i> , var. | 88. <i>Camellia</i> |
| 97. <i>Aspidistra elatior</i> | 86. <i>Pythia Marie Bellangeri</i> | 87. <i>Lizula Kampferi</i> |
| 98. <i>Podocarpus Tataru</i> | 87. <i>Ficoidia sonchifolia</i> | 89. <i>Antica Himalaica</i> |
| 99. <i>Clivia cyrtanthiflora</i> | 92. <i>Edwardsia grandiflora</i> | 86. <i>Cineraria capensis</i> |
| 100. <i>Correa cardinalis</i> | 91. <i>Sparmannia africana</i> | 83. <i>Bruzmannia sanguinea</i> |
| 101. <i>Farfugium grande</i> | | 81. <i>Daphne delphin</i> |
| 102. <i>Eucalyptus viminalis</i> | | |
| 103. <i>Elaeagnus undulata</i> | | |
| 108. <i>Clivia nobilis</i> | | |

In order to make intervening spaces a little ornamental, an infinite number of less important plants could be added.

We next come to plants for decorating the beds of the central portion. For the grass plot may be taken:—

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| 174. <i>Panacratium mexicanum</i> | 121. <i>Rhododendron Jenkinsii</i> | 134. <i>Thea viridis</i> |
| 175. <i>Sedum spectabile</i> | 122. <i>Araucaria excelsa</i> | 111. <i>Platycentrum grande</i> |
| 172. <i>Aspidistra elatior variegata</i> | 128. <i>Lomaria gibba</i> | 115. <i>Senecio platanifolia</i> |
| | 130. <i>Ceanothus tuberculata</i> | 116. <i>Nephrolepis exaltata</i> |
| 171. <i>Agave Verschaffeltii</i> | 129. <i>Chrysanthemum Comte de Chambord</i> | 118. <i>Dracena Rumphii</i> |
| 112. <i>Phormium Colensoi</i> | 137. <i>Crowea saligna</i> | 150. <i>Pteris cretica albolineta</i> |
| 111. <i>Philecia buxifolia</i> | 133. <i>Aspidium Bellangeri</i> | 153. <i>Agnostus sinuatus</i> |
| 110. <i>Muehlenia cordata</i> | 139. <i>Stadmannia australis</i> | 152. <i>Cyrtomium falcatum</i> |
| 113. <i>Linum trigynum</i> | 112. <i>Mimosa cultiformis</i> | 155. <i>Acacia dealbata</i> |
| 114. <i>Eucalyptus giganteus</i> | 111. <i>Sparmannia africana</i> | 158. <i>Pinelea elegans</i> |
| 115. <i>Aralia Sieboldii</i> | | 157. <i>Littaea gracilis</i> |
| 117. <i>Skimmia oblata</i> | | 165. <i>Senecio Ghiesbreghtii</i> |
| 116. <i>Rubus rosafolius</i> | | 164. <i>Musa Ensete</i> |
| 118. <i>Thiopsis dolabrata</i> | 135. <i>Eucalyptus giganteus</i> | |

Plants between the borders and the glass may consist of:—

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|---|--|-------------------------------------|
| 2. <i>Wigandia urens</i> | 26. <i>Verbena citriodora</i> | 55. <i>Podocarpus zamiaefolia</i> |
| 3. <i>Yucca aloifolia tri-color</i> | 29. <i>Magnolia fuscata</i> | 59. <i>Phyllocactus Akermannii</i> |
| 5. <i>Woodwardia radicans</i> | 34. <i>Aralia daucylifolia</i> | 61. <i>Fuchsia var.</i> |
| 6. <i>Viburnum suspensum</i> | 35. <i>Ficus macrophylla</i> | 64. <i>Aralia nerifolia</i> |
| 8. <i>Xanthorrhoea latifolia</i> or <i>Phormium tenax</i> | 37. <i>Templetonia retusa</i> | 66. <i>Osmanthus ilicifolius</i> |
| 10. <i>Veronica Andersoni</i> | 39. <i>Siphocampylus Humboldtianus</i> | 69. <i>Oreopanax platani-folium</i> |
| 11. <i>Acaena lineata</i> | 40. <i>Solanum Warzewiczii</i> | 70. <i>Bocconia frutescens</i> |
| 14. <i>Abutilon striatum</i> | 42. <i>Montagnea heracifolia</i> | 73. <i>Helianthus major</i> |
| 16. <i>Hibiscus rosa-sinensis</i> | 43. <i>Clivia miniata</i> | 75. <i>Aralia papyrifera</i> |
| 18. <i>Aralia pubescens</i> | 45. <i>Salvia (various)</i> | 76. <i>Hebecladium macrophyllum</i> |
| 19. <i>Senecio Ghiesbreghtii</i> | 47. <i>Rosea gratissima</i> | 78. <i>Hedychium gardnerianum</i> |
| 20. <i>Nicotiana wigandii</i> | 48. <i>Rhododendron Gibsonii</i> | 79. <i>Desfontainia spinosa</i> |
| 22. <i>Banksia Fortunei</i> variegata | 50. <i>Azalea amara</i> | |
| 24. <i>Viburnum Arrafuski</i> | 51. <i>Rhopala australis</i> | |
| | 52. <i>Rhododendron Nuttallii</i> | |
| | 57. <i>Pteronia elegans</i> | |

GENERAL TREATMENT.

The Palms for a winter garden ought to be kept in pots up to the period when their leaves divide and show their character and their stems become at their base as thick as the arm. They must not be put in the ground before this, nor until they shall have been frequently repotted and have been kept as much as possible in a warm greenhouse where the pots have been plunged in tan. They should be repotted twice a year, in spring and summer, when their growth is rapid, without cutting the roots, and in pots deep and narrow. A quiet and warm atmosphere, somewhat shady, but without stagnant moisture, is best suited to Palms when young. Growing Ferns have nothing to fear from the open air or the sun; it is only the stemless kinds which flourish in the shade and under other plants, their roots requiring nourishment. The *Alsophila australis* may be placed outside in the full sun without injury; if it be watered from time to time with liquid manure it will acquire considerable dimensions in a short time and be of unsurpassable beauty.

A great number of the plants named will remain uninjured if protected from the frost; but it is better, as has been already said, to keep up the winter temperature a little over the freezing point; and even when the sun strikes upon the glass, raising the temperature, it will not be necessary to open the house at all during the winter. After February however, when vegetation is getting active, it will be necessary

to give air gradually and to water in the evening. In March you must begin to shade with some light material up to the time that you can uncover the greater part of the conservatory, and at last place some of the plants in pots or boxes in the open air. As to the great Palms and Tree Ferns, *Dracenas*, *Aralias*, &c., they will be better slightly shaded throughout the year, taking care to give plenty of air. Where it could be easily done, it would be desirable to remove the roof and allow the contents to be refreshed by the summer rains. Thus managed, with plenty of water and a proper amount of shade, it is very possible to develop splendid vegetation in such a structure.

Here, then, is another example of a winter garden in the natural style. Should the readers of THE GARDEN take some interest in the matter, we may, at some future period, show how it may be suitably varied by tropical plants, hothouse fruits, and medicinal plants.

ED. ANDRÉ.

THE FRUIT GARDEN.

POT CULTURE OF THE FIG.

To those who are fond of this fruit, and have no means of growing it either planted out in a house or in the garden, its culture in pots is peculiarly useful. It will be found that the essentials necessary to success are very simple, especially where there is a pine stove or cucumber house at command. The roots must be kept in a very confined condition, and moist; the leaves, by syringing, kept clean and healthy, with an atmosphere free from aridity until the fruit arrives at the ripening process, when they must be placed in a medium of heat, airiness, and comparative dryness, as the fruit is liable to rot if allowed to get wet, and in a humid atmosphere it would be deficient in flavour if allowed to ripen therein. The fig is very impatient of stagnant moisture at the roots, and at certain stages of growth more so than at others. Therefore, to prevent as far as possible any mischief from this cause, it is requisite to make the drainage perfect, so that it may last good, if need be, for two successive years. The compost also ought to be of a perfectly open and free character, and at the same time manurally rich enough to afford sustenance for a lengthened period; a gritty, fibrous loam four parts, sound manure one part, and a few half-inch bones added, would make a good compost. The pots in the growing season ought to be placed on bricks, so as to allow the water which may drain through the bottom of the pots to clear away, thereby conducing to the healthiness of the trees. Where there is not much room in which to grow them, fresh batches should be periodically propagated, and the largest of the trees should be thrown away.

As early now as possible, eyes should be put in, either singly in three-inch, or a number in larger sized pots, covering the buds not deeper than half an inch with the finest of the compost used, which ought to be free from anything likely to cause the roots to break when potting them off. In a brisk hotbed the emission of roots occupies but a short time, and shortly after this is the case pot off into five-inch pots, and place them in a position where they will have plenty of light, and a warm, hard bottom to stand on. Be sure not to water them till the compost—which ought always be moist when used—has become dry; otherwise, if watered before, the roots will rot, and the plants in consequence die. After the first watering, the plants ought never be allowed to get dry, but kept constantly moist; this applies to succeeding repottings as well. Seven-inch pots are the size required for the next shift, then nine-inch, and for the largest plants another remove into eleven-inch pots will be required. Those pots which are intended to stand over the next year must be thoroughly drained; the smaller sizes require but little. By pinching the points out of the plants when nine inches high, paying attention to stopping the side branches at every fourth or fifth leaf, and tying them down horizontally, so as to afford the greatest possible room for leaf development, and a greater number of shoots to fill in the centre, neat bushes will be formed. After this, all that is required is keeping the shoots pinched, thereby inducing fruitfulness, thinning the crops down to a moderate quantity on each bush, and shifting them into pots two sizes larger than those previously occupied. In performing this operation, gently prick the ball round the outside, to get rid of any soured soil; pot in all cases to the same depth, and ram the soil quite firmly in round the ball. Place them in a moist, warm temperature, keep well supplied with water, and ply the syringe to prevent flagging; when roots have commenced working in the new soil, remove them to a warm position out of doors, standing them on bricks, from thence to be moved into a house, where no danger from frost need be apprehended. The best time

for shifting into larger pots is immediately after the last crop of fruit has been gathered, fifteen-inch pots being large enough for any of them. When it is thought necessary to shift bushes in this size of pot, chop off an inch from the ball all round, and treat them as advised for other pottings. Weak manure water is beneficial when the pots are thoroughly well filled with roots, but not unless this is the case. It is also the usual practice to surface-dress the pot at intervals; but this I cannot recommend, as either an overdose or a scant supply of water is generally sure to follow, either of which is exceedingly hurtful to the well-being of the fig.

If the trees are required for forcing, commence with a temperature of from 50° to 55°, increasing it as the buds break into leaf. When in full leaf, a temperature of not less than 65° must be allowed them at night, with a proportionate rise in the daytime. As the plants progress, an increase of 10° may be made with advantage. By commencing with a few in the beginning of January, and judiciously managing the stock of trees, a continued supply of ripe fruit may be secured from the middle of April on till autumn. Care must be taken to keep the trees from getting dry during the winter. Plunging the trees, where possible, is the best means of attaining this end, and has the additional advantage of securing to the root a comparatively even temperature. The brown Turkey fig is the best variety for pot culture that I have had experience with, the great fault of many sorts being the bad habit they have of casting their fruit. The flavour of the brown Turkey is also unsurpassable, when thus grown, by other varieties grown under any other conditions. The fruit must not be gathered till the skin has shrivelled. R. P. B.

PEARS AND APPLES UNDER GLASS.

I BEG to inform Mr. Baines (see page 229) that I grow these fruits to eat; and I can assure him, if he has never had an opportunity of comparing house with open-air ripened apples or pears, he has a treat in store which will shake his allegiance in what, at the present time, he may consider to be "superior fruits." With apples and pears, it is true, I cannot girdle the year with fruit, but I can command a nine months' supply, in great variety and of unsurpassable excellence; and this, more especially for private growers, I consider preferable to a glut of stone fruit at a time when fruit is plentiful. What is it but climate which gives superiority to the pears of France and the Channel Islands? What but climate, backed by cultural skill, renders the pines and grapes of our glass-covered areas superior to those of any other part of the world? Again, compare the superior dessert apples and pears of the south of England with those of the north, and climate again asserts its ascendancy; and, such being the fact, why should we northerners be deprived of glass for our common fruits if we like to indulge in it? A finely-matured peach or bunch of grapes are grand things in the dog days, but perfectly-ripened apples or pears at the present time, when all nature is comparatively asleep, is something equally to be appreciated. These I have learned to regard as superior fruits, necessities which no household ought to be without, while peaches and nectarines may be regarded as luxuries, fruits of a day, which must be used directly they are ripe, or be lost for ever. This is my reason for recommending the house cultivation of apples and pears. What a house-ripened grape is to the same kind from the open wall so is a house-ripened apple, pear, or plum to the same kinds grown in the open air.—W.

SPRING FROSTS IN VINEYARDS.

THE *Messageur Agricole*, a French periodical devoted to scientific agricultural and horticultural pursuits, publishes a paper on this subject, written by M. Gaston Bazille, président de la Société Centrale d'Agriculture de l'Hérault. "It is," says the author of the memoir, "just before sunrise, when the sky is serene and the atmosphere calm, that danger to the vines is imminent, even when the thermometer is some degrees above the freezing point; but if the heavens are cloudy, or ever so slight a mist obscures the sun, there is no danger to be apprehended. After many trials of various means of producing a dense smoke economically and quickly, and maintaining it from an hour before sunrise until an hour or two after, I have found nothing answer nearly so well as the burning of refuse of coal tar distillation, which costs a mere trifle. This, when set fire to in shallow earthenware pans, gives out a dense black smoke, effectually obscuring the brightest sky. These pans should be placed at intervals of about twenty yards on the east and north sides of the vineyard only; for it is to be observed that it is useless to place them on the south or west, inasmuch as when the wind is from these points of the compass the vines never suffer. The critical period appears to be about the middle of April. If," says the memoir, "the sun has set in a clear sky with a north wind, the chances are that there will be frost in the morning, and it is then that my workmen are up earlier than usual. The thermometer is

consulted frequently, and whenever it is found not to be seven degrees above freezing, a number of them, each carrying a lighted torch, pass quickly along the line in which the inflammable material has already been placed in suitable vessels, applying his torch to each as he passes rapidly along, and in a few minutes the whole vineyard is protected by a curtain of black smoke. In the year 1864 this process was repeated on three consecutive days, viz., the 9th, 10th, and 11th of April, at my vineyard of St. Sauveur, and on the first day caused no little alarm to a village situated about five miles south of our operations, and when the cause of the smoke became known created considerable amusement, and gave rise to many jokes by my neighbours at my expense; but, as my vines were preserved while theirs suffered considerably during these three days, they are now, when spring frosts are expected, to be seen in their vineyards torch in hand. The system is not expensive; five or six men will suffice to protect a vineyard of thirty hectares (75 acres), at an outlay of about fifty francs for materials and labour."

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Bottling Grapes.—There are some operations connected with horticulture that find favour, more or less, for a time, though their advantages are practically few. Preserving grapes in bottles comes under this denomination. If your grapes are badly grown, deficient alike in finish and flavour, bottle them if you choose; you cannot easily make them worse. But if, on the other hand, they are really good grapes, possessing that first essential, flavour, by all means keep them out of the bottles; for, before they have been in them many weeks, they will be as devoid of flavour as if they had never had any. I have frequently tried the practice, this being invariably the result; and all with whom I have spoken on the subject, who have tried the bottling system, admit that the same thing happens with them—otherwise, it would be a very great convenience to be able to clear a whole crop at once, and so relieve the vines, and be able to use the houses for any other purpose for which they might be required. But this one fact—the destruction of the flavour—is fatal to the practice.—T. BAINES, *Southgate*.

Pruning Old Apple Trees.—I have always supposed that the main object in pruning old trees was to keep up a vigorous, healthy growth; but how can this be done, if all the young and thrifty shoots are annually cut away, and none left but the old and enfeebled heavy branches? This seems to be the general practice, and I am only surprised that these old apple trees live as long as they do. When I want to restore health to an old tree, I cut away as much of the old wood as it seems advisable, and leave that which is young and healthy. One healthy young shoot is worth a dozen old branches for restoring health. After a branch has produced fruit for a dozen or more years, it is sure to show signs of becoming weak; and if the internal structure is examined, the annual deposit of wood will be found very thin. At the same time new shoots will start out of these old branches near their base, these are usually termed sap-shoots, and the almost universal practice is to cut them away entirely; but they are sure indications of feebleness in the branches above, and if the trees are very old, a few of them should be encouraged, and the branches above them entirely cut away. Of course, all large wounds made by the removal of such branches should be covered with wax, or some similar composition.—M.

Japan Pear.—This curious-looking fruit has attracted considerable attention from amateur fruit-growers within the past few years,—not so much from the quality of the fruit as from the remarkable growth of wood it makes, and the profusion and size of the leaves. We have specimens in the orchard, grafted a year ago last spring, that made shoots last season ten feet long, and three-quarters of an inch in diameter at the base. The leaves on those shoots are five or six times as large as the ordinary pear leaf. The tree does not shed its leaves until a month or six weeks later than the common pear; and from the 1st September until the 1st of December, the Japan pear makes a beautiful ornamental tree, the foliage becomes equally brilliant as the red maple. We have two varieties, and they are undoubtedly seedlings of the old Chinese Sand pear. James Hogg says, in the December number of the *Agriculturist*, that both of these varieties are quite common in Japan, where the fruit is used for domestic purposes. The fruit of the Japan pear looks more like a russet apple than it does a pear, but the wood and leaf have the characteristics of the pear. One of the varieties is quite fragrant, having a pleasant aroma, not unlike a fine quince. Two years ago last fall, when we fruited it the first time, we considered the fruit nearly worthless, unless it was to keep and look at all winter. Last fall we had some of these pears put up in the same way as in preserving quinces, and, to our surprise, we find they make very excellent preserves. The tree makes a very rapid growth, bearing early and abundantly. The fruits look like ropes of onions, they are so thick on the branches. With further trial the fruit may prove a substitute for quinces for preserving purposes, and they may be valuable on this account. But even admitting the fruit to be without merit, the Japan pear will make a handsome addition on our grounds as an ornamental tree. The trees of this variety that we have are grafted on the pear, and the union seems quite as good as it does with the common pear, grafted at the same time. Next spring we intend to re-graft the Japan stock with the Seckel and one or two other varieties, to see if the rapid growth of the former will exert any change on the latter, either in wood or fruit.

SOCIETIES, EXHIBITIONS, ETC.

Royal Horticultural Society.—The anniversary meeting of this society took place on Tuesday last. From the report of the council, we learn that the society realised £5,030 from the penny a-head royalty on visitors to the Exhibition of 1871, who were allowed admission to the garden. It was announced that although in 1870 some loss was sustained at Oxford, last year it was more than redeemed at Nottingham, where the net profit was £774. The sum received this year for annual subscriptions does not materially differ from that of last year; and the number of Fellows continues nearly the same. The sum received for daily admissions and promenades has fallen off from £163 to £172, a deficiency directly traceable, it is said, to the International Exhibition of last year. One step in the right direction is the appointment of a Botanical Professor, who, by lectures, answers to personal inquiries, and other means, shall assist in establishing a more correct knowledge of the principles of botany and horticulture, and of the names of plants, among those of the Fellows and their gardeners who are desirous to profit by the opportunity. Mr. Thistleton Dyer, late Professor of Botany in the University of Dublin, has undertaken the duties of this department, which we doubt not will be efficiently carried out. With respect to Chiswick, although the whole of the open space appropriated to the fruit department has been completed, the new boundary walls have yet to be furnished. Steps, we understand, are now in progress to obtain such trees as are adapted for that purpose, and ere spring has much advanced as complete a collection of Apricots, Cherries, Peaches, and Nectarines as it is possible to obtain shall have been secured, and the former high reputation of the Chiswick Garden for its pomological collections will have been restored. Up to the present time there exist, under the successful re-arrangement of these, about 400 sorts of Apples, 350 of Pears, 300 of Plums, 430 of Cherries, 220 of Vines, and 100 of Figs. Of the last there are yet many varieties that have not been determined. This season arrangements have been made for a trial of Peas, of which the varieties have become so numerous, and the confusion of names so complicated, since the last great trial in the garden. In the Great Vinery there is a very marked improvement in the condition of the Vines since the enlargement and re-dressing of the border, and the heading down of some of the varieties. The new Grape, Madresfield Court, which was at first supposed to be a variety requiring hot treatment, has proved to be one of the very best for a cool house, equalling if not surpassing the Black Hamburgh in the high condition it attains under such circumstances. A vine of this variety was planted in company with one of the Black Hamburgh in the Rev. Mr. Fountaine's vinery which was erected in the garden, and although the house has no provision of any kind for being artificially heated, the Madresfield Court grape ripened thoroughly, and was considered to be much better adapted for such a situation than the Black Hamburgh. But little opportunity was afforded last season for carrying on the usual trials of flowers, but in the vicinity of the Council Room a new series of beds for the growth of trial plants has been made, and though it was late in the season before these beds were completed, a collection of Bedding Pelargoniums was nevertheless got together, and planted out in time to make satisfactory progress. These were examined in August, when the following awards were made:—First-class Certificates, as Flowering Plants, Lawrence Heywood, Charley Casbon, Mrs. Mellows, Lady Kirkland, Stanstead Rival, R. Bowley, Waltham Seedling, Louis Veuillot, and Penelope. As Foliage Plants, Goldfinch, Macbeth, Louisa Smith, and Black Douglas. It is proposed to continue the trials of Bedding Pelargoniums, and to add in the outdoor department collections of Pentstemons and Phloxes, and in the indoor department Fuchsias. On the wall bounding the trial ground on the west, it is proposed to grow examples of ornamental hardy climbers, instead of fruit trees as heretofore. Notwithstanding the reduction of space in the garden, the collection of herbaceous perennials which had been recently acquired, has been retained. H.R.H. Prince Arthur, Arthur Grote, Esq., F.L.S., and Andrew Murray, Esq., F.L.S., were elected members of the council for the ensuing year; and his Grace the Duke of Buccleuch, K.G., John Clutton, Esq., and Major-Gen. Scott, C.B., were respectively re-elected president, treasurer, and secretary.

Fruit and Floral Meeting, Feb. 14.—The principal features of this meeting were the Orchids, Primulas, and Cyclamens, but there were a good many other subjects of interest. Amongst the Orchids were some noble specimens of *Cœlogyne cristata*, shown by Messrs. Veitch and Williams. Amongst the finest Dendrobiums were *D. heterocarpum*, a very sweet smelling kind; *D. Wardianum*, with a fine spike; *D. glumaceum*, freely flowered. Mr. Williams had a

first class certificate for a magnificent plant of *Lælia anceps*, with nineteen good flower spikes, and measuring about three feet in diameter. Lycastes were numerous and very beautiful, as were the *Odontoglossums*, and some plants of *Phalanopsis amabilis* and *Schilleriana* were nicely bloomed. Vandas, *Angræcums*, and *Cattleyas* were well grown and flowered, especially the latter. But the most admired Orchid of the day was *Masdevallia ignea*, which is truly a brilliant acquisition to our cool houses, as it is of easy culture, dwarf, very distinct, and a very free blooming plant. It would seem to be as great a gain among Orchids as the gorgeous *Anthurium Scherzerianum* was among Arums. A spike of the splendid *Amherstia nobilis* was sent from Chatsworth; on the parent plant at present there are upwards of one hundred spikes of lovely yellow-stained red blossom. Cyclamens were shown in splendid condition by many growers. Every winter and spring show proves more and more the unrivalled merits of these for enlivening our greenhouses during the duldest season. In fact if we are happy enough to discover a few other kinds of plants equally useful for winter and spring decoration, our conservatories will prove as gay in January and February as in June or July. Chinese Primulas were also to be seen in great variety; they show much improvement of late. Ornamental variegated Kale, shown by Mr. Melville, of Jersey, was nicely coloured, and of apparent value for spring decoration in our flower gardens. *Tillandsia Lindenii* was one of the most striking and beautiful objects in the room, being of good habit and producing handsome flower spikes of a fine and distinct blue. Two baskets of Lilly of the Valley, grown by Mr. Howard, were among the finest we remember to have seen. Among hardy spring flowers the sweet-scented and richly-tinted *Iris reticulata* was as usual the gem. *Bouvardias* were shown as cut flowers in neat little bundles, with the stems buried in moss. The *Bouvardias* are invaluable for cutting, and, if we mistake not, will soon be as indispensable for winter and early spring bouquets in this country as they now are in America. There was a large and freely-bloomed specimen of *Daphne indica rubra*, to which a special certificate was awarded. It was grown by Mr. Johnstone, Uxbridge. Dessert apples and pears were in good condition; the winning apples were Blenheim Orange, Ribston Pippin, King of Pippins; the second prize lot containing, in addition to these, Braddick's Nonpareil, Glou Morceau, Winter Nelis, and Pass Colmar, were in the first dishes of pears; other pears shown were Knight's Monarch, Beurré Rance, Prince Albert, Easter Beurré, and Josephine de Malines.

Royal Botanic Society, Regent's Park.—At a recent meeting of this society, the secretary reported the receipt of another specimen of the "Mangrove Tree," from the West Indies; he believed it to be only the second instance of the importation of this curious plant alive to Europe, although numerous attempts have been made. In both instances the society, and natural history generally, are indebted to the care and exertions of the officers of the Royal Mail Steam-packet Company, and Mr. P. Cameron, of St. Thomas, Jamaica, who gave particular attention to the packing and transit of the "plant case," contrived by the secretary of the society, and sent out for the special purpose.

Manchester Botanical and Horticultural Society.—At the annual meeting of this society, which took place the other day, the Council announced that the working of the past year had resulted in a gross profit of £709. 2s. 9d., which, after appropriation of the amount necessary to pay interest upon the debts of former years, leaves a net sum of £397. 15s. 8d. available for reduction of the principal. We also learn from the report that the ordinary income of the society has exceeded the expenses by £305. 11s. 8d., notwithstanding that a considerable expenditure has been necessary in renovations and repairs of various portions of the premises. The financial result of the national horticultural show at Whitsuntide was a balance to the credit of the society of £553. 19s. 10d.

Royal Agricultural and Botanical Society of Ghent.—This society, we understand, intends to hold, in March 1873, its usual quinquennial International Horticultural Exhibition, of which the programme will appear early this year.

New Provincial Horticultural Society.—Through the kindness of Mr. Ingram, of Belvoir Castle, we are enabled to announce that a very promising horticultural society has been formed for Grantham and South Lincolnshire. It is established to promote the true interests of horticulture, and is not to be restricted to the getting up of an annual flower show. It is proposed, should the society prosper, to endeavour in various ways to further the views of those who desire to extend the practice of gardening amongst cottagers, to take cognisance of the state of village gardening, and to distribute good sorts of fruit-trees amongst deserving people. The interest taken in the matter by all classes is best evinced by the extensive and satisfactory list of subscribers, which enables the committee to offer upwards of £200 in prizes, in this, the first year of the society's existence. It is announced that the first summer exhibition is to take place on the 17th and 18th of July next.

THE AMATEURS' REMEMBRANCER.

Flower Garden and Shrubberies.—Prepare beds and borders for summer flowers; and, as soon as herbaceous plants are up, slightly fork up the ground among them. Prune the hardier kinds of roses; climbing ones, on poles and buildings, undo, thin, and tie up again; sweep and roll lawns. If not already done, plant out anemones and ranunculuses; finish pruning ornamental trees and shrubs; dress borders of American plants with decayed leaves, scattering a little soil over them, to keep them in their place. Plants requiring stakes should be attended to, and neatly, though firmly, supported before March winds set in.

Indoor Plant Department.—To plants in borders now beginning to grow give a good soaking of tepid water, temperature 45°, and, whenever favourable, admit plenty of air. Acacias, Camellias, and other plants coming into bloom must not suffer from want of water. Plants for successional blooming introduce into the forcing-pit, keeping pelargoniums near the glass, so as to have short-jointed wood. In stoves maintain a temperature of from 55° or 60°, allowing a slight rise by sun heat. Prune and pot *Alamandas*, *Dipladenias*, *Clerodendrons*, *Stephanotis*, *Rondeletias*, &c. Start a few *Gloxinias*, *Gesneras*, *Achimenes*, and *Calladiums*, especially such as show signs of early growth. Water sparingly until the plants begin to grow, and avoid undue excitement and cold currents of air. To orchids give a night temperature of 55°, and from 60° to 65° during the day; the Mexican house may be 8° or 10° lower; avoid excitement. Water only such as show signs of growth; give no water overhead at present, but sprinkle the floor, walls, and stages with tepid water once or twice a-day. Retard the blooming of some of the finer kinds of orchids, by removing them into a cooler house; to those coming into flower give all the light possible, but screen them from sudden or bright gleams of sunshine. Potting materials should now be in readiness under cover.

Pits and Frames.—Bedding plants wintered in vineries and other houses remove to these, keeping them close for a few days—afterwards, admit air freely; protect from frost, wind, and heavy rains. To scarlet geraniums and fancy pelargoniums give a small shift. Heaths require full ventilation; should mildew appear, dust with sulphur, and they must never suffer from want of water, nor get too much. From carnations clear dead leaves, and stir, and refresh the soil. Ten-week and other stocks, *Cobæa scandens*, *Lophospermums*, *Maurandyas*, and other choice plants, sow for early flowering on a gentle hot-bed. Pansies, plant out; *Dahlias*, start in moderate heat for cuttings. Pots, boxes, soils, &c., must now be got in readiness for sowing, shifting, and for cutting.

Indoor Fruit Department.—Prepare for the general potting of pine-apples; but the more advanced among them should have a shift at once. Use every means to get the roots in a growing and healthy state before potting. Vines started require a moist temperature—those setting a dry one; stop and thin shoots of the more advanced, and keep regularly tied those retained. In thinning the shoots, commence at the upper part of the house, and work downwards, taking care of the leaders. Figs, water freely at the root and overhead; encourage short-jointed firm wood, and pinch at the fourth or fifth joint; temperature at night, from 55° to 60°; by day, from 65° to 70°. Peaches and nectarines set, and remove any shoots not required for succession; syringe frequently, and increase the temperature. Introduce fortnightly, successional strawberries, giving plenty of water to those in active growth; whilst those in flower, and setting fruit, are better kept rather dry than moist; give air carefully and early in the day, keeping the temperature at from 68° to 70°. To cucumbers keep up a brisk, moist temperature of 75° at night, and from 80° to 85° by day; to the beds add fresh linings as often as necessary. Set the blooms, and stop the shoots, so as to prevent superfluous growth; water overhead, as well as at the root, with tepid water; if mildew appears, sprinkle with water, and dust with sulphur. As the roots extend, add two or three inches of fresh soil. Melons sufficiently advanced stop, removing superfluous growths and male blossoms, maintain a ground temperature of 85°, admit air cautiously, avoiding cold draughts, sprinkle frequently with the syringe, and encourage short-jointed vines, by keeping the plants near the glass. Seakale lift for succession, and place in a mild temperature, excluding light. Of Asparagus keep up a succession. Capsicums and chilies, sow in heat; those that have made four or five leaves, repot, and still keep them in heat. Carrots in frames, if up, thin; look after snails and slugs. Keep up a succession of kidney beans, syringe frequently, and keep them near the glass; top-dress with light rich mould those about to fruit. Lettuces, sow on a slight hot-bed for succession; plant autumn-sown ones on a spent hot-bed, temperature, 55° to 60°. Mustard and cress sow in gentle heat every ten days. Egg plants sow last month pot, and keep in moderate heat. Radishes sow in gentle heat. Mint and sage force in succession. Expose peas raised in heat gradually, and carefully shelter them from frost or cold winds. Celery sow in gentle heat, using a rich compost; those above ground thin or prick out into pans and boxes. Cauliflower, marjoram, and basil, sow in gentle heat, for planting out. To potatoes in frames give plenty of air, and, in watering, do not wet the foliage.

Hardy Fruit and Kitchen Garden.—Protect early blossoms from spring frosts by means of wide coping boards, as shown in our last number, canvas, fish, or woollen netting, branches of evergreens, &c. Pruning of all kinds finish. Prepare grafting clay. Lichen or moss on fruit-tree stems or branches scrape off. Fork up the ground between cabbage plants, lettuces, spinach, and other crops. Portugal onions sow on a warm border, and afterwards transplant. Peas and beans sow in

a sheltered situation. To cauliflowers under hand-glasses give all the air and light possible, and permit them to receive gentle showers in mild weather; but protect them from frost, cold winds, and heavy rains; prick off young cauliflower plants raised in frames. Sow a small crop of round spinach; sow, also, an early crop of stone turnips. Lettuces of former sowings transplant; and make a sowing of leeks. Chervil and fennel may now be sown. Sow both long and turnip-rooted radishes on a warm border, and cover with rough litter till the plants appear. Shallots plant in deeply-worked soil, in drills one foot apart, and six inches between the plants. Tie up and blanch endive. Seakale and rhubarb cover with pots, and surround them with as much leaves and litter as will generate a heat of 50° or 60°. Tansy, tarragon, balm, mint, horehound, burnet, &c., may now be propagated by offsets, or division of the roots.

COVENT GARDEN MARKET.—February 17th.

Flowers.—Of these there is now great abundance, and some tastefully got up bouquets, consisting of white Camellias, which are invariably used as centre-pieces; spikes of Orchids; Tea Roses; Maiden Hair Ferns; Cyclamens; Violets; Epiphyllums; Tropæolums; Snowdrops; Pelargoniums; Eucharis; Mignonette; Orchids; Orange Blossoms; &c. Among others flowers we noticed Fuchsias; Bouvardias; Chinese Primulas, and *P. denticulata*; Cyclamens, in fine condition; *Dielytra spectabilis*; *Deutzia gracilis*; *Spiræa japonica*; Zonale and fancy Pelargoniums; Cytisus; Camellias; Ghent and other Azaleas; Heaths; Cinerarias; Lilacs; Acacias; *Thyracanthus rutilans*; Callas; Crocuses; Snowdrops; Tulips; Narcissus; Hyacinths; Anemones; Polyanthus; Arabis; Hepaticas; and Aconites. Amongst sweet-scented flowers were Violets, Tea and China Roses, Mignonette, Lily of the Valley, Orange Blossoms, Sweet Bay, and sweet-smelling Orchids.

Prices of Fruit.—Apples, Dessert, 2s. to 4s. per dozen.—Cobs, per 100lbs., 60s. to 65s.—Filberts, per lb., 8d. to 10d.—Grapes, per lb., 5s. to 10s.—Lemons, per 100, 7s. to 10s.—Oranges, per 100, 6s. to 10s.—Pears, per dozen, 3s. to 8s.—Pine-apples, per lb., 6s. to 10s.—Pomegranates, each, 4d. to 8d.

Prices of Vegetables.—Artichokes, green, each, 6d. to 8d.—Asparagus, per 100, 8s. to 10s.—Beet, per dozen, 1s. to 2s.—Broccoli, purple, per bundle, 10d. to 1s. 3d.—Brussels Sprouts, per half sieve, 2s. 6d. to 3s. 6d.—Cabbages, per dozen, 10d. to 1s. 3d.—Capsicums, per 100, 1s. 6d. to 2s.—Carrots, per bunch, 5d. to 7d.—Cauliflowers, per dozen, 2s. to 6s.—Celery, per bunch, 1s. to 2s.—Chilies, per 100, 1s. 6d. to 2s.—Cucumbers, each, 1s. 6d. to 3s.—French Beans, new, per 100, 3s. to 4s.—Herbs, per bunch, 2d. to 4d.—Horse Radish, per bunch, 3s. to 5s.—Leeks, per bunch, 2d. to 4d.—Lettuces (French), Cabbage, per dozen, 1s. to 2s., Cos, per dozen, 3s. to 5s.—Mushrooms, per pottle, 1s. to 2s. 6d.—Onions, per bunch, 4d. to 9d.—Parsley, per bunch, 2d. to 4d.—Radishes, per bunch, 2d.—Rhubarb, per bundle, 6d. to 1s. 6d.—Salsify, per bundle, 9d. to 1s. 3d.—Scorzoneria, per bundle, 9d. to 1s. 3d.—Seakale, per punnet, 1s. to 2s.—Shallots, per lb., 8d.—Spinach, per bushel, 3s. to 4s.—Tomatoes, per small punnet, 8d.—Turnips, per bunch, 3d. to 6d.

A Park for Birmingham.—At the quarterly meeting of the Birmingham Town Council this week, the Mayor read a communication from Mr. Alderman Ryland, containing a proposal from his relation, Miss Ryland, of Barford Hill, Wandswoth, to present to the town a piece of land for the purposes of a public park. The piece of land in question, known as the Cannon Hill estate, consists of about 54 acres, and is situated on a picturesque acclivity on the south of the town, and about two miles from the Town Hall. In the event of the acceptance of her offer, Miss Ryland is prepared to lay out the land in an ornamental manner, at an expense of about £5,000, and to transfer the fee simple to the Corporation, reserving a right of way through the park to the house which overlooks it. The plans contain provisions for cricket and croquet grounds, a gymnasium, and an artificial lake, and the gift altogether is estimated to represent a value of not less than £30,000. It is scarcely necessary to say that the proposal was accepted by the Council, with warm expressions of gratitude to the munificent donor, in whose honour it is proposed to name the new acquisition "Ryland Park."

New Ride in Hyde Park.—The new road and ride, which has been some months in preparation in Hyde Park, was opened last week. It branches out of Rotten Row opposite Albert Gate, cutting across that part of the park on which the first Great Exhibition stood, and runs alongside the drive to Kensington, where it joins the "Row." The length of drive in Hyde Park is thus now nearly doubled.

Trees on the Thames Embankment.—In reply to Mr. Laurence Peel (see p. 271), who entreats the Commissioners "in mercy" to remove the trees from the Thames Embankment, because "if we live so long we shall hereafter see a long avenue of green foliage, and be left to guess at a river which that foliage hides," permit me to remind him that no beauty is so beautiful as when partly veiled, and that "the something" which is left for the imagination to supply is the truest part of all enjoyment.—*A Lover of Foliage.*

All communications for the Editorial Department should be addressed to WILLIAM ROBINSON, "THE GARDEN" OFFICE, 37, Southampton Street, Covent Garden, London, W.C. All letters referring to Subscriptions, Advertisements, and other business matters, should be addressed to THE PUBLISHER, at the same Address.



"This is an art
Which does mend nature : change it rather : but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE SIX OF SPADES.

CHAPTER IV.

I MUST tell you now (how one loves to linger even among the naughtinesses of early youth!) how I essayed to avenge myself upon our Gardener for his artful ambushade behind those Scarlet Runners. He had, in those days, the finest Peaches in our neighbourhood; and upon the occasion of our giving a grand dinner, at which the Ducal party from the Castle graciously assisted, he had sent in such a dish of them as could not be surpassed in the county. The specimen which crowned the pyramid was enormous ("Monstreuse," though not "de Doual"), and was the largest I had ever seen, save one, which my eldest sister had made in wax, and in which, so far as size was concerned, she had considerably exceeded the powers of nature. When our guests had arrived (we saw them go through the hall, we little ones, as we stood in our night-gear upon a distant landing, like tipsy Pecksniffs on a reduced scale), and had seated themselves at the banquet, what do you think I had the audacity to do? I stole down stairs, imperfectly accoutred as I was, and substituted the artificial for the real Peach, secreting the latter in a cupboard of the house-keeper's room, where the dessert was lying in state!*

Two hours later, some of the ladies were brought up "to see the children." They found me, as you will conjecture, particularly fast asleep. I was located in an inner nursery, which seemed to be regarded that night, as a small chamber of horrors, attached to the general exhibition. "Is that the arch-traitor?" I heard Lady Isabel ask; "the villain slumbers soundly! let us kiss the hoary miscreant." And then I heard how successfully my scheme had sped. The pyramid had been placed in the centre of the table, and the big Peach had been admired by all. Papa had been complimented, as though he did the pruning and the nailing, and general management of the wall trees, himself. The Duke had facetiously suggested that it should be taken to a side-table, and carved like a round of beef. Squire Granville prophesied that, when it was touched, there would be such an inundation of juice, as would compel the company to swim for their lives. Finally, the Duchess had been persuaded to divide it with her neighbour, and then the imposture was discovered. It had been such fun! Every one had been amused, and Papa, though he seemed puzzled and annoyed at first, had laughed most heartily of all.

All this was very successful; but it was not the success I had intended. Not a word of blame was spoken of him for whose entire confusion and discomfiture I had laid my malignant plans. I alone was censured, and that most mildly. Taken by Mamma to the Castle in the carriage, and my new clothes, I had expressed my penitence to the Duchess, and had been immediately punished with a large casket of the most delicious bonbons I ever tasted.

Some years afterwards, for the war continued, and "revenge, Timotheus cried," through my boyhood, I made another hostile experiment, which had a completely felicitous issue. Once a month, Mr. Evans, the gardener, brought in his account book, and used to sit in an armchair by the fire in the servant's hall, awaiting his master's leisure. From an interview of this kind, my father returned one winter's evening to the bosom of his family, in a condition of extreme bewilderment. "Evans had behaved in the most extraordinary manner. Evans, the soberest man on the estate, was ostentatiously intoxicated;

could scarcely rise to salute his master, and when he did rise had brought the armchair with him, and worn it behind him in the most ridiculous manner. Had never seen any one so demoralised and red in the face. And, to crown all, the man had put himself into a passion, and murmured something about 'standing it no longer,' had sat down with a crash upon his anything but easy chair. There my father had left him; but the first thing in the morning, he would have an explanation—yes, that he would."

I could have given him a very full explanation that evening if I had liked. I had smeared the dark seat of that wooden chair most liberally with cobbler's wax, and had limed my bird securely on his twig.

My father sent for me next morning, after a conversation with Mr. Evans on the subject of his "séance fantastique," and commenced an oration of a severe and admonitory character; but he broke down in his second sentence, laughing till the tears rolled down his cheeks and leaving me master of the entire position, with the exception of the kitchen garden, into which I did not feel inclined to wander for many subsequent weeks.

Then came a period wherein we felt that weariness of quarrelling, which the brilliant but bilious Duc de la Rochefoucault has termed "une lassitude de la guerre," in which we still maintained a pugnacious posture, but struck no blows—just as you have seen a couple of pullets drawn up in order of battle, and confronting each other *tête-à-tête*, but wholly indisposed to peck. Alas! I disturbed this peaceful armistice with an onslaught of unprecedented ferocity. An undergraduate at Oxford, I began to fall in love, indiscriminately, with every pretty girl I saw; and Venus must have flowerets for her golden hair, and fragrant posies for her soft small hand. For her sweet sake ("nam fuit ante Helenam," &c.), I commenced such a series of sanguinary raids on the conservatory, as must have made poor Evans's heart to "bleed" almost as freely as his plants. Leaders and laterals, hard wood and soft—now the top of a pyramidal Azalea, to make the centre of a bouquet, now the first fronds of some delicate and costly Fern, to form its graceful fringe—fine old specimens and "nice young stuff," flowers and foliage all went down in terrible excision, until the place looked as though it were one of her Majesty Queen Flora's gaols, filled with plants of an abandoned character, and having their hair dressed *à la convict*.

Oh, ladies and gentlemen—Oh, dames and damsels with your pretty gardens, and long scissors of shining steel—Oh, gallant lovers, with your trenchant Wharnccliffe blades—Oh, mothers and daughters, knocking over the flower pots as you sweep along in your "trailing garments"—Oh, wide-sleeved dandies, breaking the young shoots as you reach forth recklessly to seize your prey—Oh, belles and beaux, so charming, so amiable, and so profoundly ignorant on the subject of plants! Pause awhile, I beseech you, and stay your ruthless hands, for you know not what fatal mischief you may do. One little snip with those sharp "rose nippers," and you may destroy in a moment the pleasant hopes of a skilful taste, and the just reward of a patient industry. You may ruin the symmetry of a plant for ever; and behold hereafter an unsightly dwarf, when you might have gazed upon a glorious Life Guardsman. What should you say, fair lady, were some disagreeable miscreant to intrude upon the privacy of your bright little boudoir, and to extract the tail of your piping bulfinch? And you, my brave gentleman, would your observations be entirely such as your pastor would approve, were you to hear from your groom that some coarse-minded person had paid your stables a visit during the night, and "gone the whole hog" with your hunter's manes?

There is provocation, I must allow, sometimes. There are Spades in the floricultural pack, though not in our company (limited), so mean as to the amount, and so sulky as to the manner of their donations, that their scared employers, dare not, finally, ask for a single petal, and so are led to adopt the facile alternative of freely helping themselves.

But how comes it, the question may arise, that the young Oxonian, of whom we heard just now as at fierce war with gardeners, and as cutting and maiming the plants around him with so much brutal stolidity, how comes it that he has suddenly put off the paraphernalia of battle for the

* This incident occurred long before the introduction of the *diner à la Russe*.

peaceful apron of the florist, and changed his sword into a pruning knife?

Of this transformation, the happiest event of my life, I must speak hereafter; appropriately, I think, in a little lecture upon Roses, which I am preparing at the request of "The Six of Spades;" but I must first introduce you to the rest of our brotherhood; and now, if you please, to that quaint, hearty, hard-working, plain-speaking, cheery fellow, Joseph Grundy, head gardener, coachman, &c., &c., to the good old ladies at the Grange.

S. R. H.

(To be continued.)

THE FRUIT GARDEN.

THE PEACH AND NECTARINE.

THESE may truly be said to be the most delicious fruits that ripen in the open air of Britain. They are liable, however, to many diseases, some of which may possibly be ascribed to a certain delicacy of constitution incidental to their eastern origin; consequently certain conditions are absolutely necessary to insure their successful cultivation in this country. A matter of paramount importance is their being worked upon a suitable stock. Various kinds of stocks have been tried; but I believe it is now admitted that the Muscle Plum is the best, more particularly for trees intended to be grown in the open air. The healthy or unhealthy condition of the individual stock, as well as its being of the proper variety, has, I may add, much to do with the future success of the tree,

SOIL, SHELTER, OPEN-AIR STANDARDS, POT CULTURE.

The next important condition is that of the soil. Both the peach and nectarine are found to require, or, at least, to succeed best in a somewhat deep and moderately calcareous soil, which must be rendered entirely free from anything like stagnant moisture. The only other condition I will mention, is that of shelter—or being placed on the south, south-east, or south-west side of a wall, or protecting medium of some sort; and, without compliance with this and the above-mentioned conditions, I fear that there is little probability of successfully cultivating these delicious fruits in the open air in this country. Some years since, encouraged by the success of dwarf pyramidal pears, plums, cherries, &c., an attempt was made at this place to cultivate peaches and nectarines in a similar fashion, and the venture did certainly, to some extent, succeed. During several favourable seasons really good and well-flavoured peaches and nectarines have been borne by dwarf pyramidal trees, growing in the open quarters of a kitchen garden, which many have witnessed. But altogether, the experience of several years' cultivation of these trees has led me to the conclusion that peaches and nectarines cannot be profitably or satisfactorily grown as standards or pyramids in the open air and climate of East Anglia. As we advance in life, there is a tendency to think and to say that things are different from what they were long ago. I have even heard of an old gentleman who maintained that peaches had not the same flavour as they had when he was young. Some of his friends ventured to hint that the supposed change was possibly as much due to his palate as to the peaches. But, be this as it may, my observations lead me to think that for several years past, in many garden establishments, peaches and nectarines have not succeeded so well on open walls as they did many years ago. This circumstance may, possibly with justice, be ascribed to a series of unfavourable seasons, which place the matter, in a great measure, beyond our control, but which may, in turn, be succeeded by seasons more favourable to outdoor success. Nevertheless, although this should prove to be the case, the price of glass is now so much reduced, and orchard houses having become the fashion of the day, it is, doubtless, to these and to similar structures that we have now to look for our principal supply of these useful and delicious fruits. This is more particularly likely to be the case now when the mania for confining fruit trees in pots is quietly subsiding, as it was not difficult to foresee that it would do. For I must say that I have always failed to discover any real advantage likely to be derived from the

practice of growing fruit trees in that manner; notwithstanding this, however, I am quite aware that excellent fruit has been produced by this method, in proof of which I may state that the Barrington and other varieties of peaches were produced here in abundance last year, averaging more than eight ounces each, from pots about fifteen inches in diameter, and the same may probably be done during the ensuing season. Still I should be sorry to depend upon trees in pots for a general supply of either peaches or any other kinds of fruit.

OPEN WALLS, WIRING.

With respect to the use of garden walls in this country, I think that it will ultimately be found to be more profitable, and also more satisfactory, to devote them to the use of our more hardy fruits—including the finer kinds of pears—and, if possible, to discontinue the practice of driving nails into them. This is certainly a great evil; a necessary one, I admit, where other means of securing the trees to them do not exist. But all garden walls, old as well as new, ought to be properly wired for the purposes of training. Nail-holes, irrespective of disfigurement, offer to the various insect-enemies of fruits, in all stages of development, free and comfortable quarters, of which they are by no means slow to avail themselves, and from which it is difficult to dislodge them. The gardening world has to thank you very much for your able advocacy of the wiring system; some months since I was much pleased to see this being carried out in a most efficient manner, under the direction of Mr. Macarthur, in the splendid new gardens of his Highness the Maharajah Dhuleep Singh, at Elvedon, near Thetford, in Norfolk.

CULTURE UNDER GLASS, SPAN-ROOFED ORCHARD HOUSES.

My experience as to the use of glass for the growth of peaches and nectarines, brings me to the conclusion that, in order to obtain fruit of the best quality, from such trees, in abundance, and with something like certainty, we must revert to, or adhere to some modification of, the old system; that is, to train the trees under, and near to the glass roof of such structures as we devote to their culture, thereby securing the greatest possible amount of solar influence. Here we have two span-roofed orchard houses, each about ninety feet in length, twenty feet wide, and twelve feet high in the centre. Both are devoted principally to the cultivation of peaches and nectarines, but the interior arrangements are different. In one house a line of pyramidal peach and nectarine trees occupies the central bed, reaching to the top of the house. These trees are remarkably handsome and healthy, and generally bear good crops of fair sized fruit, and of good flavour, but somewhat deficient in colour, and a little late in ripening; the latter circumstance, however, is rather an advantage than otherwise, inasmuch as it extends the peach season to the utmost. In the other house the path is in the centre, and the trees are planted on each side, at a distance of some eighteen inches from the side walls, and within a few inches of a hot water pipe, which, though seldom used, is nevertheless available for the exclusion of frost when desirable. Strong wires are stretched through the house lengthways, at a distance of sixteen inches from the glass, and about one foot apart. The stem of each tree is trained vertically across the wires, towards the apex of the roof; and horizontal branches from the vertical stem of each tree are led along each wire; the result is thus a series of cordons of peaches and nectarines, under each side of the span roof, extending to the entire length of the house. The shoots produced by these cordons require pinching two or three times during the growing season; they are carefully spurred or pruned during the winter or early spring, and they have never failed to produce abundance of fruit of the finest quality, richly coloured, and altogether greatly superior to the produce of pyramidal trees occupying the central bed of the other house. Indeed, I have no recollection of having ever gathered finer fruit than is annually produced by these horizontally trained trees.

Culford, Bury St. Edmunds.

P. GRIEVE.

Moss on Fruit Trees.—Syringing with salt water in winter, is reported to destroy this; and some recommend soda water. The salt water should not, it is said, be stronger than sea water, which contains some three per cent. of salt. The best way would be, perhaps, in the first place, to ascertain the right strength on some one tree of little value.

PROTECTION OF WALL TREES.

THERE are those who do not believe in nor practice any form of protection for their fruit trees. Their conviction is, that, taking an average of seasons, they gather more and better fruit without than with it. And it must be admitted that over-protection has proved most mischievous. Unsuitable materials and faulty modes of using them have probably ruined more fruit and fruit trees than they have saved. Besides, a radical danger lurks in all protective expedients. Most of them must almost of necessity leave behind them a legacy of weakness. In proportion to their thickness and consequent ability to keep out the cold, they shut out the light; and often the semi-darkness proves more destructive to vegetation than the most severe cold. Hence, until we reach that high state of protection indicated by "W." (see p. 292), when all our tender fruits shall pass safely through their danger period beneath the shelter of glass, the chief merit of our opaque expedients for the protection of fruit trees must consist in devising a happy mean or compromise between the contending forces of light and darkness. We must, to write popularly, keep out as much cold and as little light as possible.

One of the oldest and simplest modes of saving the blossoms is that of protecting copings. The theory, as expressed by gardeners, is that frost falls in straight lines. Run out a coping to sever these lines, and the power of the frost is cut asunder and the trees saved. Practically the results are as stated, and I will not burden this paper with the true theory of the matter. Provided the coping is wide enough and sufficiently thick and impervious, it is a safeguard against frost in calm weather. Of course, winds dash the cold air against the blossoms as waves are dashed against perpendicular rocks, and the blossoms may then be frost-bitten, despite the overhanging coping. Still, these copings often prove canopies of safety, and the illustration already given of those in use at Montreuil (p. 269), shows a capital way of using them in a temporary manner. Here is another method equally simple and effective, as practised at Thomery and

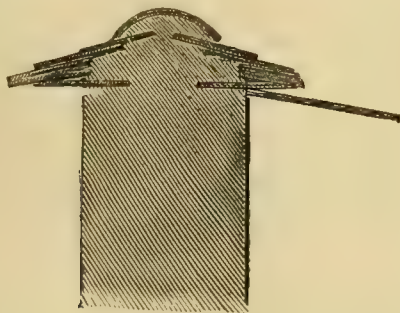


Fig. 1. Permanent and Temporary Copings.

in other parts of France. Modifications of this are also common in England. The illustration pretty clearly explains itself. The wall is surmounted by a heavy, cumbersome coping of tiles projecting about ten inches on either side of it. This is a permanent coping, water and frost proof. But it is not wide enough to shelter the trees. Hence, at intervals of about two yards apart projecting irons, almost twenty inches long, are inserted and slightly inclined towards the earth at the ends. These are the bearers of a secondary coping of wood, bituminized felt frames, or slates. The frames used in France are eighteen inches wide and ten feet long. The felt is simply nailed to light rods of wood, which are easily lifted off and on. These frames being water-proof are much used to protect grapes and other ripe fruits from the autumnal rains, as well as for cold-proof screens early in the spring. Wooden shutters are frequently employed instead of felt. Straw mats, slates, or even a layer of spruce branches, are almost equally serviceable against cold. But, of course, felt or wood are more powerful protectors, inasmuch as they keep the blossoms dry. And, whatever contrariety of opinion prevails about the effect of moist or dry air in moderating or arresting the powers of frost, as a matter of fact, every cultivator knows that a dry blossom-bud passes through a degree of cold unscathed that would have blackened it into death and decomposition had it been wet.

Next in importance to projecting copings follow moveable curtains of textile fabrics, such as canvas, bunting, tiffany, nets of wool, twine, oiled calico, blinds, &c. These are by far the most efficient when kept dry. Therefore, they ought to have the aid of projecting copings, and ready means should be furnished for moving the curtains up or down easily and speedily. This is generally done by means of a roller and pulley, or by suspending the blinds on rings placed on iron rods at top and bottom. Rollers of wood to carry the blinds right off the trees are the best arrangement. With blinds on

rings part of the wall is mostly shaded by the curtains, and the latter are also exposed to all weathers. Not necessarily so, however, for blinds may be drawn up and let down with an arrangement of rings on irons, though not so readily as on rollers. Either way, one great merit of such protectors is their easy portability. They should never be let down at all, unless absolutely wanted. The cultivator scanning the heavens, and sleeping with one eye open, will seldom be caught napping, though occasionally he may have to get out of bed at unseasonable hours to let the blinds down.

Fig. 2 shows a combination of three protectors: a coping of tiles,

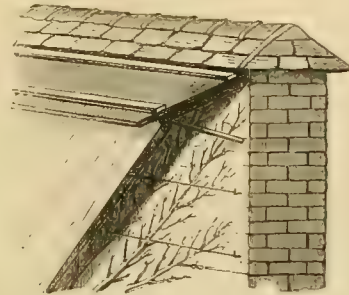


Fig. 2. Protected Peach Wall.

another of straw mats, and a third of canvas on rollers. This combination of different methods together ensures the safety of the trees. The canvas is doubled in efficiency by being thus overlapped skywards.

Fig. 3 shows a similar arrangement on a common wall. In this case, however, the canvas is made to overlap two rows of cordons in front of the wall—a capital way of killing three or more birds with one stone; for, indeed, on wide borders five or six rows of cordon fruit trees may be grown. I find the plum does remarkably well as a ground cordon. I am also trying peaches and nectarines. Apples and pears, of course, do well. By growing all our choice fruits near to our walls thus we utilise the heat radiated from their faces, and render it impossible to crop the borders of our fruit trees with vegetables. In a protective point of view we are likewise gainers by inclosing the warm earth at the base of our walls. The earth gives and takes heat more slowly than bricks. Hence, when the walls get cool, the earth helps them; and the more warm earth we can inclose in the same area with our wall trees the better. Of course, the entire border, or only a portion of it, may be inclosed at the option of the cultivator. It will take a little more canvas; but those who have seen or grown most cordons will be the first to declare that it is impossible to do too much for them.



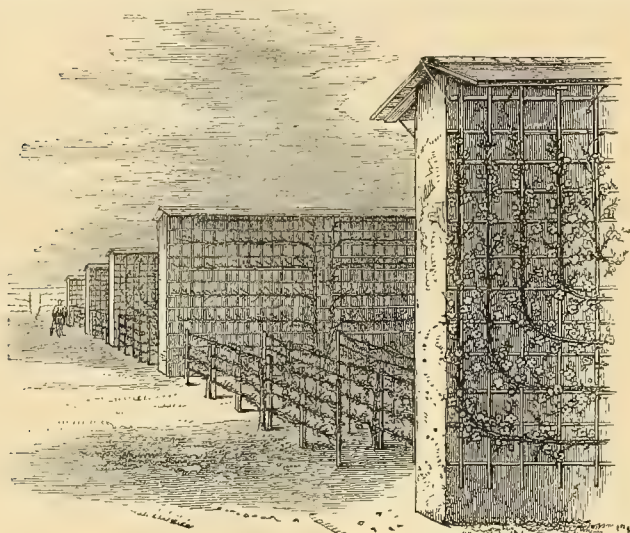
Fig. 3. Protection for Wall and Ground Cordons.



Fig. 4. Coping for Young Peach Trees.

Fig. 1 shows how our means of protection may be brought down to the stature of the trees. Wonderfully simple when seen; but I have noticed many walls with expensive protective expedients all good and proper for mature trees, but useless, because too high above their heads. These simple iron or wooden brackets can rise with the growth of the trees. Of course, as the trees cover more wall, the brackets would be made wider—a point of great importance. For although heat radiates in straight lines, yet the amount of heat returned to the trees on the face of a wall is very much as the breadth of the overhanging coping. Therefore, the higher the wall the wider the coping, if the same efficiency is wanted. In all our various expedients for protecting wall trees, it is singular that so little attention has been paid to the wall itself as a source of warmth. We build walls that our trees may

be warmer on than off them; but we place the walls as far asunder as possible, as if we feared their aggregate warmth would produce a tropical climate. They do not seem to have any such fears in France and Germany. The following is a spring view of a fruit garden in North Germany, on the model of the best of those at Montreuil. The walls run east and west, and are about thirty feet apart. The walls have thus a cumulative effect on the temperature—they give and take from each other, and thus the atmosphere of the fruit garden is sensibly ameliorated. By this "grouping of walls" much shelter may likewise be provided. Cold points and prevailing winds may be built as well as planted out, and special care ought to be taken in the formation of soils, drainage, &c. By choosing a sloping



Fruit Garden in North Germany.—Spring View.

site, or building the walls on a graduated scale from back to front, they might be placed still closer together, say at distances of ten or twelve feet; and the whole space thus be converted into fruit-tree borders. Then curtains or screens, like temporary tents, might be raised over an entire block of walls at once. Indeed, there is no reason why the cultivator should not copy a leaf out of the nurseryman's book in this matter. The latter groups his walls of brick, stone, reed, concrete, wood, or glass, close together for training and growing young trees. This crowding together is chiefly to economise space, but it likewise husbands—yes, and accumulates—warmth. Glass walls may be even placed closer to each other, as the light and heat pass freely through; peaches may likewise be grown on both sides to an equal degree of perfection, thus virtually doubling our south wall space. The accumulative effects of the reciprocal action of glass walls upon each other, and their aggregate results on local temperature, promise to be greater than that of any other walls.

From the protection of walls, we advance a step further to the sheltering of espaliers or cordons in open borders. Here is a very simple mode of doing so (Fig. 6), which is now practised in some places.



Fig. 6.

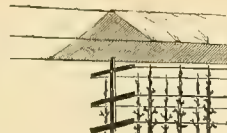


Fig. 7.

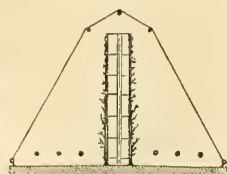


Fig. 8.

Three lines of galvanized wire are carried along the espalier; the centre one rising a foot or so above its top, and the side ones a little under or on a level with the espalier. A few posts will suffice to stretch the wire on; and the width of this triangle may be from three to five feet, according to the height of the espalier. Just before the buds of the trees break, this triangular skeleton should be covered with canvas, bunting, or even common mats. The tighter these are put on, the more rain they will pitch off. Whatever is used can readily be thrown over the wires and made fast by sewing or tying on each side. Figure 7 is a side view of this mode of protection for double lines of espaliers. This simple arrangement is well worthy the attention of every cultivator.

Of late years a sort of prejudice has set in against espaliers, and I confess I prefer nice conical fruit trees to them or any others. But still, when well-managed, espaliers are extremely effective, and may be so treated as to produce a maximum weight of fruit from the smallest area of ground.

Fig. 8 exhibits an extension of a similar mode of protection. In this case the canvas is brought down to the ground, and is made to include three cordons on either side of the double espalier of pears. Of course it would be necessary to roll up or fold back the canvas as far as the triangular roof daily. This would involve a good deal of labour; but it seems not only impolitic, but a reckless waste of capital, skill, and time, to allow the fruit crop of a year to be wrecked for lack of this careful protection of the trees for a month or six weeks in the spring. F.

PEARS AND APPLES UNDER GLASS.

I CAN assure "W." that I have had ample opportunity of comparing these fruits grown under glass with those in the open air. If, regardless of cost in culture, all the attention possible is given them, they are equal to those well done out of doors, but not superior. But it is relatively the same with these fruits under glass, as we generally find it with peaches and nectarines. Those that are under glass receive every attention, whilst those that are outside are comparatively neglected. It is possible that there may be a few kinds that might succeed better inside than out; for instance, the Newtown Pippin Apple is very poor grown in this country, compared with the same sort grown in America; and I have not seen Calville Blanche grown here equal to that kind grown in France. But these are simply the exceptions found in the cultivation of fruits in general. I maintain that the pears grown in France and the Channel Islands are not superior to those grown in this country except in appearance, not in flavour. I can assure "W." that there is nothing extraordinary in keeping up a supply of pears and apples for nine months in the year; with good culture, a judicious selection of sorts, and a well-constructed fruit-room, this can be easily done in any part of the country not absolutely unsuited to the growth of these fruits.

After a dry, warm summer, when I have always found the late-keeping pears and apples to come in much later than in wet, dull summers, I have frequently commenced in July with Citron des Carnes, and ended up in May with Ne Plus Meuris.

Anyone has a perfect right to adopt this mode of culture who feels disposed; although it entails three times the amount of cost the productions are worth. But it is opposed to the interests of horticulture to usher this or any other system before the world as possessing advantages which do not belong to it.

Southgate.

T. BAINES.

Bottling Grapes.—I am surprised to find Mr. Baines (p. 292) asserting that bottling grapes deteriorates their flavour. From a rather extensive trial of this system of preserving late grapes, I have not found this to be the case to any great extent where they were thoroughly ripened before being put into the bottles. This I have tried with Lady Downe's Seedling kept in bottles for four successive months, against some left on the vines in the same vineyard, and, if anything, the bottled grapes were the best flavoured when compared. If Mr. Baines can grow late grapes as well as he can cultivate specimen plants, when thoroughly ripe in October or November he may bottle them without any fear of their losing flavour. The great utility of bottling thick-skinned late grapes, such as Trebbiano, Royal Vineyard, Lady Downe's Seedling, and others, is to get the vines pruned and properly dressed every year in season. I used to have grapes hanging in April and May, with the vines in full leaf, and of course this soon had an injurious effect upon the vines. To test their flavour I shall send you a bunch or two of Muscat grapes that have been bottled for three months.—WILLIAM TILLERY, *Wellbeck*.

I HAVE forwarded some grapes for your opinion, my employer being anxious to know what you think of them. They have been kept in the grape-room here in bottles of water. The Muscats have been cut from the vines eighteen weeks, and the Lady Downe's Seedling have been cut sixteen weeks from the vines.—RICHARD NISBET, *Aswarby Park*.—[We have tasted your grapes, and think their flavour excellent. They have also been submitted to several of our friends, good judges of grapes, all of whom assert that better flavoured Muscats or Lady Downe's they have rarely eaten. The bunches, too, are large, the berries plump and sound, and covered with beautiful bloom.]

"NOTES AND QUERIES" repeats an excellent story concerning the Duke of Wellington and the late Mr. London. Mr. John Claudius London wrote to ask the Great Duke for leave to inspect the beeches at Strathfieldsaye. His writing was not very legible, owing to an affection of his right hand, and it will not appear surprising, therefore, that the then Bishop of London, Dr. J. C. Bloomfield, should have shortly afterwards received the following note: "My dear Lord,—I shall always be glad to see you at Strathfieldsaye; and my servant shall show you as many pairs of my beeches as you choose to inspect; but what you want to see them for is quite beyond me.—Yours, &c., WELLINGTON."

ASPECTS OF VEGETATION

TREE FERNS.

SOMETIMES the transition from cold to hot countries is marked by a total change in the character of the vegetation, sometimes by the greater development of the same or similar types. In our latitudes the ferns are lowly and humble—companions of the moss and the short delicate grass or dwarf heather; in warmer latitudes they rear tall and stout columns or stems, from which they throw off crests that rival the palms themselves in stately beauty and grandeur. Their slender trunks rise to the height of from twenty to twenty-eight feet, and from the tops spring large fronds, often eight or nine feet long, bipinnate and feathery, which, from their extraordinary delicacy, are put in tremulous motion by the gentlest wind.

The slender trunks, often quite smooth, and beautifully pitted by the marks of the insertion of the leaves, although they grow to such heights, are sometimes not more than three inches thick. They are confined to the torrid zone; and on some of the East Indian islands they grow in such numbers that their stems are as close to each other as the slender firs and pines are in unthinned plantations. Sometimes the trunks of these tree ferns attain a greater thickness, as much as two feet or more in diameter; but in such instances they are generally cased in a thick layer of roots. Wherever the tree ferns appear within the tropics, from the plain to the height of three thousand or four thousand feet, the soil and atmosphere are full of moisture—indeed, they seem to prefer wet places, and grow in them along with Musaceæ and Scitamineæ. The shrubby ferns prevail rather at the tropics than in the equatorial zone, and they are also less frequent at the foot of tropical mountains than at an elevation between two thousand and three thousand feet. Recent years have witnessed a rich accession of these tropical forms to our gardens. With the hardier palms they constitute the most valuable materials for the picturesque conservatories recently advocated in our columns.

THE KITCHEN GARDEN.

WORTHLESS NOVELTIES.

THE adulteration of seeds has often been complained of, but the needless multiplication of varieties is the greater evil. The extent to which this is carried by our seedsmen—even the most respectable of them—could only be justified by real and rapid improvement; and this, we need scarcely say, does not

occur. Indeed, some kinds of vegetables are well known to be practically the same now that they were a dozen years ago, and yet our seed houses bring out new varieties every year, and go on christening and selling at a high rate varieties which really have no uncommon merit. Who knows the difference between a slice from Messrs. A. & Co.'s cucumber Emperor of the Longs, sent out at a high price this spring, and some variety in culture for the past ten, twenty, or, it may be, hundred years? Nobody. Yet the gardening public, baited by printed descriptions and new names, are yearly buying varieties of no decided merit, and, it may be, inferior to many good and well-known kinds, for perhaps several times the price of the very best in cultivation. Seedsmen are enabled to carry on this system by the taste that everywhere prevails for novelty. Thus it is that of almost every vegetable there are new and worthless kinds sent out every year, and perhaps the same kind often sent out by different houses under distinct names, to the endless confusion and great injury of the

cultivator. Real and useful novelties are welcomed by everybody; but in the case of our best known vegetables it is rare to find any real improvement, the limits to which they can attain in any one direction seeming to have been detected and fixed in the course of hundreds of generations of their lives. What is sometimes offered as a new pea—the earliest in cultivation—is often simply an old kind under a new name, not a minute earlier than it was twenty-five years ago. The love of novelty, as we have remarked, has a deal to do with this; but it is notable that the same thing does not



Aspects of Vegetation.—Tree Ferns.

prevail on the Continent, where the love of novelty is quite as great as here. We have conversed with a large Parisian seedsman on the subject, and he regarded it as the greatest evil of the seed trade in this country. "Every one of your seedsmen," said he, "seems to think it necessary to send out a certain number of novelties every year, and we, obliged to buy them to see if they are worth adding to our lists, find as a rule that they are old and worthless kinds, and often that the same kind is sent out by several houses under distinct names." The remedy for this great evil does not seem so clear as that for adulteration. It rests chiefly with the public, who should never invest in new and very dear varieties of the seeds of well-known vegetables, unless they have certain evidence that the said kinds are better than those which they will find marked at less than half the money in the same lists. With flower seeds and seeds of new species it is different, as these, when first breaking into varieties under cultivation, often offer marked interest and value. If a code of nomenclature were fixed on by our Horticultural Society, or some similar body, and the new names and characters only given to kinds possessing real novelty and merit, much good might be done; but the immediate and best remedy remains with the public. They should, as a rule, avoid all new varieties of well-known vegetables, unless in possession of some real proof of their merit; and then they may be spared the disappointment of finding that they have secured a very ordinary or very worthless variety, at, it may be, four times its real value.

PRIZE CELERY.

ORDINARY celery growers commit no greater error in the cultivation of this excellent vegetable than that of sowing it very early and then starving the plants afterwards. As early as the end of January we have seen directions given for sowing the early crop; and the chances are that the plants so raised will be drawn up and stunted into premature old age long before the weather is sufficiently seasonable for them to be transferred to the open trenches. Then follows "bolting," and "kekky" celery, all originating in the check which the plants have received. Plants, to have them crisp and juicy, must be grown with vigour. To sow at the right time, and grow the plants afterwards without a check, is the right way to succeed. This is the secret of the Nottingham system, and in no town is celery generally so well grown. The following is the plan pursued:—About Nottingham celery is grown in almost every garden, and many of the working men grow it with an amount of success only to be attained by those who make its cultivation a hobby, and pursue that hobby with the enthusiasm of men determined to succeed. Among these the late Mr. Samuel Hooley, of Wollaton, was the most successful, so much so as to be justly considered the champion grower of the county. In 1866 he won five first prizes, competing against 129 growers; and in 1867 four first prizes, contesting the pride of place with 126 exhibitors.

CELERY, NATURAL AND CULTIVATED.

Of course, much is achieved by attentive cultivation; but even this, unless you have the proper kind to grow, will not ensure the desired results. When we look to the celery in its original state, choking the ditches in some parts of the country and forming an acrid and dangerous poison, and compare it with the long, thick, solid, and finely formed specimens, perfectly blanched and crisp as an icicle, one cannot but wonder at the ennobling influence of cultivation, and be thankful that the great Giver of all good has blessed us with faculties to convert "weeds" to such useful purposes. Few plants are more esteemed than the celery; for whether stewed or forming part of a salad, it is relished by almost every person. Poisonous when green, it possesses when blanched high medicinal qualities, and is one of the best things which persons suffering from dyspepsia can eat. One of the best kinds of celery is certainly that called Hooley's Conqueror, the kind with which the raiser himself succeeded in conquering all competitors who came against him. It is of the red section, and remarkable for its broad, thick, fleshy leaves, which are almost free from ribs or corrugations. It is the result of careful selection for some years, and at last the character has become so fixed that every plant may

be depended upon as being almost certain to come true to its kind.

PREPARATION OF THE SOIL.

In the cultivation of this plant it is indispensable that the ground be thoroughly drained to the depth of three feet at the least—if four, all the better—and that it be trenched and enriched by the addition of manure and leaf soil to the depth of two feet, mixing the manurial matter as intimately through the soil as possible. The best way to do this will be to trench and ridge the soil at the same time, performing the operation of mixing the dung as the work proceeds. This should be done as early in the autumn as convenient, and during the winter, in dry and frosty weather, the ridges should be frequently forked over so as to expose the whole of the soil as much to the enriching and ameliorating influence of the atmosphere as possible. In this way the whole mass of soil may be brought into fine workable condition. It may seem strange to want well-drained soil for this plant, which is naturally found in ditches and other damp places, but nature is not always the best indicator of the conditions most suitable for a plant in a domesticated state. In a wet soil, Celery grows rank and strong flavoured, and quickly rots when the weather is continuously wet; in a well-drained one, the rain passes speedily away and the soil remains in a healthy condition. In the spring, in March or April, the ground may be levelled down, and then trenches for the plants may be prepared. These should be taken out to the depth of twenty inches and one foot wide, and, if possible, the trenches should run from north to south, so that the sun may act upon both sides alike. Tread the bottom of the trench quite firm, and then place in it perfectly decayed, but rich, horse dung to the depth of eight inches, and that, too, must be trodden pretty firm, then return the soil, and the work is complete, and ready to receive the plants. The trenches should be four feet apart from centre to centre, and the plants must be, when planted, one foot apart. Between the trenches a couple of rows of early potatoes or a row of early peas may be taken, as these will be out of the way by the time the celery requires full exposure. The reason for placing the dung so low is that the roots may get to it, and feed upon it just at the time when the centre leaves, those that will be blanched for exhibition, are pushing up. At that time it will impart increased vigour to the plants, and the leaves will be formed with corresponding strength.

SEED SOWING, AND TREATMENT OF YOUNG PLANTS.

The time for sowing the seed to produce plants for the early autumn exhibition is early in April. At that time a slight bed of hot dung must be made, to receive a small frame, or some hand glasses, and this being covered with some good soil, the seed may be sown very thinly. Shut the frame closely down, and allow it to remain so until the young plants begin to show. Then air must be given daily, and every care must be taken to induce the plants to grow as strongly as possible, and for that purpose, where they come up too thickly, a few of the weaker ones may be drawn out, to give more room for those retained. When the plants have two or three leaves they are in a fit state to plant out in the nursery beds, which must be prepared specially to receive them. The method of preparation is this:—Tread a piece of ground tolerably firm, and upon it place about four inches thick of rotten horse-dung and leaf mould in equal proportions. Tread this firmly, and upon it place about an inch of rich fine soil. Rake this level, water it, and the following day, or as soon as it is dry, it will be fit to receive the plants. These must be put out in lines, the plants being not less than four inches apart, and each plant must be pressed firmly as it is planted. Of course, it is of the greatest importance that the plants be shaded until they recover the transplanting, that they receive copious supplies of manure water when necessary, and that they be kept free from weeds, so as to induce them to grow as robustly as possible. Plants properly cared for will be fit to be removed to the trenches in two months from the time of sowing, say the end of May.

PLANTING IN THE TRENCHES AND SUMMER TREATMENT.

Before planting, each trench must be forked over a full spit deep, and the plants must be put out a foot apart. In

removing them take care to preserve every fibre possible, and this, through the manure being trodden firm, you will be able, to a great extent, to do. Press the soil firm about the roots, water well, and shade the plants from bright sunshine until they are re-established. The summer treatment will consist in thorough cleanliness from weeds, copious watering twice or thrice a week according to the weather, and protection of the plants from being broken by rough winds. For this purpose, it may be necessary, after the plants get a foot high, to tie them loosely with matting, but be careful the ligature does not at any time get tight, so as to cut the plants. In watering, it is essentially necessary that the water be warm at the time it is used, and for this purpose it should either be exposed to the sun in a tub for a day or two before it is used, or it should be taken from a pond. Soft or rain water is the best for all garden purposes, and be careful to give sufficient each time to soak the soil the full depth of the roots. If it can pass freely away by the drainage, you can scarcely give too much water in bright sunny weather, but in dull weather so much will not be required. When the plants are six to nine inches high, weak manure water, prepared by soaking horse-dung and a handful or two of soot in a tub of water, may be given at each alternate watering, and a handful of soot scattered occasionally around the plants upon the ground will be found a valuable stimulant, and will also tend to prevent the ravages of snails and other insect pests. For prize Celery it is not customary to earth the plants much until they receive the final earthing, but a little soil may be scattered over the roots about once a fortnight. This will serve as a mulching, and will encourage the roots to spread on the surface of the soil.

EARTHING AND BLANCHING.

From five to six weeks is the time necessary to ensure the Celery becoming thoroughly blanched, and that is a very essential point in growing it for exhibition. At the time of earthing remove the small leaves from the base of the plants, and at the same time any suckers or secondary shoots that may have formed, cutting or twisting them clean out. This done, fold each plant to the height you intend to carry the soil in clean strong white paper, and tie it loosely with some thin matting, not over strong, as it is necessary it should rot and give way as the plant swells. Some people use tubes, such as drain pipes, around the plants to support the soil, but if tubes are used, the best are those made of iron, zinc, or tin, as they are better conductors than earthenware, and consequently allow the soil to become more quickly warmed or dried in wet weather; the tubes being fixed, fill up to the necessary height with fine light soil, and the work is done. Where tubes are not used the soil must be banked up in the usual manner, taking care to make the bank slope outwards and quite smooth so as to prevent the wet soaking into the centre of the plants. Water must still be copiously applied to the roots, and manure water, weak, but copious in quantity, must be freely administered—the weather, of course, being some guide as to the quantity required.

CELERY FOR EXHIBITION.

Celery about Nottingham, when prepared for show, has only the small outer leaves taken off, and it should be washed quite clean and free from dirt, and be shown in pairs neatly tied together. In addition to the properties before mentioned, viz., the leaves being broad, thick, solid, crisp, and without ridges, they should be free from stringiness and the plants dwarf, sturdy rather than thin and long, and the inner leaves should grow up regularly without speck, stain, or insect blemish. In judging Celery, any plants that are pipy, hollow, or have rotten or discoloured leaves, are at once put aside; and a deformed or run centre is a certain disqualification. The blanching must be perfect and crystal like, and it, in the red kinds, the pink colour does show, it should be of that delicate tint which indicates perfect fitness for table, though not perfect blanching. Add to these qualities fine form and weight, and you have the essentials of a perfect specimen of Celery. In conclusion, we may say the secret of Mr. Hooley's success was, like the secrets of all other successful cultivators—a vigorous plant vigorously pushed forward to its final result. He began late, by which he escaped the risk of the plants starting prematurely to seed, but he lost no time after he did

begin, and hence rarely failed to bring his plants to the head of the prize list on the show day. Of course there is much in the kind grown, but as seed of that and other good kinds is now in the market, that drawback no longer exists. W. P. AYRES.

BROCCOLI.

FIFTY years ago we had good varieties of broccoli, and grew them pretty nearly as well as we do now. We had a good early white, a good late ditto, and an early and late purple, a large brimstone variety, and a sprouting purple. Fashions have changed vastly more than horticulture since those days of knee-breeches and large buckles, when Wellington boots were unknown and Bluchers not discovered. It was about that time when, hearing a good deal of the skill and colossal operations of the London market gardeners—the acres of handlights for early cauliflowers, and the miles of celery—that I started for London, as full of hope, perhaps, as many who went on a higher enterprise. But London generally takes a good deal of the starch out of a young man, poor and without friends, and is usually overawing for awhile till he feels his feet. I remember it was very sleety and stormy in crossing Wimbledon Common, and my spirits were not improved by seeing an old gibbet there, with its chains and irons rattling in the breeze. However, I soon entered a market garden, and felt again at home among the vegetables and flowers that were growing extensively in it for Covent Garden.

At that time people thought as much of their horticultural skill and acuteness as they do now; but I suppose this is true of every generation that has existed since Adam delved and Eve span. At present it is no uncommon thing to hear unthinking though clever people speak as if we had arrived at the climax of horticultural improvement; whereas the truth is there is as much room for investigation and discovery as ever. When we look at the vast surfaces of the earth that have never yet been tickled with a hoe, and consequently never smiled with a harvest—when we think of the comparatively small number of really good fruits that we have succeeded in bringing into popular use; and when we reflect on the multitudes of species found in every clime, and that their uses and capabilities, medicinal or economical, are as yet comparatively unknown, we must own that the ground has hardly been broken yet.

I got on very well in the market gardens, and soon became the manager of the one I entered first. At that time I took every opportunity of seeing good examples of market gardening, independently of the one I was immediately interested in; and I had very little difficulty in doing this, for at that time there were gardens all the way from Pimlico to Putney Bridge, besides those on other sides of London. Ever since that day I have grown quantities of broccoli, and perhaps a few hints from my experience may be of use.

One of the first additions and improvements to the kinds already named was sent out by Messrs. Grange, who kept fruit shops in Piccadilly and Covent Garden, and who had, besides, a large market garden at Hackney. It was called Grange's early white broccoli, and had a great run of popularity, and was then lost sight of, to reappear a few years ago. Something near it in character is Snow's early white—a very useful autumn and winter kind, which I have failed to get true from seed of late years. The Malta white is still a good old early spring kind, when we get it true, and its leaves are so arranged as to act as an efficient protection to its head or heart, for the heads are always in close and perfect union in the broccoli tribe. Osborn's dwarf is a delicate and neat little kind, throwing its heart leaves so much open that, if not looked after pretty sharply, every little morning frost disfigures it.

Of all the really useful whites, the Cornish or "large spring white" is my favourite when procured true. By making three or four little sowings of it from the first week in April till the first week in June, and planting these out in succession, fine cauliflower-like broccoli may be cut from Christmas till the following May. This variety has also an advantage in having an abundance of heart leaves to protect it, and is hardy in constitution. It takes a good deal of frost to disfigure it. In fact, I begin to think that, with this and a good variety of cauliflower, we want but little else to keep a supply the whole

year round. It is most likely to be obtained true from Cornwall, as they grow it in quantities there. Of purples, the early Cape is a useful autumn kind. The cooks do not like its colour, though it is tender and of a nice flavour; neither do they like that of the old hardy purple sprouting, which is a useful kind for large consumers. I have left off the culture of most of the purples for years, managing to secure a succession of the best white kinds, which are preferred by all parties. Among other good kinds, I may name Walcheren for the early autumn cuttings, early Penzance, Snow's winter, Knight's protecting, and Somer's particular, and Sulphur and Lake's white for late spring or early summer use.

The object of the country gentleman or private cultivator, as opposed to that of the market gardener, should be a regular succession of good heads, and not a glut at any one time, which might be disposed of by the market gardener, but is often almost thrown away in private gardens. The broccoli is so hardy as to be grown with ease in all parts of the British Isles; but where exposed to the cold blasts it suffers in severe winters, and indeed we have had some winters within the past dozen years that left the broccoli plots a mass of rotten vegetation. It takes a good deal of cold to do that, however, and it even often escapes a scorching frost if a nice coat of snow has fallen previously. Some attempt to protect them by planting them very closely, and by sheltering them with boughs and harder crops, but none of these avail much if it comes to a thorough hard frost. However, as this very rarely happens in Britain, and broccoli as a rule escape, we shall say no more about protection. They are not fastidious about soil, but, like most things; they are partial to good living, and will always be found—like some bipeds—the “best-hearted fellows in the world” when their food and drink are good and in abundance.

Any ground that is cleared off during the season may be planted with them. All garden ground should be sufficiently rich, deeply cultured, and in such tilth that waterings beyond one or two after the first planting, or any other attentions except mere weeding, are unnecessary. From the way in which some talk of using liquid manure, one would think they had quite substituted it for the natural rain. To give liquid manure to broccoli is a thing I never do, nor to any such crop. Well tilled and properly manured garden ground is in no want of liquid manure, and I pity the man who has much to do with it in a tasteful garden.

The first sowing of seed should be in March, the main crop in the end of May, and a little of the Walcheren should be sown in the beginning and end of June. They are, of course, always sown out of doors, but persons wishing to secure a stock for early autumn cutting may facilitate it by sowing a pinch very early in a cold frame, quickly inuring them to the free air and pricking them out on nice warm borders. As a matter of course, the seed should be sown on warm, nicely situated borders, and thinned and pricked out as soon as large enough to handle. They should be planted carefully, using every precaution to keep the roots and leaves as free from injury as possible.

JAMES BARNES.

Two Ways of Travelling.—Going by railroad I do not consider as travelling at all; it is merely “being sent to a place, and very little different from becoming a parcel; the next step to it would of course be telegraphic transport, of which, however, I suppose it has been truly said by Octave Feuillet, “*Il y aurait des gens assez bêtes pour trouver ça amusant.*” If we walk more than ten or twelve miles, it breaks up the day too much; leaving no time for stopping at the stream sides or shady banks, or for any work at the end of the day; besides that the last few miles are apt to be done in a hurry, and may then be considered as lost ground. But if, advancing thus slowly, after some days we approach any more interesting scenery, every yard of the changeful ground becomes precious and piquant; and the continual increase of hope, and of surrounding beauty, affords one of the most exquisite enjoyments possible to the healthy mind; besides that real knowledge is acquired of whatever it is the object of travelling to learn, and a certain sublimity given to all places, so attained, by the true sense of the spaces of earth that separate them. A man who really loves travelling would as soon consent to pack a day of such happiness into an hour of railroad, as one who loved eating would agree, if it were possible, to concentrate his dinner into a pill.—*John Ruskin.*

THE FLOWER GARDEN.



ROSES AND ROSE CULTURE.

BY S. REYNOLDS HOLE.

SINCE the accounts of the first National Rose Show were printed in the year 1858, I have not seen in any weekly publication so much interesting information concerning roses as appears in the last number of *THE GARDEN*.

In the first place, it is to me, and, I doubt not, to many other fond rosarians, a very great gladness to receive from such an authority as Mr. Curtis, of Torquay, not merely the assertion, but the proof, that *Devoniensis* is an English rose. Never until now have I believed that our climate, or rather our miscellaneous collection of climates, could produce such delicate loveliness; and I would urgently exhort our growers of seedling roses and others not to confine their experiments to the hybrid perpetual section, but, remembering *Devoniensis*, to extend their attentions to the family from which she springs. Nor let them hope to evade this duty by pleading that “*Devonshire* has, of course, *the cream in her Tea.*”

In the next place, Mr. Perry's article is a very valuable one. There is not a more reliable judge of roses than he; and he will agree with me, I know, in the statement that, as a rule, the grandest of roses are grown in the budding-ground. But for a beautiful rose garden, for abundant and continuous bloom, for luxuriance of foliage, for endurance of frost—which, if they are mulched can do them no harm—for general effect, and for economy too, his plan of growing roses upon their own roots is by far the best. Vivacious and rampant as the briar is where it is not wanted, it is very shortlived in our rosaries; and it seems often to be a race, generally terminating in a very dead heat, whether the stock or the scion shall expire the first. In Mr. Perry's tasteful and successful garden, where I have seen all that he describes “a blowing and a growing” as only such rose trees can, there is no need of ambulances at every “fall” to bear away the dying and the dead.

And there is no hacking here of the poor Dog-rose, no cruel clipping of his mane and tail (as though he were a French poodle), of which Mr. Baines, at page 276, makes humorous complaint. Heartily do I rejoice to see this prince of plantsmen (some day, let us hope, we may be blessed with a Society, not a whit less Royal, but a good deal more Horticultural, than that now dominant, which will delight to honour, by an order of merit, such excellent skill as his) writing about the Rose; and much do I thank him for his welcome, practical hints as to the early treatment of cuttings. His instruction, moreover, is specially opportune, coming in conjunction with Mr. Perry's commendation of roses upon their own roots.

At the same time, I would remind the beginner that it takes three years, as Mr. Perry tells us, to make a rose bush from a cutting; and I would, therefore, advise him to buy at the nurseries. And thus we come to the subject of “Cheap Roses,” also discussed by Mr. Baines, Mr. Fish, and others, in the last number of *THE GARDEN*. My own conviction is, that, considering the expenses of the grower in rent, wages, glass, and fuel, in the cost of novelties, their uncertain merit and yet more uncertain sale, in grievous losses from drought and damp and frost, the prices charged for rose-trees are perfectly fair and just. And if, simultaneously with his purchase from the growers, the amateur plants briars at seven shillings a hundred, or Manetti stocks at five shillings, and learns the easy arts of budding and grafting, how else can he fill his garden with beauty at such a moderate outlay?

There is a simpler, shorter, cheaper method of propagating rose trees than any which I have yet seen described, which is known, I dare say, to some of your readers, and which I may shortly, if I am not anticipated, explain to all. At present, having promised to the nurseryman who revealed it to me, to keep his secret, I can only give to them who ask, What is it? an anecdote in lieu of an answer. Some years ago, one of the minor canons in the Cathedral at Salisbury asked the

prayers of the church at every service for a sick man, whom he mentioned by name. This was done daily, morning and evening, for so long a period that one of the higher dignitaries at last suggested that the name need not be repeated. On which the minor canon, who was very sensitive of interference, gave out at the next service, with an air of injured disgust, "The prayers of the church are desired for an individual whom I'm not at liberty to mention."

For a while I must endure a similar restraint with regard to the multiplication of rose trees.

CENOTHERA MARGINATA.

This plant is altogether unique amongst its congeners as regards habit and appearance. Commencing at the base, the flowers continue to issue in long succession from the axils of the leaves, and are elevated vertically over remarkably slender tubcs, fully a span in length, in a way to produce a beautiful effect. The flowers, as compared with the plant, are of great size, and pure white. The stigma is cruciform and considerably exserted. The description just given, we are quite aware, is very imperfect, and conveys a still more imperfect idea of this fine thing: As yet, so far as we are aware, this *Cenothera* is without a specific name. It comes from the State of Utah, North America, and was communicated to Dr. Moore by his friend M. Roezl, of Zurich. When we saw the plant at Glasnevin it promised to seed freely, and we hope ere long to see it widely distributed and taking a prominent position in the choice herbaceous border or cutting a figure in some phase of subtropical gardening, for which its dwarf habit and exotic appearance seem to render it eminently suitable.—*Irish Farmers' Gazette*.—[The plant at Glasnevin is the true *Cenothera marginata* (Nuttall), not of *Botanical Mag.*, t. 5818, which is *Cenothera eximia* (A. Gray). The former is much the best plant, producing flowers constantly and daily during four months of summer.]

ACANTHUSES.

THESE stout and hardy herbaceous plants are of the greatest importance in the picturesque garden or the pleasure-ground, their effect being being very good when they are well established. They thrive in almost any soil, but attain their greatest luxuriance and beauty in deep warm ones. The best uses for these species are as isolated tufts in the grass, in the mixed border, or in picturesque groups with other hardy subjects. In all cases they should be placed in positions where they are not likely to be disturbed, as their beauty is not seen until they are well established. All are easily propagated by division. Few herbaceous genera may be made more useful than this. The following are the best kinds:—

ACANTHUS LATIFOLIUS.—The leaves of this are bold and noble in outline, and the plant has a tendency, rare in some hardy things with otherwise fine qualities, to retain them till the end of the season without losing a particle of their freshness and polished verdure. We should not like to advise its being planted in the centre of a flower-bed, or in any other position where it would be disturbed; but in case it were determined to plant permanent groups of fine leaved hardy plants, then indeed it could be used with great success. Supposing we have an irregular kind of flower-garden or pleasure-ground to deal with (a common case), one of the best things to do with this *Acanthus* is to plant it in the grass, at some distance from the clumps, and perhaps near a few other things of like

character. It is better than any kind of *Acanthus* hitherto commonly cultivated, though one or two of these are fine. Give it deep good soil, and do not grudge it this attention, because, unlike tender plants, it will not give trouble again for a long time.

ACANTHUS LONGIFOLIUS.—A fine, distinct, and new specie from Dalmatia and S. Europe, three and a half feet to four feet high, distinguished from *A. mollis* (to which it is allied) by the length and narrowness of its arching leaves. They are about two and a half feet long, very numerous, of a bright green colour, growing at first erect, then inclining and forming a sheaf-like tuft, which has a very fine effect. The flowers are of a wine-red colour, becoming lighter before they fall. A specimen in the gardens of the Museum at Paris, in four years after planting, had twenty-five blooming-stems rising from the midst of a round mass of verdure nearly two and a half feet in height and width. This would be very effective on the undulating and picturesque parts of pleasure-grounds. It does not run so much at the root as *A. mollis*. It seeds more freely than the other kinds, and may be readily increased by seeds as well as by division. Its free-flowering quality makes this species peculiarly valuable, while it is as good as any for isolation or grouping.

ACANTHUS MOLLIS.—A well-known old border-plant from the south of Europe, about three feet high, with leaves nearly two feet long by one foot broad, heart-shaped in outline, and cut into angular toothed lobes. The flowers are white or lilac, the inflorescence forming a remarkable-looking spike, half the length of the stem. Well adapted for borders, isolation, margins of shrubberies, and semi-wild places, in deep ordinary soil, the richer the better. Increased by division of the roots in winter or early spring.

ACANTHUS SPINOSISSIMUS.—This is in all respects among the finest of fine hardy foliage-plants, growing to a height of three and a half feet, and bearing rosy flesh-coloured flowers in spikes of a foot or more in length. It is perfectly hardy, very free in growth, and is quite distinct from any of the other species, forming roundish masses of dark-green leaves, with rather a profusion of glistening spines, by which it is known immediately from its relatives. As a permanent object, fit to plant in a nook in the pleasure-ground or on the turf, associated with

the nobler grasses or other plants, there is nothing to surpass it. It does not often flower; and if it should throw up a spike, it will perhaps be no loss to cut it off, as its leaves are its best ornament, though the flowers too are interesting. Never at any time does it require the least attention; it will stand any exposure. It will thrive best in good and deep soil. South of Europe.

SWEET PEAS.

EVERYBODY admires Sweet Peas for their perfume as well as for their beauty, but few persons grow them so successfully as they could wish; that is, they do not keep them in healthy blooming condition throughout the season. This arises from several causes: first, the ground not being sufficiently rich or deep where they are first planted; secondly, sowing too thick, by which the plants have to battle for life; and thirdly, expecting them to grow in situations where other shrubs or trees are constantly robbing them of their proper supply of nutriment. If the Sweet Pea is to be really well grown, and continue to bloom for many months of the season, the ground or stations must be prepared just the same as you



Acanthus latifolius (after Vilmorin).

would prepare them to grow Celery—that is, excavate a trench fifteen or eighteen inches, put in six inches of rotten dung, return the soil, and sow your peas, not in a continuous row, but if a row is to be formed, in patches about a foot apart, placing from six to a dozen Peas in each patch. In this way you will get vigorous development, and, with the assistance of the dung and free watering in dry weather, a plant that can resist some of the vicissitudes to which plant life is exposed. If you wish the blooming to be continuous, you must not allow a single pea to be formed. As fast as the flowers drop, cut off the flower stems, and if, when you are gathering flowers, you cut off some of the points of the branches at the same time you will promote the blooming principle by causing the plants to break afresh and form fresh branches. The purpose and end of all plants is to produce fruit and seed, and we know among annuals, of which the Sweet Pea is one, that so soon as the seed is formed the future energy of the plant is directed to its maturation, and very few fresh flowers are produced. Prevent the formation of seed and the plant will continue for an indefinite period, sometimes for years. From this the importance of removing seed-pods so fast as they are formed should be apparent to every one. A crop of Sweet Peas sown in March and another about the middle of May should command a succession of flowers up to November. Pea sticks generally are not very sightly objects in a dressed garden, but if you procure a sufficient length of three or four inch mesh galvanized wire netting and support it at the right distance and height by neatly painted stakes you may form most efficient, neat, and durable Pea risers.

P. A. W.

MURAL GARDENING.

THERE may be seen—nigh unto the village of Ollerton, Notts, and within view of those grand old oaks of Birklands, which still remain to remind us of Bold Robin and the great Shire Wood—growing in graceful combination upon the walls of a modest little wayside home, two creepers. These are the Variegated Ivy (*Hedera foliis argenteis*) and the *Pyracantha* (*Crataegus Pyracantha*). The glowing scarlet berries of the latter contrasting beautifully with the silver foliage of the former, seem to brighten the wayfarer's journey, and to

"Cheer the ungenial day;"

and I commend this conjunction to those readers of THE GARDEN who are interested in mural gardening, and who have, horticulturally speaking, a "wall eye." Furthermore, I avail myself of this opportunity to suggest to them a still more admirable alliance for the summer months, namely, plants in alternation of Rose *Maréchal Niel* (or *Rose Gloire de Dijon*) and of Mr. Jackman's magnificent *Clematis*, which bears his name. When these hang out their banners of purple and gold upon the outer wall, the effect upon the "wall eye" just referred to is almost overpowering.

S. REYNOLDS HOLE.

PRIMULA ALTAICA.

AMONG the choicest gems of the hardy spring garden there are few that will bear comparison with the Altaian Primrose (*P. altaica*), and yet I know of few gardens where it is to be found. It was sent to me some years ago as a most interesting and desirable plant, and I have ever since cultivated it with the utmost care. It is, however, delicate in constitution, and I can seldom reckon upon keeping more than two or three robust plants. I suspect it misses the protection of the winter snows of its native home. In general appearance it very closely resembles our own *P. acaulis* (*vulgaris*), but may at once be distinguished by its narrow and more deeply-cleft petals, the reddish hue of its flower stalk, and its singularly attenuated, deeply channelled, and sharply cuspidated calyx, the basis of which is not nearly so deflexed as in *P. acaulis*. The tube of the corolla, too, rises higher above the calyx than in the last named species. The flowers, which are produced in great profusion—quite smothering the plant when it is in a healthy state—are of the most lovely soft mauve, the base sulphur, with an orange spot in the centre. It comes into bloom several weeks earlier than the common Primrose, in fact, it is the companion of the earliest Aconites, Snowdrops, and Snowflakes. It seems to come quite true from seed, but is very shy in ripening any. It ought to be one of the favoured pets of every garden, and I hope some day it may be. It cannot but be loved at first sight wherever it is seen.

The Rectory, Drayton-Beauchamp, Triug. H. HARPER CREWE.

[Along with this communication came a beautiful bloom of this charming Primrose, which is certainly one of the handsomest of the fine genus to which it belongs. In 1849 a plant of it in a pot was exhibited in beautiful condition by Mr. Darbyshire, who found it in a meadow on the Asiatic side of the Bosphorus, near the entrance to the Black Sea.]

SPRING HAS COME.

THE sunbeams, lost for half a year,
Slant through my pane the morning rays;
For dry Northwesters, cold and clear,
The East blows in its thin blue haze.

At first the snowdrop's bells are seen,
Then close against the sheltering wall
The tulip's horn of dusky green,
The pæony's dark unfolding ball.

The golden-chaliced crocus burns;
The long narcissus-blades appear;
The cone-beaked hyacinth returns,
And lights her blue-flamed chandelier.

The willow's whistling lashes, wrung
By the wild winds of gusty March,
With willow leaflets lightly strung,
Are swaying by the tufted larch.

The elms have robbed their slender spray
With full-blown flower and embryo leaf;
Wide o'er the clasping arch of day
Soars like a cloud their hoary chief.

See the proud tulip's flaunting cup,
That flames in glory for an hour—
Behold it withering—then look up—
How meek the forest-monarch's flower!

When wake the violets, Winter dies;
When sprout the elm-buds, Spring is near;
When lilacs blossom, Summer cries,
"Bud, little roses! Spring is here!"

The windows blush with fresh bouquets,
Cut with the May-dew on their lips;
The radish all its bloom displays,
Pink as Aurora's finger tips.

Oh, for one spot of living green—
One little spot where leaves can grow—
To love unblamed, to walk unseen,
To dream above, to sleep below!

—Oliver Wendell Holmes.

EARLY FLOWERS.

The following are the earliest and latest dates at which the subjoined plants have flowered during the first four months of the year, from 1850 to 1871, as observed in the Royal Botanic Gardens, Edinburgh, by Mr. James M'Nab, viz. :—

Name.	Earliest Date.	Latest Date.
<i>Adonis vernalis</i>	Feb. 18, 1851	Apr. 19, 1855
<i>Eranthis bycnalis</i>	Jan. 15, 1851	Mar. 2, 1855
<i>Hepatica triloba</i>	Jan. 14, 1858	Mar. 7, 1855
<i>Draba aizoides</i>	Mar. 4, 1863	Apr. 11, 1855
<i>Orobis verum</i>	Jan. 25, 1869	Apr. 16, 1855
<i>Nuttallia cerasiformis</i>	Feb. 7, 1869	Mar. 20, 1870
<i>Ribes sanguineum</i>	Mar. 4, 1869	Apr. 19, 1855
<i>Tussilago fragrans</i>	Jan. 18, 1863	Feb. 14, 1871
<i>Rhododendron atrovirens</i>	Jan. 2, 1851	Apr. 6, 1855
" nobleanum	Jan. 16, 1869	Apr. 13, 1855
<i>Jasminum nudiflorum</i>	Jan. 21, 1869	Mar. 18, 1870
<i>Omphalodes verna</i>	Feb. 2, 1863	Apr. 23, 1855
<i>Mandragora vernalis</i>	Mar. 2, 1869	Apr. 9, 1867
<i>Scopolia carniolica</i>	Feb. 19, 1869	Apr. 9, 1864
<i>Daphne Mezereum</i>	Jan. 2, 1851	Apr. 6, 1855
<i>Nordmannia cordifolia</i>	Jan. 21, 1869	Apr. 9, 1855
<i>Corylus Avellana</i>	Jan. 14, 1858	Mar. 21, 1855
<i>Crocus susianus</i>	Jan. 15, 1858	Mar. 8, 1853
" vernus and cors	Jan. 18, 1858	Mar. 15, 1853
<i>Sisyrinchium grandiflorum</i>	Jan. 14, 1858	Mar. 23, 1870
" album	Feb. 20, 1869	Mar. 29, 1864
<i>Galanthus nivalis</i>	Jan. 4, 1858	Mar. 2, 1855
" plicatus	Jan. 26, 1869	Mar. 4, 1870
<i>Leucojum vernum</i>	Jan. 17, 1869	Mar. 21, 1853
<i>Narcissus moschatius</i>	Mar. 16, 1869	Apr. 13, 1855
" pseudo-narcissus	Mar. 24, 1850	Apr. 20, 1855
" pumilus	Feb. 18, 1869	Apr. 2, 1855
<i>Erythronium Dens-canis</i>	Mar. 1, 1851	Apr. 11, 1855
<i>Fritularia imperialis</i>	Mar. 13, 1851	Apr. 14, 1855
<i>Muscari botryoides</i>	Feb. 17, 1858	Apr. 14, 1855
<i>Puschkinia scilloides</i>	Feb. 29, 1869	Apr. 16, 1855
<i>Scilla bifolia</i> (blue)	Jan. 30, 1866	Apr. 10, 1855
" " (red)	Mar. 10, 1863	Apr. 6, 1855
" " (white)	Feb. 21, 1869	Apr. 5, 1855
" major	Feb. 21, 1869	Mar. 25, 1870
" sibirica	Feb. 8, 1866	Apr. 21, 1855
<i>Symplocarpus fetidus</i>	Feb. 4, 1851	Mar. 20, 1855

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Alpine Plants Green in Winter.—I have recently purchased a place with a good deal of raised and rocky bank, within close view of the windows. On these I should like to establish the most interesting kinds of alpine vegetation, especially if I can obtain kinds that do not leave the ground bare in winter. My garden is near a town, but in pure air.—J. F. [The following will suit you well:—

<i>Alyssum montanum</i>	<i>Loiseleuria procumbens</i>	<i>Saxifraga umbrosa</i>
<i>A. saxatile</i>	<i>Lycopodium dendroideum</i>	<i>Sedum acre</i>
<i>Andromeda tetragona</i>	<i>Menziesia empetriformis</i>	<i>S. album</i>
<i>Arabis albidia</i>	<i>Myosotis dissitiflora</i>	<i>S. Anacamperos</i>
<i>Arenaria balearica</i>	<i>M. sylvatica</i>	<i>S. anglicum</i>
<i>Aubrietia</i> , in var.	<i>Othonna cheirifolia</i>	<i>S. Ewersii</i>
<i>Corydalis lutea</i>	<i>Phlox reptans</i>	<i>S. glaucum</i>
<i>Daphne Cneorum</i>	<i>P. subulata</i>	<i>S. monregaleense</i>
<i>Dianthus alpinus</i>	<i>Polygala Chamæbuxus</i>	<i>S. pulchellum</i>
<i>D. neglectus</i>	<i>Primula Auricula</i>	<i>S. sexangulare</i>
<i>Dryas Drummondii</i>	<i>P. integrifolia</i>	<i>Sempervivum calcarum</i>
<i>D. octopetala</i>	<i>Pyrola rotundifolia</i>	<i>S. globiferum</i>
<i>Empetrum nigrum</i>	<i>Sagina glabra</i> , var. <i>corsica</i>	<i>S. Heuffelii</i>
<i>Epigaea repens</i>	<i>Saxifraga affinis</i>	<i>S. hirtum</i>
<i>Erica carnea</i>	<i>S. Andrewsii</i>	<i>S. montanum</i>
<i>Erysimum ochroleucum</i>	<i>S. Becklandii</i>	<i>S. tectorum</i>
<i>Gaultheria procumbens</i>	<i>S. ceratophylla</i>	<i>Silene acaulis</i>
<i>Genista sagittalis</i>	<i>S. cordifolia</i>	<i>S. alpestris</i>
<i>Gentiana acaulis</i>	<i>S. cotyledon</i>	<i>S. Pumilio</i>
<i>G. verna</i>	<i>S. crassifolia</i>	<i>Soldanella alpina</i>
<i>Globularia cordifolia</i>	<i>S. Geum</i>	<i>Thymus lanuginosus</i>
<i>Helianthemum</i> , in var.	<i>S. hirta</i>	<i>Vaccinium Vitis-idaea</i>
<i>Iberis</i> , in var.	<i>S. hypnoides</i>	<i>Veronica saxatilis</i>
<i>Leptophyllum buxifolium</i>	<i>S. juniperina</i>	<i>Vinca major</i>
<i>Linnaea borealis</i>	<i>S. longifolia</i>	<i>V. minor</i>
<i>Linum arboreum</i>	<i>S. muscoides</i>	<i>Viola</i> , in var.]
<i>Lithospermum prostratum</i>	<i>S. palmata</i>	
	<i>S. Stansfieldii</i>	

Late Flowering Rhododendrons and Azaleas.—Will some of your correspondents kindly furnish me with the names and colours of a few late flowering good varieties of Rhododendron and hardy Azalea? I am desirous of planting a few first-rate varieties, and prefer late flowering sorts on account of the danger to early ones from spring frosts.—RUSTICUS.

The Winter Heliotrope.—This is very suitable for planting by the sides of walks in woods, under trees, or in clay where nothing else will grow. Where other plants of a more objectionable character grow this seems to have the power of exterminating them. It is green the greater part of the year; and at this season, when in flower, its scent is something like that of hawthorn blossom, but not so strong. It must not be introduced into dressed grounds, as it would become a troublesome weed; but by woodland walks and on roadside banks it would never be out of place.—WM. TAYLOR, *Loughcut*.

Christmas Roses.—Mr. McNab laid before a recent meeting of the Botanical Society of Edinburgh a variety of Hellebores raised from seed by Mr. G. M. Butler, nurseryman, Finnart, Greenock, being crosses between *Helleborus purpurascens* and *atro-sanguineus*. The habit of the plants, as well as the size of the flowers, approaches *H. purpurascens*, while the colour is intermediate between the two. These hybrids will prove a great acquisition, as adding to our stock of hardy winter flowering plants, now so much wanted. Mr. Butler does not give any detailed account of their parentage, but it seems evident that the seed has been taken from the *H. purpurascens* crossed with *H. atro-sanguineus*.

Cypripedium Calceolus.—Last September I became possessed of a root of this plant, the crown at that time looking as if it would immediately start. I planted it in a forty-eight-sized pot, in coarse turfy peat, kept thoroughly open by a free use of small broken crocks. Up to the present time it has not started at all, and the other day, when I removed some of the soil, to see if it was rooting, I found some of the old roots in a state of decay. I should add that it has been kept near the glass in a house, where the temperature has not been below 45° all the winter. I fear I have treated it wrongly.—S. HILLMAN, *Lower Norwood*.—[*C. Calceolus* is a perfectly hardy plant, which will grow in the open air in half shady places in any part of Britain. On the fringes of groups of shrubs, in good sand or calcareous loam, it would be likely to thrive, and also on shady banks. A few pieces of calcareous rock broken up with the soil, and also half buried round the plant, are very desirable for it.]

Plants Suitable for a Suburban Public-house.—A correspondent has written to ask an opinion as to the kind of plants most suitable for his front garden, he having recently opened a small suburban tavern. To this, a friend, to whom the query was submitted, has favoured us with the following reply:—"Tell your correspondent he must, in the first place, carefully avoid the *Tea-plant*; and after selecting some respectable plant in *porter*, he had better purchase a good *about Ale*! This he must at once make quite tight with *strong Bass*. Should his neighbours make fun of this plant, and call it a *Rose shrub*, he had better remove it, and plant in its stead a *Bottle-well-lins*. This, indeed, has some advantages over the former, for its smell is truly *luch-lous*. It however, requires constant *scrubbing*. For the border, he might have *Gin-tian* and *Clones*; these will be found far preferable to either *Adonis-vivor* *Mug-wort*. Should the boys prove troublesome, and pull up his flowers, he cannot do better than plant a few *wild pecker-goniums* in the neighbourhood. Our friend "*hops*" this will quite meet the views of the tavern-keeper.—W. G. S.

PUBLIC GARDENS.

THE MANAGEMENT OF OUR PARKS AND PUBLIC GARDENS.

THOSE interested in selecting trees for planting in positions liable to much smoke could scarcely do better now than stroll into Hyde Park or any other of our London parks and gardens, and observe the aspect of the evergreens as compared with that of the deciduous trees. But nowhere may the ruin be seen more plainly than along the drive in Hyde Park, where it is quite painful to see the filthy and dying objects that were once beautiful and glistening young evergreen conifers. It was simply folly to plant these in this position; as anybody who studies the fate of trees in London could have foretold that they had about as much chance of thriving as if planted in the fire. The whole thing is disgraceful to us as a nation of gardeners; and the worst of it is we do not know who to blame for it. It was done long before Mr. Gibson, than whom no man is more fitted to do justice to the position, was placed in charge of Hyde Park. But even if this were not the case, we could not, if report be correct, blame the superintendent. We understand that our great parks and gardens are not ruled by their appointed guardians, but from the central office. It appears that the functionaries here, not content with selecting the best man they can find for each park or garden, not content with the many important duties which of right belong to them, go further, and are good enough to inform the various able and intelligent superintendents of our public gardens where they are to place their pelargoniums, and, generally, how they are to arrange the details of their charge!

We have reason to believe that this system, so intolerable and unjust to the superintendents of our gardens and parks, and so fraught with evil to the gardens themselves, is applied to the Royal gardens at Kew as well as to the parks. We know of a case in which a superintendent of a park was desirous of getting rid of a peculiarly objectionable feature in one of our most popular parks, and reported accordingly; but orders came not to interfere with it. We assure the reader that nothing in a tea-garden could have been in worse taste, but the answer from Whitehall Place was, "Let it remain!" On the other hand, orders, from which there is no appeal, are given for the execution of the most unwise changes in our gardens. If a mere question of taste were involved in this, we should not have anything to say. Let the reader look at one of the consequences of the system we point out—the hideous "rockwork" at the eastern end of the Serpentine, and he will see at once that it means in at least one case a costly monstrosity in the vilest taste.

Not long ago the site of this was an ordinary steep bank shaded by trees, with an objectionable and watery hollow at its base. It was resolved to improve it by covering it with an extensive "rockwork." It is difficult to give an idea of what this is like, but numbers of our readers may have an opportunity of seeing it for themselves. Suppose a cottager, in some part of the country where cottagers display grotesque taste in their usually pretty little gardens, to be owner of a few barrowfuls of the rubbish of burnt bricks, clinkers, &c., and to make of these and a little mortar a flat shapeless mass on the ground, with a hole in the middle to act as a sort of vase. Suppose the whole surface of the large bank in the park to be covered with a gigantic and hideous plaster of this kind, and a roundish hole here and there left to be filled with earth for the reception of plants, and the reader who has not an opportunity of seeing this scene will have some idea of what it is. We should hesitate to describe it were it not under the eye of everybody, as people might naturally conceive it incredible that such a course should be pursued in a public park on which vast sums of money are spent.

The "rockwork" once made, then came the planting; and in this, if possible, a greater blunder was committed. Probably the wretched effect of the great bank of plaster and brickyard rubbish became too evident, and it was resolved to hide it by thick planting; but, in any case, the whole surface is covered with evergreen and often rare shrubs as thickly as the floor of a nurseryman's waggon on its way to the railway

station with a load of specimens. In many cases they are denser than this, and if the reader walks round the fringes of the bank, he will see as many as half-a-dozen choice little shrubs stuck in, and struggling for existence, in one hole, or rather he will see the sickly remnants of them, for of course they gradually perish under such treatment. Delicate and pretty little alpine shrubs, like *Daphne Cneorum*, that always require a little space to spread out and be seen, may be here observed bearing their last few leaves, extinguished under some coarse shrubs; and this in many cases. In one miserable hole here, only large enough to develop a house-leek, or some rock plant with an iron constitution, we observed the following plants:—a *Retinospora*, two kinds of *Rhododendron*, an Ivy, a *Genista*, a *Daphne Cneorum*, and a small Cedar.

The whole was done at first just as if it were merely arranged for the sake of its effect for a single evening. It resembled a vast toy garden, planted by children innocent of any notion that the shrubs would grow. Of the judgment used in selecting the subjects, some idea may be formed when it is stated that numbers of plants of the New Zealand Flax were crammed in among the shrubs on the low mounds. But the prime beauty of the planting here has yet to be described. Here and there on the surface of this wonderful "rockwork" may be observed a clinker and cement vase sticking up a couple of feet above its neighbours, and less than two feet in diameter, probably designed to act as the "last great evidences of mountain beauty"; or, say, to afford something of the effect the Lombardy Poplar affords among low-headed trees. What is planted in these pockets elevated in a thin wall of cemented rubbish? A creeper to fall over the sides, or a *Yucca*? No; each contains what was once a promising specimen of one of the noblest and hardiest conifers known—the well-known and much-admired *Picea Pinsapo* of Spain, and which forms such imposing forests on the higher and northern parts of the Sierra Nevada. M. Bossier, who discovered this fine tree, which has already formed large specimens both near London and Paris, would indeed be astonished to see it in this position, as would every lover and planter of conifers throughout these islands. In addition to being planted as described, they are placed right under large trees, so that they are in dense shade in summer.

We are, in simple pursuance of our duties, obliged to call attention to eyesores in our public parks; but so long as the system we have alluded to exists, it would be most unfair to blame the superintendents of the gardens or parks, who are not guilty of perpetuating such absurdities as we allude to, and who are powerless to remove them.

The question we now bring up, let no man suppose to be a trifling matter. Let anybody, with a knowledge of trees or general gardening, walk round the "rockwork" alluded to at the end of the Serpentine, and look closely into its structure and planting, noting also the *Piceas* dying in the ridiculous vases just named, and he can only come to one conclusion—that the whole thing is a standing insult to the intelligence of our gardeners and garden architects. We shall continue, then, to point out blemishes of this kind, assuming that the superintendents of our gardens are not responsible for them—at least till we learn that their hands are loosened.

The Cow Tree.—On the parched side of a rock on the mountains of Venezuela grows a tree with dry and leathery foliage, its large woody roots scarcely penetrating into the ground. For several months in the year its leaves are not moistened by a shower; its branches look as if they were dead and withered; but when the trunk is bored, a bland and nourishing milk flows from it. It is at sunrise that the vegetable fountain flows most freely. At that time the natives are seen coming from all parts, provided with large bowls to receive the milk, which grows yellow and thickens at its surface. Some empty their vessels on the spot, while others carry them to their children.—*Humboldt*.

A NOBLE NATIONAL PARK.

THE YOSEMITE VALLEY.



IN order to form some idea of the noble national park about to be described, let us imagine a noble chain of giant mountains, with towering peaks for months white with snow, with flanks clothed in gigantic forests and riven with chasms, down which streams are precipitated from vast heights into park-like valleys, forming cascades of astonishing beauty and grandeur, and again dashing onward in "arrowy" torrents through the valley. Let it be imagined further that a region has been discovered, in which the grandest features of alpine scenery are concentrated within comparatively limited space around a valley of surpassing beauty, and then some idea may be formed of the territory which the State Government of California has declared a national park, to be preserved in all its original magnificence as a pleasure ground of the American people for ever.

It is in acts of this kind that the far-seeing sagacity of American rule is exhibited under its most favourable aspect, and in a way that makes its shortcomings in many other directions seem small failings in comparison with its grand sympathies for the well-being of its rapidly increasing millions. In many of the States of the great Federation, stretches of noble scenery have been secured for public parks by timely foresight, before the disfiguring hand of man could settle his tall black chimneys and his noisy workshops like unsightly blotches on the fair face of beautiful nature. Some of the noble parks thus secured have been briefly described in the pages of *THE GARDEN*; but those alluded to, though containing grand natural features of rock, of river, of remnants of natural forest, cannot for a moment be compared with the Yosemite Valley, which was proclaimed a people's park in 1865-66.

The Yosemite Valley became known to Europeans for the first time in the year 1850. During the whole time of the Spanish occupation of the country and that of the Americans, till that date the extraordinary beauty of that magnificent recess among the great mountains of the Sierra were utterly unknown except to the Red Indian. In the year 1851, a small mining population of Whites, living on the streams which head round the vicinity of the Yosemite land, found themselves unable to live in peace with the scattered Indians of the region, and a war ensued, in the course of which it was ascertained that the Indians had a secret stronghold high up among the mountains, into which they disappeared whenever they found themselves completely overmatched. In 1851 an expedition was organized to discover this retreat if possible, and drive the Indians from their fastness, which was effected through the treachery of a chief named Tenaya, who led the Whites by the secret tracks of his tribe into the Yosemite Valley. The Indians were terribly disheartened by this betrayal of their retreat, and, after a feeble resistance, made peace, and retired far into the Nevada, leaving the beautiful valley in the undisputed possession of the white man; the Indians who remained being finally expelled after a quarrel in 1852. It was ascertained that in this favourite retreat of the Indians they had a special name for every meadow, every stream, every cliff, and every waterfall in the valley, some of which were picturesquely descriptive, as are so often their own personal names. The waterfall, now known as the Bridal Veil, they called "Po'hono," meaning a blast of wind, and expressive of waving motion imparted by the wind to the slender stream in its fall of nearly a thousand feet. The beautiful cascade now known as the Vernal Fall, they called "Peiuayac," or white water, which is, in fact, but a shower of snowy spray. These are, however, already superseded by English names, many of which, if not always appropriate, are not without their poetry, and will serve to perpetuate the enthusiastic feelings of admiration with which Europeans first beheld the wondrous scenery of this unrivalled alpine valley. That such a spot should have remained undiscovered till within the last twenty-five years appears somewhat extraordinary.

Approaching this "State Park" from the Mariposa side,



Picea Pinsapo, as planted at the end of the Serpentine (from a sketch in the *Field*).



SCENE IN A NOBLE NATIONAL PARK.—THE YOSEMITE VALLEY.

near which station was discovered the grove of Giant Wellingtonias, which has also been declared national property, the visitor arrives at an opening in a great ledge of rock, about seven thousand feet above the sea level, from which the first view into the valley is obtained. It has been named "Inspiration Point." The entire valley is about six miles in length, and from half a mile to a mile in breadth, and sunk almost a mile (perpendicular) below the general level of the adjacent region. It may be roughly likened, as has been said by an American describer, to "a gigantic trough, hollowed out in the mountains nearly at right angles to their regular bend. The vast chasm is, however, of extremely irregular form, being characterised by prominently jutting angles and deep recesses; its stupendous walls, which are, on an average, above two thousand feet high, being as nearly perpendicular as can be well conceived in alpine scenery—one deep sheer cut down, productive of the most startling effect when seen for the first time. Its detached features are so remarkable, that any one of its great domes of granite—any one of its great waterfalls—would be sufficient in Europe to attract travellers from all parts.

From Inspiration Point to the bottom of the valley is a deep descent of nearly three thousand feet. The more striking features which first present themselves are, on the left, the enormous rock called "El Capitano," which one cannot help thinking may have been so named by one of those Spanish friars who are known to have penetrated far into the mountains in their missionary pursuits. At all events, the name is an appropriate one. It is, indeed, the Captain rock, standing at the head of all its giant congeners—the true *hetman*, as a Cossack might say, of the granite giants that wall in the valley.

Another great rock, with rounded and polished crest, which seems to have been half cut away from base to summit, is conspicuously visible over the Sentinel Rock, and is known as the "Half Dome." Opposite El Capitano is the gracefully-beautiful waterfall known as the Bridal Veil, which precipitates itself, in its first clear leap, to a depth of 630 feet, when it strikes on a projecting ledge, and makes another plunge of 300 feet, the total height being over 900 feet. As seen at a distance, it seems sometimes to flutter like a white lace veil, producing an indescribably beautiful and peculiar effect, from which it has received its poetical name.

On the other side of the valley is a cascade nearly, if not quite, as beautiful, which has received the name of "Virgin's Tears," which again suggests the visit of some pious Spanish friar, as the modern mining population of Anglo-Americans would be hardly likely to have conferred a name founded upon Roman Catholic legends. This fall makes a clear descent of more than a thousand feet into a deep recess of rocks; and in the spring, when the supply of water is abundant, forms an exquisitely beautiful object. Yet this cascade, very superior to the celebrated Staubbach of the Swiss Valley of Lauterbrunnen, is hardly spoken of as remarkable among the marvellous beauties of the Yosemite Valley. The towering group of rocks called the Cathedral, from their turreted aspect, rise 2,660 feet above the base of the valley, and yet are far less lofty, less massive, and less impressive, than El Capitano.

The next object that attracts attention is a detached rock call the Obelisk, or Sentinel Rock, from the foot of which the first glimpse is obtained of the grandest of all the grand features of this marvellous valley, the Yosemite Fall itself, which, taking into consideration its height and its surroundings, may, perhaps, be considered the grandest and most picturesque cascade in the world—so many elements of beauty and grandeur are combined in this grand fall and its accessories. Its vertical height, it is assumed, surpasses that of any known waterfall in the world. In the central depths of the Himalayas or Andes there may lurk concealed some miraculously-formed valley, whose features, both in rock and water, may surpass those of the Yosemite, but such regions have not yet been discovered; therefore, the Yosemite Fall, of its kind, remains at present supreme. In the spring, when the snows first begin to melt, the volume of water of the Yosemite Fall is very great. At its average, the breadth of the stream which falls over the lofty granite ledge is about twenty feet; but, in the early spring the supply of water is nearly treble what it becomes at a late period. The first vertical descent of

this cascade exceeds 1,500 feet. From the ledge on which it then strikes, it makes a further descent of 600 feet in a series of plunging falls, and then takes a final leap of 400 feet on to a talus of low rock at the base of the precipice. As the various portions of the fall are upon one vertical plane, the effect is fully as grand, and even more picturesque than it would be if the descent were made in a single leap from the summit to the bottom of the valley, a depth of 2,500 feet! The descending mass of water is too great to allow of its being broken up into spray; nevertheless, it widens considerably in the course of the descent, and at the base, at high-water time, its general width is not much less than 300 feet. At a moderate state of water supply, it has been estimated the quantity projected over the summit is at the rate of 220 cubic feet per second.

One of the principal characteristics of the Yosemite Valley is the close concentration of so many magnificent features, the great fall, for instance, being only distant in a straight line from the Sentinel Dome two and a half miles, and the extraordinary clearness of the atmosphere makes it appear less than half that distance. In springtime, and at the period of full moon, the scenery of this valley is perfectly magical, and no description—not even that of a Byron, if such a genius were again available—could ever approach in words, the glorious majesty of the scene. We know well how he could paint alpine scenery by what he said when he makes Manfred exclaim, as he issues from his mountain laboratory at night, and paints the Alps by moonlight,—

"The stars are forth, the moon above the tops
Of the snow-shining mountains.—Beautiful!"

And, again, in words that might apply to the rent rocks and tumbling waters of the Yosemite Vale, lit by the moon,—

"And thou didst shine, thou rolling moon, upon
All this, and cast a wide and tender light,
Which softened down the hoar austerity
Of rugged desolation."

But even touches like these of an inspired pen would paint but vaguely the marvellous and endless details of exquisite beauty, which shines out in the soft spectral light of the Californian moon, in early springtime.

A remarkable cliff beyond the Yosemite Falls rises to the height of 3,030 feet above the level of the valley, and a little further on an Indian canyon may be ascended by good climbers, from which a magnificent view of the whole region may be obtained. Many more such features, combined with the aspect of the waters of the Merced, which run through the valley, and the beauty of the Californian flowers that cluster about the roots of the noble detached trees, and carpet, in the season, the open spaces in the denser woods and the alpine meadows during spring and summer, render this region of concentrated natural beauty and grandeur, one of the most remarkable spots on earth. What a chance America has of making its vast inheritance the noblest and most attractive in the world! Scenes of matchless magnificence lie spread out before her, unencumbered by any of the claims of private property, and that can by a stroke of the official pen, be made public property for the enjoyment of all, as a common possession. In our thickly populated country there is no longer a chance of securing such national privileges without an entire remanipulation of our land system. There was once a time—only then public parks were not dreamt of—when we might have enclosed many a noble piece of land, which might have formed natural parks of great beauty.

But the times for doing so are long past with us, and it is only by struggles with already established "rights" that we can now receive a few shreds of land, here and there, for popular purposes. The remaining scrap of Hampstead Heath had to be purchased from the Lord of the Manor with a large sum of money taken from the taxation of the whole people. The remnant of our once grand Essex forest has to be fought for foot by foot, or dearly paid for. The claim for a little extension of Victoria Park, in order to afford a little more breathing space for the dense population of eastern London, is deemed an unwarrantable demand by our tight-handed Chancellor of the Exchequer; and, in short, the time is past with us for doing that which the State Legislature of California has effected with such far-seeing wisdom. NOEL HUMPHREYS.

THE BOTANIC GARDEN AT GLASNEVIN.

(FROM DR. MOORE'S REPORT).

In the Palm-house, two of the large palmas have flowered and perfected their seeds, from which young crops have been raised. One, *Seaforthia elegans*, a feather-leaved species, native of Australia, is now nearly forty feet high; the other, *Latania borbonica*, a fan-leaved kind, from the Isle de Bourbon, has attained nearly the same height as the former. In one of the other warm conservatories the Mango tree, *Mangifera indica*, bore ripe fruit last year. The chocolate tree, *Theobroma cacao*, is also fruiting again. The filmy ferns are growing well in the house lately erected for their culture. The different species of *Trichomanes* and *Hymenophyllums* seem quite at home in it, and have been much admired by many of the visitors who have seen them. The fine collection of tree ferns which is now in this garden continues to make progress; but it is difficult to make an atmosphere exactly suitable for them in ordinary conservatories where they are associated with other kinds of plants. Additions of considerable interest have been made to all the departments in the garden, in the way of plants, which have been obtained partly by purchase, but mostly by exchange. The journey I made to the principal botanical establishments in Belgium, Switzerland, and Germany, during the month of July last, enabled me to make selections from them of such plants as were much required at Glasnevin, and to supply in return those selected by the directors of botanical gardens, &c., from our lists. By no other means can a good botanical collection be properly maintained, where it is necessary to grow many kinds of plants not to be found in commerce. The gardens have been much frequented during the past session by the professors of botany and their students, belonging to several of the medical schools in Dublin, for the purpose of teaching and studying from the arranged plants. Notwithstanding the unusually wet summer of last year, a very large number of persons have visited the garden, on both week-days and Sundays. The books show that the Sunday visitors, during the year, amount to 170,170; on week-days, 51,889. Total, 225,059.

Public Park.—On Tuesday, February 6th, the Warrington Town Council passed a resolution, authorizing the purchase, by the town, of Bank Hall and its beautiful grounds for the sum of £50,000, for the purpose of forming a public park. The mansion is to undergo certain alterations and additions, which will fit it for a town hall, to which will be attached suitable handsome buildings for a police station and a fire-engine station. While we find so much difficulty in raising £24,000 to secure a small extension of Victoria Park for the vast population of East London, we are fairly put to shame by the spirit displayed by this provincial town. The cases are not precisely analogous, a park for the population of Warrington being, comparatively speaking, a luxury, and, therefore, more properly to be paid for by themselves. But, had not the means been forthcoming, as they evidently are, it would have been incumbent upon the Government to come to the aid of Warrington, in a case where the health and wholesome recreation of the people are concerned.

Meetings in the Parks.—Mr. Ayrton's Bill for the regulation of the Royal Parks and Gardens contains the following among the eighteen regulations to be enacted by the Bill:—"No person shall deliver, or invite any person to deliver, any public address in a park except in accordance with the rules of the park." The rules (except as to any matter within the jurisdiction of the Ranger) are to be made by the Commissioners of her Majesty's Works and Public Buildings. The Bill applies to Hyde Park, the Green Park, Kensington Gardens, St. James's, Regent's, Victoria, Kennington, Greenwich, Battersea, and Bushy parks, Richmond Park and Green, Hampton Court Park and Green, Kew Gardens, Chelsea Gardens, Parliament Square Gardens, Primrose Hill, Holyrood Park, and Linlithgow Park.

Proposed New Market near Leicester Square.—The company which has been formed for the erection of a new market close to Leicester Square, near Coventry Street, include in their plans a proposal to build on a portion of the square, dividing it into wide and spacious streets, leaving about half the area of the square open and still unbuild upon. It is suggested that the site and the property in the locality will be enhanced in value by the opening of a fruit and vegetable market on the side of Coventry Street, with two entrances from the last-named street, and platforms underneath, connected with the new railway which is about to be constructed, so as to unite the Euston with the Charing Cross and Waterloo stations. All the requisite plans in connection with the company's proposed works have been deposited with Parliament.

Hardening Asphalt Covering.—Nothing can be done till summer; then, on a hot day, give a coat of coal tar; this will dry in a few days; then boil pitch, tar, and tallow together. Take it by rule of thumb—say, one of tallow and three of pitch to four of tar; put this on on a hot day, and, if properly done, roofs or paths will require no further care for years; ten feet square may be tarred with a sweeping-brush in ten minutes.—*English Mechanics.*

A WINTER GARDEN FOR LONDON.

WHAT resources have the people in the way of enjoyment during spring and summer? Let the myriads that throng our public parks and gardens answer. The human frame, pent up in close workshops or rooms for many days together, sighs eagerly for a glimpse of nature, a breath of fresh air, the odours of sweet flowers, the enjoyment of the beautiful, even though to be had only in a London park. To rich and poor alike, our Hyde, Victoria, and Battersea parks, or our Kew and Hampton Court gardens, are glorious institutions, of which, while the sun shines warmly, one never tires. The noble umbrageous trees, the green velvetsward, the orange or scarlet tufted shrubs, and, not least, the beautiful flowers, with the many and varied tints of foliage, planted out in quaint and captivating forms, all combine to allure and attract the attention of all classes. We are proud of our parks, and justly, but these are but fair weather sights; and, when winter comes, where can the poor Londoner enjoy his holiday? My earnest wish, therefore, is that either the Government or private capitalists would establish within our midst a veritable winter garden. But what sort of a garden is practicable? We want our winter garden to be vast in its proportions. Nothing but a large area, enclosed and covered by iron and glass, will suffice. The kind of building in which such a garden should exist must not be a temple dedicated to Flora—a thing to look at only. It is not in height but in breadth that we shall find our hopes realised—a building that shall hold within its bounds the simplest flower or the choicest plant as easily as they can now be cultivated within the bounds of the humblest glass structure our gardens afford is what we want.

Our winter garden ought to be placed in some sheltered spot in a deep crescent of trees and shrubs, which should shield it from the north and east winds, whilst its entire area should be encircled with shrubs and borders. The glass erection should be strong, and consist of a series of half-circular roofs, supported upon neat iron columns, plenty of ventilation being provided, as well as wide and roomy gutters, so as to enable snow and dirt to be cleaned off with facility. Within we would have, at least, one small portion divided by a glass partition from the remainder, and which should be devoted to the cultivation of plants and flowers that need heat to have them in perfection. In the larger area, however, there should only be maintained a moderate degree of heat, so that, with proper cultivation, the humble primrose and the violet should blossom as favourably in the vast structure as on the banks of our fields and meadows. We want neither shelves nor stages, but artistically arranged banks, beds, and borders, all margined with Lycopods, succulents, ornamental grasses, and any kinds of vegetation that will thrive well under glass. All through these beds and borders must be planted masses of Camellias, Azaleas, Cytisus, Coronillas, and all kinds of winter-flowering plants, whilst half hardy ferns, palms, &c., shall tower up and display their splendid forms to the gaze of admiring multitudes. As far as possible, the groundwork of these beds must be covered with all kinds of plants that experience has shown to be useful for winter decoration, not even the humblest hedge flower being forgotten. Running like a network all over the wide area should be broad, smooth gravel or asphalt pathways, over which thousands might wander without discomfort, and be delighted with the charms that so beautiful a spectacle would present. Seats in all kinds of recesses, and at all commanding spots, should be abundantly provided, and nothing should be wanting to make our winter garden the most beautiful, enjoyable, and captivating place of resort that the metropolis could boast through the dull, dead days of winter.

Then we must have miniature waterfalls on rockwork; and, in order that the flowing streams should be at a proper temperature, we would have them previously to entrance subjected to the action of powerful jets of steam, and thus not a little would be accomplished towards the maintenance of an agreeable temperature. Such a winter garden would be a boon to us.

Perhaps much of what I have advised is incapable of realisation, but at least the conception will bear consideration. One thing is certain: our winter garden must be within reach of the people, and not placed eight or nine miles away, making the cost of travelling greater than the cost of admission. Great as have hitherto been our horticultural enterprises, a good winter garden will exceed them all.

A. D.

New Mode of "Watering" Streets. Some days since, at a meeting of the Paddington Vestry, at which tender were received for watering, slopping, &c., it was resolved by a large majority to accept Mr. Cooper's tender for "watering" the parish with his patent salts for the ensuing twelve months. We presume these are something of the nature of the deliquescent salts tried in Paris.

GREAT GARDENS OF EUROPE.

VERSAILLES.

THE GARDENS OF THE LITTLE TRIANON.

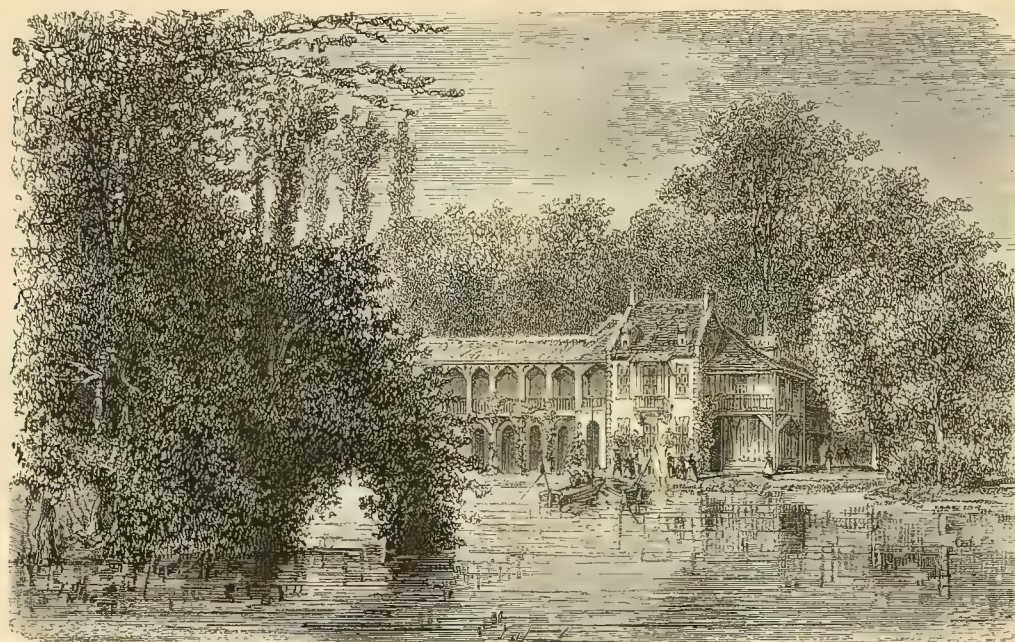
BY NOEL HUMPHREYS.

The gardens of the Little Trianon never fail to produce an agreeable impression upon the visitor after the grand formalities of the great gardens of the palace. Their comparative simplicity and the refreshing irregularity of the walks and plantations, in professed imitation of nature, are undoubtedly a source of relief to the explorer who has undergone the fatigues of the endless rectangular walks oppressed with the legions of statues, urns, and fountains of the great gardens. Nevertheless, the comparative naturalness of these pretty grounds is not above criticism. The Marquis de Girardin, when he purchased the celebrated domain of Ermenonville in 1763, proceeded to embellish it after his own carefully cultivated taste in the matter of landscape gardening; upon which subject he published a treatise, the title of which may

clear lake in which they are reflected, and turn his attention to the finely-grown trees, many of which first flourished in Europe in the soil of the Trianon, he cannot but feel that the pretty *jardin paysage* is a very pleasant place. Even the somewhat over-classical Temple of Love is so prettily situated on the picturesque island, that one is inclined to give in even to the pretence of its name, and Bouchardon's elegant statuette of Cupid, cutting his bow out of the club of Hercules, is such a graceful fancy, that the imagination is led away captive, and, not troubling itself about shams, is simply delighted with the pretty effect of the little edifice reflected in the lake.

Even the imitation "Swiss Village," fails to offend, and the "natural" arch of foliage at the side of the lakelet, one base of which terminates in the water, is so tastefully and naturally managed that criticism is so fairly led away by it, that the trickiness of the thing evades notice.

There is one feature in the gardens of the Little Trianon—a little building overgrown with ivy and deeply embosomed among noble trees—which is so truly picturesque and attractive that it matters little whether it be a reality or a sham, for it is



Scene in the Gardens of the Little Trianon.

be thus translated, "On the Composition of Landscapes, and the Means of Embellishing Nature." He hastened to put in practice at Ermenonville the theories enunciated in his work; and the result of his labours has been thus described by a clever though somewhat cynical critic:—"This is certainly a return in the direction of nature; but accompanied by the unfortunate determination to ornament it by the introduction of sham ruins, imitation cottages, pretended temples, false tombs, and other devices of a similar class, such as verses inscribed on rocks, or half-obliterated inscriptions on fallen fragments of stone; it being expected that a wanderer among those serpentine paths should feel a vivid pleasure in the deciphering of some sublime phrase half overgrown with moss on the face of a rock, or to fall into a pleasing reverie in the contemplation of the fallen stones of the sham ruin." Absolutely similar remarks might be made on the planning and decorations of the gardens of the Petit Trianon, which have also their sham seignorial castle, their sham *chaumières*, their imitation mill, and their utterly idle, yet very pretty mill stream. But if the visitor will only shut up his cynical criticism, and admire the green slopes and the

undoubtedly a very charming object; so charming, that few will care to be told that it was originally built as a *real* dairy, which it now only pretends to be, as it is no longer used for that purpose.

In summing up the general merits of the great park and gardens of Versailles, it must be admitted that as a grand geometric garden, supposed to be in accordance with the architecture of the palace, it is the most sumptuous example of its kind that regal expenditure and the labour and genius of a host of great artists ever produced, or that is ever likely to be produced—at any rate in Europe. In such a system of gardening, the beauty of flowers, the contrasts of various kinds of foliage, the grandly contrasted natural forms of trees, and the irregularly and picturesquely sledged edges of sparkling water, perform no part, or, at all events, a very minor part. And therefore, this system of palatial gardening must be judged, to a great extent, according to the principles, good or bad, upon which it is based. We must at the same time concede to the little landscape garden of the Trianon the merit of being sufficiently charming to prevent the most cynical critic from objecting to it.

THE INDOOR GARDEN.

SAND AN UNSUSPECTED PLANT-KILLER.

ALL is not gold that glitters, we know; and it is equally true, though not so well known, that all is not sand that looks to be so. I have even found in some so-called silver-sands a large percentage of lime. It looked white and sparkling, but tested with water it made a milk-like infusion. Many such sands contain lime enough to kill whole colonies of heaths or other choice plants. And as to coloured sands, they are still more impure; and the more colour, as a rule, the greater the impurity; for the colour is the stain left by some earth or iron that is certain to be injurious to plants. Reigate silver-sand is the best. The partiality of cultivators for this is well known to dealers in sand; consequently, they all profess to come from Reigate, though many of them get their supplies much nearer where they live. I have even had white sand from the seashore offered for pure Reigate.

The purification of sand for the potting of choice plants is a branch of gardening that has been much neglected. Great care has been exercised in the selection of peats and the choice of loams, and their qualities have been, and are, tested in various ways; but sands have received far less attention; and yet the best sweetened loam and peat may speedily be converted into plant poison by means of impure sands. The best sand I ever had was pounded down from white free or sand stone. A good portion of it was used in a roughish state, and the roots of Heaths, Epacrises, Azaleas, &c., clung to these as if they were pearls of great price to them; and the fine sand seemed almost equally esteemed. For the potting of choicer plants, all sands should be passed through fire and water first. The first burns out any organic impurities, and the latter washes out fine earthy matter. Some portions of sand may even be too fine for our purpose, and their minute particles can be washed out. Sand is used chiefly for mechanical reasons; it haulks, if I may so express it, the cohesive power of soils, and hinders them from running too closely together. Hence, the grittier it is, in reason, the better. For soft-wooded plants and common purposes, I prefer road to pit sand. Both ought to be washed; and when this is done, the reason of the preference will appear. Take the same quantity of each to start with, and at the end of the washing we will find generally as much again of the road as the pit sand left. Of course the latter varies immensely in quality, and occasionally pits of pretty pure coloured sand are found. But very often pit sands contain fifty or more per cent. of coloured earths, soft, fine, useless, and it may be highly injurious.

Sand might readily be burnt in our boiler furnaces in small portable retorts; and were its purification, either by fire or water, more general, we should hear fewer complaints of sour soils that the roots refused to feed upon, and of sudden and apparently unaccountable deaths among choice plants.

D. T. FISH.

AN OLD PLANT OF THE DWARF FAN PALM.

THIS is usually seen in such a dwarf condition that few of us would suspect it to attain such stature as that represented by the specimen now figured. It grows, and has long grown, in the Garden of Plants at Paris, where it and a companion plant are placed every year in the open air. This Palm, valuable in all stages, is particularly

so for narrow corridors, glass-covered passages, &c., where a tall, graceful, and tropical type of vegetation is required, and where there is no room for wide-spreading forms.

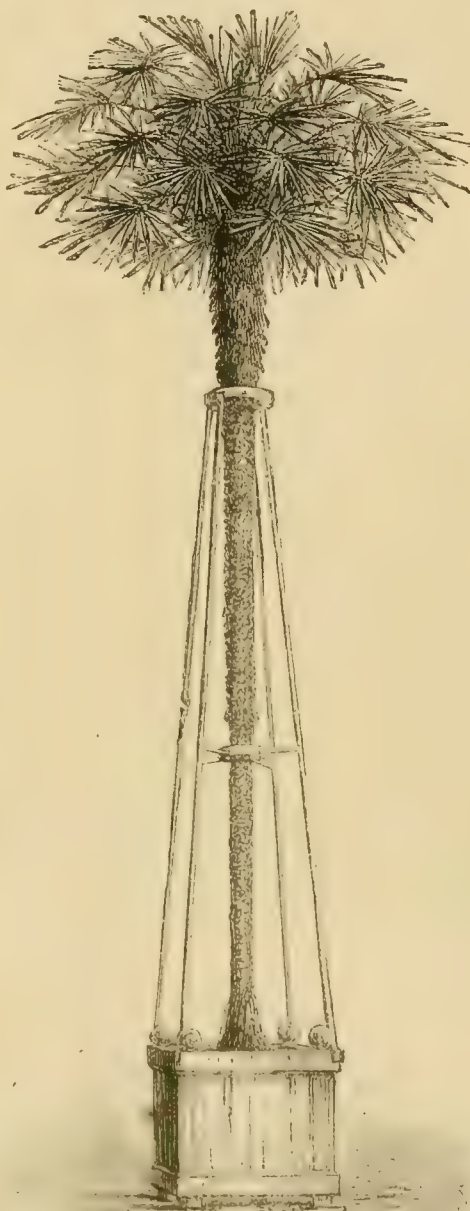


FIG. 1. Old Specimen of the Dwarf Fan Palm.

CONSERVATORIES IN THE NATURAL STYLE.

IN discussing the subject of conservatories in the natural style nothing has yet been said respecting the building for the winter garden, conservatory, or whatever name it is thought fit by which to designate it; nevertheless, wherever any attempt is made to carry the project to a successful issue it is of much importance that this most essential point be well considered. By far the greater number of conservatories in this country, large and small, are nothing more than mere creations of the architect, who generally finds a vacant corner into which the introduction of a conservatory will improve the appearance of the mansion, and this without regard to adaptation for the plants it is destined to hold. Therefore, with the exception of roof-climbers, it becomes a mere living sepulchre for the occupants, which can only be kept in anything like tolerable condition by frequent removals, simply through an insufficiency of that greatest of all essentials—light. The fact of every plant which we introduce into our glass houses, and more especially the occupants of the warmest of them being indigenous to countries where they are subjected to an amount of light scarcely understood by us in our sunless climate, ought to point to the necessity of making this the first consideration in the matter. And even if it were not a positive essential to the existence of the plants, there is another potent reason in reference to this to be considered, and that is that a conservatory ought to be most enjoyable in winter; yet how often do we find from insufficiency of light that a gloom is cast over the whole of the interior?

The first consideration should be the situation. Unless a conservatory can occupy a position that will afford an abundance of light, and also harmonise well with the architectural features without being made too lofty for the well-being of the plants, it never

ought to be placed in immediate proximity to the mansion; and, wherever it is placed, the internal appearance, when furnished, ought to take precedence over mere outside effect; but where sound cultural and the necessary architectural knowledge are combined, both these essentials might be secured.

The next question is the material—iron or wood. On this subject much difference of opinion exists; each have their advantages. In

wood, the expansion and contraction consequent upon the changes of our variable climate, are much less than with iron, consequently there is not so much breakage of glass. Against this, iron has the two great advantages of durability, and its greater strength admits of its being reduced in bulk, so as to admit much more light than is possible in the case of wood; therefore I must give the preference to iron.

A third consideration is the form of the building; here there will be room for the exercise of much diversity of taste, and the surroundings in each individual case will in some measure determine the plan. Conservatories of any size, constructed with a single span, internally have an apparent deficiency in breadth, in short, a cramped appearance, and do not afford sufficient scope for anything approaching a natural arrangement of the plants. The best form would be a series of three or five curvilinear spans, according to the length, the centre one being higher than the rest, using iron columns for support, and hollow, so as to take off the roof-water. This form might be varied with a transept, or in other ways, if thought desirable.

As to the distribution of the plants, no set form of arrangement can be satisfactorily given, unless the size of the building was determined on; but, above all things, anything approaching crowding must be avoided, otherwise, it would be impossible to secure the repose which is so essential for general effect. As to the plants that are to be permanently planted out: this will require being done with judgment, considering well what proportion each individual is likely ultimately to attain, and should be confined to such things as are intended to drape the walls with climbers for the roof and the plants that are to fill the most commanding positions in the building. If it were necessary to use only such things as are grown for the beauty of their foliage, or to make the arrangement to consist principally of such, then almost all might be planted out. This might answer in the sunny clime of southern Europe, but during our sunless winters we want a very considerable amount of colour in the shape of blooming plants. Now, I say distinctly, that with few exceptions, these blooming plants must not be planted out, but must be grown in pots, tubs, or similar contrivances. And this for many reasons, the principal one being that it is impossible to regulate the blooming season with plants that cannot be moved. As to the objectionable appearance of the pots or tubs, this might easily be overcome by sinking them to the level of the ground where they are placed; or there are many other devices by which they might be concealed. But, as I attempted to show in my first communication on this subject, unless the selection of the plants is made with care and judgment, failure must follow. Instead of going to the hottest parts of the world for plants of quick growth that will always be struggling to outstrip the bounds allotted to them, and that require a temperature too hot to render the place as enjoyable as it should be, the selection should be made of such plants as are found in more temperate climes that possess advantages the reverse of those to which I allude.

I have no doubt that a more natural arrangement of our conservatories will gradually take the place of the present system. Fortunately, this improvement in general effect can be attained without sacrificing in any way that excellence of culture on which the gardeners of this country justly pride themselves.

Southgate.

T. BAINES.

I QUITE agree with M. André as to the general principles involved in this matter. Nothing is more desirable than that the structures by courtesy called "green" houses and conservatories should be made a little greener and fresher and more natural-looking than they usually are. This is desirable from every point of view, but especially so for the gardener, who is continually harassed by the present system of filling and emptying the conservatory every second week or so. The success of the plan, however, depends entirely on the selection of the plants; and while M. André's selection of Palms and plants of noble habit is admirable, and embraces a good many things that deserve to be better known, I think he is wrong in enumerating in his last list such subjects as the Sweet Verbena and the Sparmannia. No doubt they would do well, but so would hundreds of unsuitable weeds. It is the noble Palm, Dracæna, and Tree Fern type of vegetation we want; the small-leaved and flowering plants we can add in pots as we like. As types, these are not so welcome for permanent planting as the tropical forms. But the chief reason for employing such plants as the New Zealand Flax, the hardier Palms, Tree Ferns, Dracænas, &c., is because they do not become periodically shabby; do not rush up to the roof hastily and begin pushing through the glass, but remain for years at a time in a healthy and beautiful condition—always in winter or summer ready to gracefully harmonise with any flowering or other plants we can spare to associate with them.—H. VINER.—[We quite concur.]

APHELANDRA CULTURE.

THOUGH common many years ago, these are now not often seen, even among the best-appointed collections of plants. Why this should be we cannot tell; for they are not plants of difficult cultivation, neither do they belong to the most fugitive of decorative plants, as the flowers are produced upon branched spikes, and remain in perfection for many weeks. The great drawback is that they are not easy to produce in a dwarf state, and hence, unless great care be taken at the outset, they are apt to run up spindly and produce a single spike of bloom only. To prevent this, it is necessary that the cuttings be taken not more than two inches long, so that the young buds may come pretty close to the ground. The buds are opposite in pairs, and hence the first growth should be two shoots, the second four, and so on, six or eight pairs of shoots making a magnificent plant—such a one as is rarely seen, and will take several years to form. Cuttings may be taken in the spring, when the plants will be in a comparatively dormant state, and possibly many of the leaves will have fallen. Cut the plants down to within the last pair of joints on each shoot from the old wood, and then cut each shoot into lengths close above and about two inches below the joints, making the last cut in a sloping direction, so as to allow a larger surface for the production of roots. To strike the cuttings readily a brisk, moist bottom and atmospheric heat is necessary—in fact, indispensable. The cuttings are best put in singly in small pots, as then they sustain very little check in removal. When they are struck allow the shoots to grow on, removing them into larger pots as it may become necessary, until they are six or eight inches high, and then, when the pots are full of roots, stop each shoot back to the lowermost pair of buds. From these four pairs of shoots should be produced, and when these have attained sufficient strength they also may be stopped back, and if they are vigorous at the time eight pairs of shoots may be the result. This, technically speaking, may be called forming the bottom, a process which may result in fine plants another season, but not in those which will produce flowers the first. But never mind that; take care to get the last set of shoots well grown and thoroughly ripened, and then gradually dry off and put the plants to rest for the winter. They must not be kept absolutely dry for the winter; but no more water must be given than will be requisite to keep the plants from shrivelling.

With plants for blooming it will be necessary to grow them right on from the cutting state, giving them none of the checks of the stopping process, but encouraging them to grow as strongly as possible. For this purpose a brisk growing temperature of 70 degrees, rising to 90 degrees with sun heat, is necessary, and if at the same time bottom heat can be given, it will be so much the better. Cuttings rooted in small pots may be removed to four-inch, again to six-inch, and if they are very robust, to eight-inch pots, of course watching the right time for these several removals. The best compost for the strong-growing kinds is rich turfy loam three parts, and a fourth of rotten dung well incorporated, to which must be added sufficient sand, charcoal, and crushed oyster-shells to make it light and friable. Pot firmly at all times, but especially when the plants receive their last shift for the season. To ensure their blooming, the plants should be kept in full light, and as near to the glass as possible; but at the same time, as the leaves are thick and coriaceous, to prevent their scorching it will be necessary to shade them in bright sunlight. This, however, will depend upon the quality of the glass. If it is good and free from convexities, no shading will be necessary; but if not, it will be safest to throw a slight shade over the plants in bright sunlight. The plants may be made to bloom at any time from October, or earlier, to March, according to the temperature in which they may be placed; but all attempts to prolong the blooming beyond that season and into the early spring have signally failed. When they have ceased blooming reduce the supply of water, and remove the plants into a lower temperature. The time for cutting them down must be regulated by the season in which it is desired that the plants should bloom. It is best to divide the stocks of the plants into three or four sets, and, by introducing a set into a higher temperature every month, a succession of bloom may be had from October to the end of March.

In speaking of the old plants, in successive years the young shoots must be boldly cut back to the lowermost pair of buds upon each branch, then syringe them daily, limiting the supply of water at the root. In a short time the buds will begin to develop themselves, and then the plants must be shaken out, the roots curtailed, and repotted into small pots in the compost previously named. After this bottom heat may be applied with advantage, and the plants may be grown vigorously on, of course guarding against those insect pests to which almost all plants are subject. The preceding remarks apply in the main to that old favourite species, *A. cristata*, but they are also applicable to *A. aurantiaca* and *Roezli*, though these, being more delicate in habit, will require the compost to be very turfy, with an addition of peat; and, until they become well established, should have limited pot room and careful watering. Two more beautiful plants when properly grown it would be difficult to conceive. The regret is that we see them so rarely. In addition to the above we may specify *A. nitens*, a recent introduction from Guayaquil, which blooms in May. *A. Siboniana*, from Brazil, is another spring-blooming species of great beauty. These two species we should specially recommend to our great plant growers as being worthy of their attention for exhibition purposes.

W.

PALMS FOR THE GARDEN.

(Continued from p. 283.)

COCOS AUSTRALIS (SYN., WALLISH: PARAGUAY).—Habit, dense; fronds, recurved; pinnae, regular, narrow, channelled on the underside; a character which also belongs to all the species. A good greenhouse palm, the fronds of which are more like those of a Phoenix than those of others of the genus.

C. BOTRYACEA (SYN., BOTRYOPHORA: TROPICAL AMERICA).—Fronds, when young, erect, when old, drooping; pinnae, regular, lax. Very ornamental when about ten, or from that to sixteen feet in height, the whole plant then being very erect, and forming a striking object among large-foliaged plants.

C. FLEXOSA (BRAZIL).—In general habit allied to the last, except as regards the pinnae, which are arranged in sets of from eight to ten. Very ornamental.

C. NUCIFERA (COCA-NUT PALM: INDIAN ARCHIPELAGO).—Fronds very stout compared with those of the other species; pinnae, regular, two inches broad. A well-known and noble palm for large stoves; fond of water and heat, and so fast a grower as soon to get too large for general purposes. Of this species there is a fine variety called the "King," with a yellowish tint in the foliage, altogether a stronger plant than the last, of which, moreover, there are some twenty other varieties, some smaller than the normal kind, but not in cultivation in this country.

C. PERUVIENSIS.—A lax, bad grower, and not useful.

C. PLUMOSA (SYN., COMMOUSA: BRAZIL).—Erect; pinnae, irregular. Of the erect-growing section of this genus, this is the best, though all are good. Where a slim, tall plant is required to break a line or give elegance to a lofty stove, such palms as these are useful, giving to such positions a very tropical effect.

C. ROMANZOFFIANA (BRAZIL).—Erect; pinnae, regular, narrow, and lax.

C. SCHIZOPHYLLA (BOLIVIA).—Fronds, reflexed, long; pinnae, regular; petioles brown, with spines at base. A tall-growing species, with the habit of a Phoenix. A very ornamental conservatory palm.

C. WEDDELIANA.—Fronds, gracefully spreading; pinnae, one and

a half inch wide, regular, glaucous. The most elegant species of this genus; when not more than four feet in height, young plants of it have often as many as twelve and twenty graceful fronds on them, forming a plume of the most beautiful description.

COPERNICIA.—A genus of Tropical American palms, having foliage similar to that of *Latania*s, but irregular and sparse; therefore not desirable in an ornamental point of view. The species are *cerifera*, *tectorum*, and *palmata*, the last of which is the best; foliage nearly round and dark-green.

CORYPHA AUSTRALIS (SYN., LIVISTONA: NEW HOLLAND).—Fronds, palmate, cut half-way, forming almost a circle; spines on the petiole, small and recurved; fibre at base brown. An excellent greenhouse palm or for setting out of doors in summer. It is not a very fast grower, and may be kept in a room for a long time without injury.

C. UMBRACULIFERA (CEYLON).—Fronds, palmate; petiole with small spines on margin. A very slow-growing palm, and one which forms very strong roots, unfitting it for pot culture.

DIPLOTHEMIUM CADESCENS (BRAZIL).—Fronds, from twelve to twenty feet, two feet six inches wide, nearly erect, regular, pinnate, channelled on the underside, and white; upper surface dark green; unarmed. A noble palm for a large house, the nearly erect fronds, showing the white undersides, being very effective; moderate heat is sufficient for it.

D. LITTORALE (BRAZIL).—A lax, useless plant for decorative purposes.

D. MARITIMUM (BRAZIL).—In general aspect like *caudescens*, but dwarfer and denser.

ELIS GUINEENSIS (THE OIL PALM: WEST TROPICAL AFRICA).—Plant, dense; fronds, erect and spreading; pinnae, regular, channelled on the underside, recurved; base of petiole spinose; fronds, fully developed, plant from eight to ten feet. When young, this makes a good plant, as well as a good useful plant for decoration, being of light feathery habit, and it will last well in a small pot for eight or ten years. When old, it gets rough; it is fond of heat and water.

E. MELANACOCOA (BRAZIL).—In general appearance like the last, but slenderer, and without spines; a good plant.

J. CROUCHER.

(To be continued.)

Window Box furnished with *Dracaena*.

THE GARDEN IN THE HOUSE.

DRACENAS AS WINDOW PLANTS.

But a few years ago *Dracaenas* were only known in collections of choice greenhouse plants, and like many other things, it was formerly supposed that they could only be grown by skillful gardeners. They have been found to endure, however, and even flourish under very ordinary treatment. The increased taste for and general use of hanging-baskets and window-boxes have made plants formerly rare in such positions now quite common. *Dracaenas*, as will be seen by our illustration, have a fine appearance in window boxes, and they also look well in Wardian cases. *Dracaenas*, as is doubtless well known, belong to the Lily family, but they do not have showy flowers, and are cultivated solely for their foliage. Many of them have red coloured foliage, and others present different shades of green. There is considerable difference in the width and thickness of the leaves, and all have a pleasing tropical habit. They endure the dry air of our dwellings with impunity. The tall specimen in the centre of the box is *Dracaena indivisa*; the two smaller ones are, *D. terminalis*, with reddish foliage, and *D. australis*, with broad green leaves. Some *Tradescantia repens* is put in as a covering to the soil, so as to give the box a pleasing appearance. —*Heart and Home*.

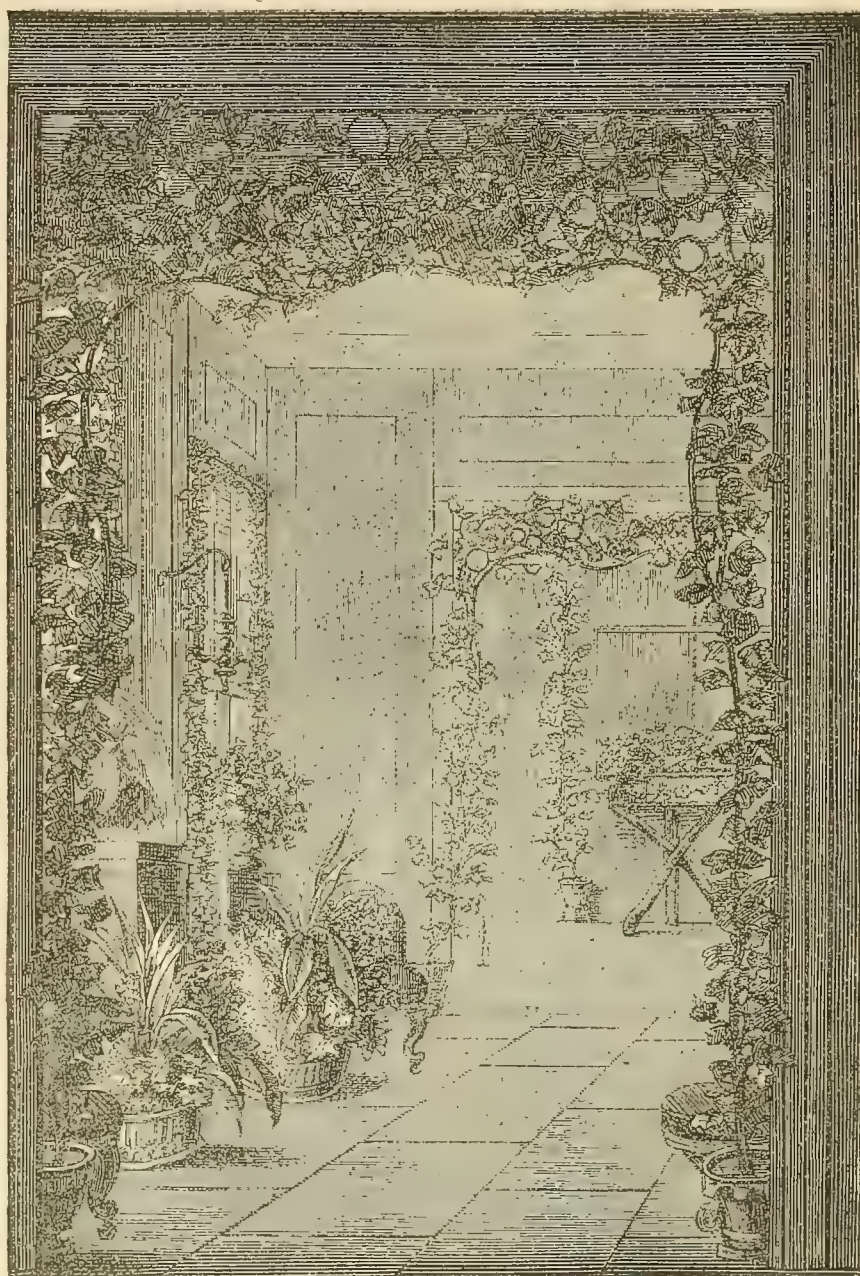
CULTURE OF PLANTS IN ROOMS.

(Continued from page 199.)

Our illustration is intended to furnish a view of plant arrangement in a room which is lighted on one side only. Ivy and the antaretic vine here form an important part of the decoration. The baskets of plants on the floor are placed at just such a distance from the wall that the light from the windows may fall directly on them. In place of these flower-stands may be used, placing them directly opposite the windows. The parts of the wall between the windows are very unsuitable positions for flower-stands, although one often sees them placed there.

In dwelling-rooms, properly so called, plant decoration, as we have hitherto described it, cannot be carried on, as it would either darken the rooms too much, or would deprive the mistress of the house of the window recess in which she loves to sit at a table with her work. But even in Russia, when nature out of doors lies dead and the earth is covered with a shroud of snow, we can obtain the greenness of vegetation, so soothing to the eyes and so cheering to the mind, by constructing bowers or canopies of ivy or Cissus, at the window and only a little broader than it, so that they may be in a line with the side-walls of the window recess. The plants placed in the window here should not be too large, and then the mistress can sit at her work-table in a green bower in the middle of winter, the dimensions of space in the apartment being very little curtailed thereby. But these rooms

generally have several windows, one or other of which may, without detriment to the light or the use of the apartment, be devoted entirely to plants, in which case boards or shelves may be placed one over another, and on them may be cultivated ornamental foliage plants, or flowering plants, or the windows may be converted into double windows, the construction of which will be explained further on.



Room Plant-Culture at St. Petersburg.

THE ARRANGEMENT OF PLANTS IN ROOMS, CORRIDORS, CELLARS, &c., WHERE THE TEMPERATURE IS ABOVE THE FREEZING POINT.

We must here, as in the foregoing remarks, make a distinction between the arrangement for ornament, and the arrangement for culture only. With respect to the arrangement for decorative purposes in rooms not usually occupied, but which maintain a temperature above the freezing point, or in corridors, on staircases, &c., with a similar temperature,

the instructions already given will be equally suitable, and the only difference will be in the selection of the plants. Hardy evergreen greenhouse plants may be employed here during the period of rest, and, so long as they do not make a fresh growth, may even be placed during the winter, in positions at a distance from the light without suffering any harm. But as soon as the new growth commences, they must be transferred to positions which are better lighted.

In the greater number of cases, greenhouse plants, whether they be evergreen foliage plants, or flowering plants, are not brought by the amateur inside the dwelling-house for decorative purposes, but partly in order to produce flowers for winter-blooming, partly to fill flower-stands before the windows in summer, and partly for the open-air decoration of balconies, verandahs, &c., during the summer. Therefore in cultivating them in rooms, the winter period is the chief one which requires attention. Hardy kinds which can endure some degrees of cold unsheltered, and which maintain a perfect state of rest all through the winter, may be wintered in places

feebly lighted, or even almost dark, such as cellars, vaults, &c. As in such places all depends on keeping the plants in a state of rest, the temperature should range from 1° to 3° above zero. The positions of the plants are to be looked to, so that they will be injured neither by too much moisture or damp air, nor by dust or too dry air. In the first case mouldiness and decay, and in the second the drying up

of the plants will inflict much damage. Thorough ventilation will prove of considerable service during the winter. Cellars in which fermentation is carried on, dry heated vaults, fruit cellars, &c., are consequently unsuited for the wintering of plants; while half-lighted, dry cellars are most favourable. Deciduous shrubs, and shrubs in pots, and even hardy evergreens, are more easily wintered in such localities, in proportion as the mildness of the climate allows them to be brought in late in the season, and to be brought out again early in the following spring, before the new growth begins.

A room with a temperature above the freezing point is an excellent place for wintering the greater number of those favourite greenhouse flowering plants, the flowers of which fall off principally in the summer months, such as Pelargoniums, Heliotropes, Fuchsias, &c. In this case, where it is possible to have such an arrangement, the plants should be placed on tables or stands which run across the window, and at just such a distance from it, that the parts of the wall between the windows may not hinder the light from falling directly on the plants. Stands with steps from top to bottom, and rising from the window, which are not more than a foot broad at the most, are the most suitable arrangement, because on them the plants are so distributed that each receives more light than if they were arranged on tables. When a stand of this kind is used, there should be either no plants or only very small ones placed between it and the window, so that the plants on the stand may enjoy all the light possible. The space behind the stand and under it may be utilized for the wintering of deciduous plants, hardy evergreens, and, above all, hardy greenhouse plants in a state of rest.

When the room is not to be entirely devoted to the wintering of plants, several boards may be placed in the window, at a distance of two feet one above another, on which the smaller plants may be placed. Other and larger plants may be set on separate stands at just such a distance from the window as to permit access to the smaller plants which are placed there. Ventilation in mild weather and a careful observance of the temperature, so that frosty air may not enter during a sudden change in the weather, are two points which require to be especially attended to.—*From the German of Dr. Regel.*

NOTES AND QUESTIONS ON THE GARDEN IN THE HOUSE.

Rose and White Flowered Lapagerias.—The rose-coloured Lapageria and its white variety, on account of the size, form, consistence, and durability of their flowers, are among the most choice and valuable for cutting. The latter is a most important quality most fully developed in the Lapageria. The flowers have a wax-like consistency that preserves them from fading for days, or even weeks. Pendent branches, hung thickly with rosy pink or white bells, are simply magnificent for vase and basket work, the effect being unique and inimitable. The flowers strike one at once as of the highest quality, while their size adapts them admirably for large vases, &c. A vase filled with Brugmansia suaveolens, with Lapageria rosea fringing its sides, has a magnificent effect. Single flowers, set in green moss or fern, are telling in flat arrangements. I hardly venture to write how long the flowers will keep fresh in such positions. Then, for centres or for forming hand bouquets, the Lapageria mounted singly furnishes material of the first quality. A single flower of either the rose or white variety forms an exquisite eye or centre. Both colours may be used in the bouquet with good effect. A white centre, with three or five rose-coloured flowers round it, forms, with green backing and fringe, and a little "stabbing" of Lily of the Valley, Hoteia japonica, violets, or mignonette, or other slender flower, for contrast and perfume, a perfect bouquet. A rose centre with white around is equally beautiful, and more chaste. The white variety gives quite a new character to wedding bouquets. This is a great boon; for few arts are more difficult than the securing of variety in bouquets spotlessly white and green only. The novelty of form, too, in the Lapageria is an advantage to the maker of wedding bouquets. Standing up, the white cup-like flowers remind one of spotless goblets offered to the bride. The only difference in the two varieties is that of colour; in all other respects they appear identical. The white does not manifest that great weakness even that often appears in white varieties, as if white were indeed the breath of consumption, or the pale touch of early death. Still, the white variety is not yet generally cultivated, though it ought to find a place in every garden.—*D. T. F., in "Field."*

A New Floral Ornament for the Drawing-room.—Last August a lady friend of mine gathered a handful of the world-renowned flowers of Forget-me-Not, Myosotis palustris, and to preserve them for as long a period as possible they were put in a large soup-plate filled with rain water. The flowers were placed near the window, so as to enjoy the advantages resulting from an abundance of light and air, and the water

was replenished when needful. In a surprisingly short space of time—three weeks, I believe—white thread-like roots were emitted from the portion of the flower-stalks in the water, and they ultimately formed a thick network over the plate. The flowers remained quite fresh, excepting a few of the most advanced when gathered, and as soon as the roots began to run in the water the buds began to expand, and to take the place of those which faded; and up to the middle of November the bouquet—if it may be so-called—was a dense mass of flowers; and a more beautiful or chaste ornament for the indoor apartment cannot be imagined.—*Thomas W. Grissler, in "Gardeners' Magazine."*

Goniophlebium appendiculatum.—It is well known that many fern leaves, even when they are matured, will not stand long in water after being cut—one or two days at the most will suffice to finish their beauty. Even the Maidenhair, though quite matured, will not stand more than three days. I may mention one kind which is a very beautiful fern in any way we choose to look at it, whether in pot, basket, or fern-case—Goniophlebium appendiculatum, fronds of which will stand three weeks in water in a perfect state. I look on this fern as a most valuable one at this season of the year. It is a warm greenhouse kind, and like most of the valuable winter decorative ferns, is most impatient of heat. It should never be allowed to get dry, and a saucer of water at the roots in summer will assist it very much to mature its numerous fronds for the winter months, when they are found really valuable.—*H. K., in "Gardeners' Chronicle."*

THE PROPAGATOR.

THE ART OF GRAFTING.

(Continued from page 276.)

METHODS OF GRAFTING.

THESE are numerous, and vary according to circumstances, being not unfrequently the result of chance, or the fancy of the operator. From our own experience and observations we shall describe the modes which are most useful. By modifying them in one way or other the number may be increased; but all may be referred to the types which we shall describe, and may be employed with the same results. A systematic classification of them is difficult, on account of their number, and the almost invisible lines of demarcation by which some of them are divided from each other. They may, however, be grouped into three great divisions, viz.:—Grafting by approach, or inarching; by detached scions; and by detached buds.

In the descriptive part, under each subdivision, we shall give the title by which each particular operation is known. We have arranged the subject in the following order:—

GRAFTING BY APPROACH.

Group 1.—Method by veneering.

" by inlaying.

English method.

Group 2.—Inarching with an eye.

" with a branch.

GRAFTING BY DETACHED SCIONS.

Group 1.—Side grafting under the bark.

" " with a simple branch.

" " with a beeled branch.

" " in the alburnum.

" " with a straight cleft.

" " with an oblique cleft.

Group 2.—Crown grafting.

Ordinary method.

Improved method.

Group 3.—Grafting de précision.

Veneering, common method.

" in crown grafting.

" with strips of bark.

Crown grafting by inlaying.

Side grafting by inlaying.

Group 4.—Cleft grafting, common single.

" " double.

" oblique.

" terminal.

" " woody.

" " herbaceous.

Group 5.—Whip grafting, simple.

" complex.

Saddle grafting.

Group 6.—Mixed grafting.

Grafting with cuttings.

When the scion is a cutting.

When the stock is a cutting.

When both are cuttings.

ROOT GRAFTING.

- Of a plant on its own root.
 " on the root of another plant.
 Grafting with fruit buds.

BUD GRAFTING (BUDDING).

- Group 1.—Grafting with shield buds.
 Bud grafting under the bark, or by inoculation.
 " ordinary method.
 " with a cross-shaped incision.
 " with the incision reversed.
 " by veneering.
 " the combined or double method.
- Group 2.—Flute grafting.
 " common method.
 " with strips of bark.

GRAFTING BY APPROACH.

GENERAL INSTRUCTIONS.—Grafting by approach is the most ancient of all the methods of grafting. From time immemorial nature has given examples of it in our forests, hedges, arbours, &c., where we find trees joined together by their branches, stems, or roots, from long continued contact or rubbing. Grafting by approach, then, consists in uniting two trees by their stems or branches. In certain cases, the shoot of a tree or plant is thus grafted on the parent stem or branch. The season for grafting by approach commences and ends with the flow of the sap, from March to September. The stock and the scion may be in the woody or the herbaceous state, the mode of operation being the same in both. In grafting by approach, the scion is not stripped of its leaves, as in the other modes, because it remains attached to the parent plant while it is being joined to the stock. From both scion and stock a precisely similar portion of wood and bark is removed, so that the parts may fit exactly when they are put together. In order to promote their union, the graft is bandaged, and covered with grafting wax. In the case of two trees being grafted together, a prop, or stake, is used. After they have continued to grow together for, at least, a year, when the union may be considered perfect, the part grafted on the other may be detached from the parent stem. The modes of grafting by approach may be divided into two classes:—First, those ordinary methods, in which the upper part of the scion is retained after it is joined to the stock; and second, the process named "inarching," in which the cut top of the scion is inserted under the bark of the stock.



Veneer Grafting by Approach.

GROUP I.

ORDINARY GRAFTING BY APPROACH.—The scion is a tree, or a branch of a tree, distinct from the stock, or a branch belonging to the stock itself. The top of the scion is kept entire above the point of contact with the stock: however, if too long, it may be cut above the graft, leaving two or three

eyes if it be a single shoot, and a length of four, eight, or twelve inches if it be a ramified branch. There are different ways of joining the scion and stock, named after other modes of grafting, as by veneering, by inlaying, and by the English method.

VENEER GRAFTING BY APPROACH.—The scion (A) has a portion of the bark and alburnum removed at *a*. In the stock (B) a flat-bottomed groove is made at *b*, reaching to the alburnum, and corresponding in dimensions to the part *a* of the scion. The metro-grefe will be useful here in adapting these two parts accurately to each other. They are then joined together at C, bandaged and covered with grafting-wax if necessary.

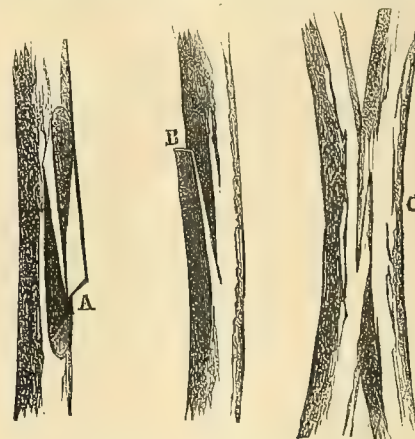
APPROACH GRAFTING BY INLAYING.—The scion (D) is slightly cut on both sides at *d*. The stock (E) is prepared to



Approach Grafting by Inlaying.

receive it by having an angular groove made at *e*, into which the bevelled part *d* will fit accurately, and be inlaid, as shown at F.

THE ENGLISH METHOD OF APPROACH-GRAFTING.—In addition to bandaging, the parts may be still more firmly consolidated by means of corresponding tongues or notches (A and B) cut in

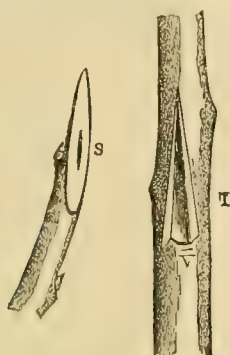


English Method of Approach-Grafting.

each, so as to fit exactly into each other as shown at C. If it is apprehended that the union of the parts will be tedious, the top of the stock is cut off at the time of grafting, and the scion joined to its extremity. This is called the English method.

GROUP II.

APPROACH-GRAFTING BY INARCHING.—Although more particularly employed for restoring defective parts of plants and trees, this mode of grafting by approach is equally useful for multiplication. The proper time for it is from April to July. The chief difference between this and the preceding group consists in the cutting off the top of the scion, whether tree or branch, and the inoculation of the top so cut under the bark of the stock. The cutting of the scion is made under an eye or a shoot, so that one or other may be set in the stock. This scion, having been topped and cut in the manner represented at S in our illustration under the terminal bud or shoot, is grafted into the stock by means of a reversed T-shaped incision in the bark, as shown at V. The place of the incision is calculated from the length of the scion, which should be an inch or so longer, so that in inserting it into the

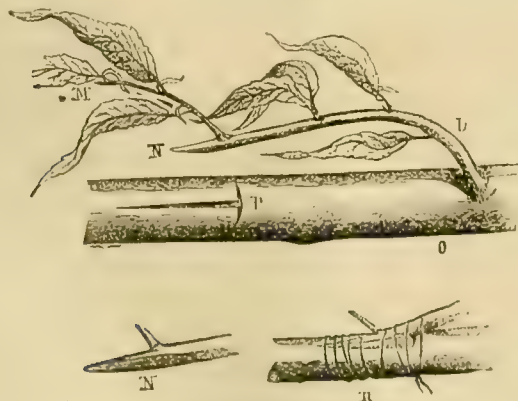


Approach Grafting by Inarching.

incision it is first slightly bent, drawn back, and the point then allowed to slip under the bark. The two principal modes of inarching are only to be used during the flow of the sap, in spring or in summer.

INARCHING WITH AN EYE. The eye being selected like the terminal bud, the scion is cut at the end with a flat splice-graft, as shown at S. It is then inserted under the bark of the stock T, which is raised at V. We shall re-produce hereafter the same graft completed and beginning to vegetate. When the bark of the stock is thick, an incision is made with a double longitudinal cut, the intervening strip of bark is raised at one end, and the top of the scion is inserted under it. Neither the strip of bark nor the bandage should cover the eye of the scion.

INARCHING WITH A BRANCH. The scion (L) bearing a young lateral branch (M), is to be cut about an inch above it, in a sloping direction (N), on the side next the branch. Care should be taken not to cut the end too thin; and the leaves



Inarching with a Branch.

are not to be removed from either the branch or the scion. The stock is either a distinct tree, or a branch (O) bearing the scion. The incision (P) is made in such a manner that the introduction of the scion is effected as represented at R. The branch (M) may be left entire or cut down to two eyes,

according to its length. It is called an "anticipated branch" if it has been produced in the course of the year on the herbaceous scion, in which case the grafting would take place in summer. It is called a "branch" simply, if it has been developed in the spring on the woody scion, or in the preceding year on the main branch. In this case, the grafting would take place from April to June.—C. Baltet, "*L'Art de Greffer*." (To be continued).

ANOMALOUS GRAFTING.

YOUR correspondent, *apropos* of anomalous grafting, in your number for December 30th, p. 122, whilst asserting that Virgil speaks of "a plum tree which bore apples after being grafted," and "recommends the grafting of the pear on the ash," mis-states Virgil's drift in his second clause, and in his first confounds his authority with that of Palladius, a Latin horticultural writer of the fourth century after Christ. Of what Virgil has to say on grafting, Mr. R. D. Blackmore's version of the "Georgics" gives a fair transcript:—

"But nuts are grafted on the rough arbutu,
And barren planes bear apple trees in fruit.
With chestnut bloom the beach is silver-laid,
The mountain ash in white pear-flowers array'd,
And swine crunch acorns in the elm tree's shade."

—Georg. II., 69.

Palladius has not found a translator that I know of for his poem on grafting, but I give his lines *ad rem*, and a rough and ready version of them:—

"Insita proceris pergit concresecere ramis,
Et socium mutat malus amica pirum;
Seque feros silvis hortatur linguere mores,
Et partu gaudet nobilitate frui.
Spiniferus prunos, armataque robora, sentes,
Levigat, et pulchris vestit adulta comis."

—77-82 Palladius De Insitione.

The engrafted apple, bleeding kindly growth,
Transforms the kindred pear tree, nothing loth;
Leaves barren habits in the native wood,
And joys to yield a fruitage apt for food.
Makes smooth the spiny plums and prickly thorns,
And with gay foliage novel boughs adorns.

In the context to these lines the author describes how the service tree (*Sorbus*) and the medlar (*Mespilus*) owe to the apple the same insitional improvement.

JAMES DAVIES, M.A.

L A W.

IS A GREENHOUSE A CHATTEL OR A FIXTURE?

THIS case was heard before Mr. Justice Quain, in the Court of Queen's Bench, on the 5th instant, and was an indictment removed into this court by *certiorari*, the prosecution being instituted for a conspiracy under the Malicious Injuries to Property Act, and the penal sections of the recent Debtors Act. The defendant, Mr. D. Perkins, was a nursery gardener and florist, and held a lease of his house and gardens in St. John's Wood Terrace. In 1869 he obtained an advance of about £117 on the security of this lease from the Model Discount Company. The advance, it appeared, was not repaid, and in June 1870 he filed a petition for the liquidation of his affairs under the Bankruptcy Act. During his tenancy he erected four greenhouses on his premises, the brickwork and foundations being there when he came into possession. The evidence was that these were not fastened into the brickwork, but laid upon it so as to be fixed only by their own weight. While the liquidation proceedings were pending it was alleged that the defendants took down and removed three of these greenhouses, and a prosecution was then instituted against them for conspiracy under the above Act. The case for the defence was stated to be that they had been sold before the liquidation by Mr. D. Perkins to his co-defendant, a Mr. Tindal. A somewhat curious point arose as to whether a greenhouse erected in the way described was a building, or fixture, within the meaning of the Act for preventing malicious injury to property. The facts turned upon the alleged removal by the defendant of the greenhouses after a distress for rent and after the presentation by him of a petition for liquidation. The learned Judge ruled that the greenhouses were not "buildings or fixtures" within the meaning of the first-mentioned Act, and that the defence might be confined to the question whether they had been removed fraudulently with the object of defrauding creditors within four months of the commencement of the liquidation. The case for the defence was that the greenhouses had been sold by one of the defendants, D. Perkins, to a co-defendant, one Tindal, some time before both the distress and the liquidation proceedings. The jury

found the defendants D. Perkins and Tindal guilty, and acquitted the third defendant, Frederick Perkins, who, it appeared, had only acted as gardener and labourer for his father, D. Perkins. The learned Judge ordered D. Perkins and Tindal to stand forward, and sentenced them to be imprisoned—D. Perkins for two months, and Tindal, as the principal offender, for three months, in each case without hard labour.

THE AMATEURS' REMEMBRANCER.

Flower Garden and Shrubberies.—Herbaceous borders dig lightly over, taking care not to injure the roots of the plants; loosen the surface of spring flower-beds, and make all appear neat and gay. Rectify the edges of grass verges, gravel walks, and lay box edgings. Lawns sweep and roll. Roses prune, and firmly stake. From those on walls and pillars remove dead wood; thin them, and neatly tie them up again. Beds and borders of American plants, dress with a covering of decayed leaves. Plant out Pansies, wintered in frames, press the soil firmly about their roots. Where Auriculas are planted, loosen the soil to the depth of two inches, and top dress with cow-manure, leaf-mould, sand, and charcoal. Plant out Hollyhocks four or five feet apart in deep rich soil.

Indoor Plant Department.—In conservatories, which should now everywhere sparkle with floral beauty, maintain a night temperature of 45°, and while the weather is so favourable give plenty of air. Let nothing suffer from want of water, and plants beginning to grow syringe morning and evening. Climbers, thin and tie where required. Keep up a regular succession of blooming plants, and those done flowering remove. Calladiums, Gloxinias, Gesneras, &c., showing signs of growth, pot, and place in a nice bottom-heat of 75°. Marantas, Dieffenbachias, Dracenas, tropical Palms, &c., repot, and keep in a warm, moist atmosphere, and where convenient, a brisk bottom-heat should be given. Pot Sarracenas in rough bits of turfy peat mixed with a little silver sand. Ferns not already potted, should receive that attention at once, and where ferneries are out of repair, they should be renovated. Orchids beginning to grow may receive more water, but at present, they must be kept rather dry at the root; encouraging a moist, fresh, and healthy atmosphere, by frequent sprinklings of water on the floor, walls, tables, &c. Shade from bright sunshine, and give a little air, but avoid cold draughts.

Pits and Frames.—A regular supply of Lilacs, Azaleas, Spiræas, Deutzias, bulbs, &c., should be introduced to the forcing-pit, for conservatory decoration hereafter. Propagate Coleuses, and pot those already rooted. Alternantheras shake out of their cutting pots, and pot off singly into small pots. Dahlias and Cannas, start in gentle heat; sow a few choice annuals for indoor decoration on a gentle hot bed; those already up should be pricked off into shallow pans. Gloxinias, Gesneras, &c., as they begin to grow, shake out, and pot, then plunge them in a gentle bottom heat. Chrysanthemums, if rooted, should be potted singly, and kept near the glass, shading from strong sunshine for a few days. Sow Lobelias in pans or boxes, prick off those sown in autumn, and plants from cuttings should now be placed in heat for propagating from. Tropæolums, introduce into heat for cuttings; Fuchsias, prune, and place in gentle heat, for early flowering and for cuttings. Stocks in frames, as soon as they show flower-buds, and the single ones can be known from the double, should have the former pricked out, and thrown away, and the latter potted. Geraniums and other bedding plants should receive all the air possible; young plants may be repotted, and where two or three are in one pot, separate them, and pot singly. Propagate by inserting in sand in a hot-bed of 60° or 65°. Verbenas should now be kept in heat for cuttings, which should be placed in a hot-bed, and kept near the glass. As soon as rooted, pot off singly, and plunge in bottom heat, so that the points of the young plants may be taken off, and struck. Salvias, Heliotropes, Ageratums, &c., may be similarly treated. Camellias should now be grafted, or inarched, keeping them rather close afterwards for a time.

Indoor Fruit Department.—Pine-apples, pot as they require it; they may now receive more water and heat than they have been getting; keep up a bottom heat of 85°, and maintain a steady growth. Those colouring fruit require a drier atmosphere and more air than succession plants. Vines setting require a rather dry atmosphere; for Muscats, a night-temperature of 70°, and for Hamburgs, 65°. Thin and tie, and syringe frequently those starting. Before and after the fruit is set maintain a moist atmosphere. To Figs give plenty of water, and keep up a temperature of from 60° to 65° at night; pinch the young shoots at their fourth or fifth joint. Peaches and Nectarines set may have a temperature of 60°, not more; syringe frequently, and give plenty of air, avoiding draughts; for those in flower, maintain a temperature of 50°, keeping the atmosphere dry, and admitting air whenever that can be done. Strawberry plants introduce every fortnight to shelves near the glass; pick off small flowers, and when a sufficient quantity is set, remove the rest.

Hardy Fruit and Kitchen Garden.—Finish planting fruit trees and bushes, also pruning and nailing. Blossom protection look to, adopting some of the modes of protection given in another column. Ground vacant dig, and trim edges of alleys. Grafting may now be commenced. Sow Onions on well-prepared ground; plant some bulbs for seed in an open situation, and cover to the depth of six inches. Peas and Beans sow for succession. From Lettuces in frames remove the sashes in fine weather, and sprinkle with lime, to keep off snails, &c., and make good blanks. When Lettuces are sown in frames with Carrots and Onions, the former should be removed, and the latter thinned and

regulated. From Cauliflowers, remove the handlights in warm weather. Radishes, sow successionally, covering with litter till they appear, after which the litter may be removed. As soon as Broccoli is cut, replant the ground. Early Turnips sow, also prickly Spinach and early Cabbages. Potatoes forwarded a little in boxes, plant out in a warm, sheltered border; early potatoes may also be planted in the open ground.

A NEW LONDON PARK.

THE contractors of the Metropolitan Board are now engaged in the rapid completion of what will be one of the best of the public gardens of the metropolis; and by the spring it is hoped that it will be ready for the recreation of the public. For many years past the large open space known as Stepney Green, which is situated in the heart of the most crowded quarters of the East of London, had fallen into a neglected condition, and its enclosure and adornment having become the subject of discussion at the local board, the Mile End Vestry, an appeal was made to the Metropolitan Board. After a brief delay, the Metropolitan Board consented to contribute the whole cost—about £3,000—of converting the fields into flower gardens and a public recreation ground. Stepney Green, apart from its sanitary value as one of the very few open spaces in the East of London, has many interesting historic associations. It is the last remaining remnant of the once famous Mile End Green, the trysting-place of the civic archers of the Tudors, and the rendezvous of the rioters of Essex in the insurrection led by Wat the Tyler in 1381. By a patent granted under the seal of the Second Charles an annual market and fair was held on Mile End Green at Michaelmas; but this has shared the fate of other metropolitan fairs. It is only within the last century that some of the houses of the Stuart nobility which stood on Stepney Green, and marked the spot as a once fashionable quarter, were demolished; and so recently as 1859 a large castellated mansion belonging to the Marquis of Worcester, and commonly known as "King John's Castle," was still standing in excellent preservation. The Lord of the Manor of Stebunheath has now granted Stepney Green for the free and perpetual use of the people as a recreation ground, and, except in regard to the expenditure for enclosure and culture, this valuable open space, which contains many noble and venerable trees, has been secured to the public without cost.—*Metropolitan.*

COVENT GARDEN MARKET.—February 24th.

Flowers.—Conspicuous among flowers, representatives of which are now everywhere in blossom out of doors, are Violets, Crocuses, Snow-drops, Christmas Roses, Arabis, Aconites, and one or two species of Saxifrage; while, from frames we have the lovely Winter Windflower (*Anemone blanda*), which often opens its charming deep-blue blossoms as early as Christmas. Cyclamens, Primulas, and Polyanthus—those never failing harbingers of spring may be obtained in abundance; and of those ever-pleasing occupants of our hot-houses, Orchids, there is no scarcity, either as regards quantity or variety. Other flowers consist of Spiræas, Daphnes, Heaths, Epacris, Roses, Acacias, Camellias, Deutzias, Lilacs, Cytisus, and others.

Prices of Fruit.—Apples, Dessert, 2s. to 4s. per dozen.—Cobs, per 100lbs., 60s. to 65s.—Filberts, per lb., 8d. to 10d.—Grapes, per lb., 6s. to 12s.—Lemons, per 100, 7s. to 10s.—Oranges, per 100, 6s. to 10s.—Pears, per dozen, 3s. to 8s.—Pine-apples, per lb., 6s. to 10s.

Prices of Vegetables.—Artichokes, green, each, 6d. to 8d.—Asparagus, per 100, 8s. to 10s.—Beet, per dozen, 1s. to 2s.—Broccoli, purple, per bundle, 10d. to 1s. 3d.—Brussels Sprouts, per half sieve, 2s. 6d. to 3s. 6d.—Cabbages, per dozen, 10d. to 1s. 3d.—Carrots, per bunch, 5d. to 7d.—Cauliflowers, per dozen, 2s. to 6s.—Celery, per bundle, 1s. to 2s.—Chilies, per 100, 1s. 6d. to 2s.—Cucumbers, each, 1s. 6d. to 3s.—French Beans, new, per 100, 3s. to 4s.—Herbs, per bunch, 2d. to 4d.—Horse Radish, per bunch, 3s. to 5s.—Leeks, per bunch, 2d. to 4d.—Lettuces (French), Cabbage, per dozen, 1s. to 2s., Cos, per dozen, 3s. to 5s.—Mushrooms, per pottle, 1s. to 2s. 6d.—Onions, per bunch, 4d. to 6d.—Parsley, per bunch, 2d. to 4d.—Radishes, per bunch, 2d. to 6d.—Rhubarb, per bundle, 6d. to 1s. 6d.—Salsafy, per bundle, 1s. to 1s. 6d.—Scorzonera, per bundle, 9d. to 1s. 3d.—Seakale, per punnet, 1s. to 2s.—Shallots, per lb., 8d.—Spinach, per bushel, 3s. to 4s.—Tomatoes, per small punnet, 3d.—Turnips, per bunch, 3d. to 6d.

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All communications for the Editorial Department should be addressed to WILLIAM ROBINSON, "THE GARDEN" OFFICE, 87, Southampton Street, Covent Garden, London, W.C. All letters referring to Subscriptions, Advertisements, and other business matters, should be addressed to THE PUBLISHER, at the same Address.



"This is an art
Which does mend nature : change it rather : but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE FLOWER GARDEN.



THE ROSE SECRET.

THERE is no mystery whatever in raising roses in any quantity by means of cuttings, and thus making them much cheaper than budded ones. Where cuttings can be had in quantities, the best time to put them in is October, on a sheltered south border, into which plenty of sand has been worked to make it light. If frames can be put over them, they will strike quicker and be safer in severe winters than when unprotected. In making the cuttings a small piece of the old wood should be left attached to the end inserted in the soil, as it calluses sooner for the emission of roots than when only the current year's wood is used. Last year, in October, I had between four and five hundred cuttings put in from roses grown in pots, consisting of some of the best new sorts. About twelve cuttings were put in each pot, and the pots were placed in a frame, where they have continued all through the winter. They are all now thoroughly rooted, and want planting out the first opportunity. I have frequently struck great batches of the Felleberg Noisette and Céline Forestier for planting in hedges, and all on a south border in the open air. The Felleberg is one of the very best of perpetual flowering, dark-coloured Noisettes, and when mixed with Céline Forestier a hedge of them is grand all the summer and autumn, the only drawback being that severe winters often cut them down; but they spring again from the roots. Roses on their own roots ought to be planted more than they are; for, either as bushes or pillars, they are far more graceful than the cabbage-headed standard roses now so much patronised. Another reason for cultivating roses on their own roots is their safety in very severe winters; for, if cut down to the ground or snow line, they will spring up again from the roots, and soon show their former beauty. In cycles of ten or twelve years a killing frost thins all the standard roses, and both nurserymen and gardeners suffer great losses in their collections. For exhibition purposes, perhaps, the largest and finest specimens of rose flowers are grown on standards, the first or second year after budding; but, for a display of the Queen of Flowers, give me a pillar rose tree covered with flowers from ground to top.—WILLIAM TILLERY, *Welbeck.*

— If "G. S.," who feels disappointed with "Y." in not letting him know the way in which he grows his cheap roses, will try the following plan, he will doubtless be able to grow them by the hundred or thousand. I select my cuttings in September or October, and put them in any odd corner of the garden. The cuttings have about six eyes, three below and three above ground. I make a trench to begin with, as if I were going to put in box edging, put in the cuttings, tread them firmly, and then level for the next trench, and so I go on until all are in. I put in two hundred cuttings last October, and of these only two have missed growing. Those I inserted the season before made shoots four feet and five feet long. I have struck *Devoniensis* most successfully in this way.—W. J.

— "Y.'s" method of managing rose cuttings, which is so mysteriously held back, is doubtless striking them in water. Cuttings put in a glass of water in a warm room will grow—i.e., make roots. A lady whom I know strikes quantities in this way. They, however, require very careful handling afterwards, in the matter of potting, &c. The roots, being so tender, damp off in the soil—a circumstance owing, doubtless, to the bruising they receive by that operation. The varieties which will most readily grow in this way are the Teas; the most success attended the trial of other varieties when small fine cuttings have been used. Now the pruning-time is come, plenty of opportunities will offer for the experiment.—HENRY MILLS.

— I SOMETIMES strike a few Roses, not by the thousand, like "Y.," but ninety-five out of every hundred cuttings put in can be struck in the following manner:—In the spring, as soon as the Roses have made shoots about six inches long, I take a sharp knife, and where I think them too thick I take off some of the young shoots with a bit of a heel to them. I then have some six-inch pots ready, with plenty of drainage in them, and fill them with soil consisting of loam and leaf-mould, with plenty of silver sand. I put ten in a pot, and then plunge them in the cutting-frame, with a bottom heat of about 75°. I shade them as little as possible, give them plenty of air, plenty of heat, and plenty of moisture; and thus managed they strike as freely as Verbenas. There is no secret in that. I have some plants in frames now that were struck last May. They consist of Madame Margottin, Céline Forestier, Charles Lefebvre, and Elizabeth Vigneron, all of which are, of course, small; but nevertheless they have on them three or four blooms each, and I find them handy for the decoration of small vases in the drawing-room or for cutting from; if they are spoilt, it is of no importance, as I can strike more next May. On the 17th instant, I planted out twenty *Maréchal Niel* and about a hundred Hybrid *Perpetuals* of kinds that were struck at the same time and had been kept in pots in a cold frame. They are from twenty to thirty inches high. I shall cut them down nearly close to the ground, and take all shoots off but the two strongest, and next year they will be pegged down to make an edging for the centre walk in the kitchen garden.—J. PINK, *Lees Court.*

— ONE of the largest rose growers in France says:—My principal propagator employs two methods for striking rose cuttings. 1st. He keeps strong plants of each sort of roses we have in large pots, which are plunged in a bed of ashes. About Christmas, when he looks over his stock of roses on their own roots, and finds that some sorts have run short, he removes the rose trees of the said sorts which are in pots into the propagating house, where they soon push young shoots. About the end of February he cuts all the young wood off, divides it into bits with two buds each, and plants the cuttings closely in silver sand in frames, which are on both sides of the propagating house, and under which the flue runs. The frames are two feet broad, and are covered with movable panes of glass, which are washed every morning. My propagator takes great care in inserting the cuttings, to cover only the lower bud. After they are planted, they are watered through a finely rosed watering-pot. In three or four weeks all will have struck root. They are then potted off into small pots, covered again for a week or two, and then removed to an outside frame, where they get hardened off.

The second method is, in the beginning of July, to take the half-ripe wood of such rose trees as my propagator wishes to increase, and to cut it in the same way as has just been described; but, instead of planting the cuttings in the propagating house in heat, he inserts them in frames against a north wall, which he has nearly filled with finely-sifted coal ashes. In about five weeks all will have struck root, and none will have damped off.—G. S., *Cheltenham.*

[Other interesting communications on this subject remain over till next week.]

THE ROSE GARDEN FOR MARCH.

BY GEORGE PAUL.

ROSES are now in so forward a state as to almost necessitate immediate pruning in order to have dormant eyes to prune back to. The present time is considered, I believe, by amateurs early for the operation; but, from considerable experience (last year's especially on a very large scale), I think pruning should be done earlier in the season than it is in general. The fact is, we are losing in our Hybrid *Perpetual* roses the character retained from the damasks and Hybrid *Bourbons*, and getting the earlier growing and early flowering habits of the *Chinas*. Of course, the numerous seedlings of General Jacquemont, a host in themselves, have led to this organic change. The season will somewhat modify the pruning. One must prune back closer than ordinary to have a good unshot eye to start with. Thin the shoots well out, leaving no wood in the head that is not healthy and fairly vigorous. Study the individual habits of the roses; the catalogue descriptions of vigorous, robust, and moderate being in some sense guides. For instance, *Maréchal Vaillant*, a vigorous kind, does not bloom if cut in close. Its shoots require to be left at least one foot to one and a half foot in length. Robust roses, as *Madame Vidot* or *Baroness Rothschild*, with short stumpy wood, should be pruned to a prominent bold eye—the best on the shoot, high or low. The small wood of these sorts never yields blooms worth having, and must be cut clean out. Moderate roses, as *Mlle. Bonnaire* or *Xavier Olibo*, need close pruning. They may be cut in almost to the old wood.

quite so, when the shoots are weak. The eye to which the shoot is pruned should, if possible, look outwards. If this rule is followed, a hollow head will be formed, allowing air to circulate well amongst the foliage and flowers. Prune, if possible, after a day's drying weather, as, if the ground is in good order, roses do not bleed badly. Choose likewise fine weather to dig the ground, turning in some manure, unless this has been already done, when a mulching of some short horse dung (road droppings, fermented by having been in a heap, are good for them) may be applied early in April.

Make good all vacancies in borders where the kinds to be planted are Hybrid Perpetuals, Noisettes, and standards of the Teas, and reserve places for dwarfs of Tea roses, which are better planted from pots in May.

In the forcing houses a few kinds started in November will be just opening. *Souvenir d'un Ami*, *Madame Falcot*, and the white Hybrid Perpetual *Marquise de Montemart*, are amongst the first. Where plants are just breaking syringe twice a day, which will also supply almost sufficient moisture to the plants; 55° to 60° is a good day temperature, which may fall to about 50° at night. All pot roses should now be pruned, as after May, grown under glass, they do not compare favourably with the early flowers from out of doors. It is well therefore to get all pot roses over by the end of that month. Pot roses should always be pruned some days before being started, however slowly, into growth.

EARLY SPRING FLOWERS.

A LOVE for flowers, of all kinds seems naturally implanted in man; but it is the early flowers of spring that always bring along with them the greatest degree of pleasure. Our affections seem immediately to expand at the sight of the first opening blossom under some sunny bank, however humble its race may be. Addison says that he always looked upon the whole country, in spring-time, as a spacious garden. We then welcome our long-lost associates with a cordiality that no other season can excite; and *Flora*, even early in the year, scatters her gifts all over the land with generous hand—some to deck the valleys with innumerable hues, others to adorn our upland pastures. Who among us has not admired the drooping *Snow-drop* of peerless white, or the pale *Primrose*, which garnishes the hedgerow bank, or the *Wallflower*, whose abode is everywhere, from the crumbling ruins of the dismantled abbey to the humble cottager's garden, or the meek *Violet*, whose home is in the secluded dell, where at dewy eve its fragrant sweets are tossed upon the gentle breeze? These, when they reappear in spring, stir up dormant memories which few can altogether abolish. The sight of the *Crocus* bursting through the mould bespeaks the advent of sunny days. With summer flowers we seem to live, as with our neighbours, in harmony and goodwill, but for early flowers we cherish a private friendship; and, when we first meet them in spring, it is like meeting with a long-lost friend. Autumn *Violets* are greeted with none of that affection with which we hail *Violets* in the spring; they are unseasonable, and we view them with curiosity rather than delight. The last *Rose* of autumn loses its charm compared with the first *Rose* of summer. Every season, however, has its peculiar charms, and autumn's sere and yellow leaf yields to many as much enjoyment as the full gush of young foliage in spring.

Amongst the earliest flowers of the year are those of the *Christmas Rose* and the fragrant *Coltsfoot*, whose beautiful blossoms load the air with perfume. The vernal *Hound's Tongue*, too, rivals the *Forget-me-Not* in loveliness, and, like the *Primrose*, is a "lorn tenant of the peaceful glade." The *Wood Anemone* carpets the shady grove, and *Hepaticas* of various hues also love the shade and thrive best when undisturbed. The humble winter *Aconite*, with golden flowers frilled with green, must also be classed amongst the first harbingers of spring; as must also the vernal *Pheasant's Eye*, with golden flowers prettily set off with leaves like *Fennel*. The charming little *Moor Heath* (*Erica carnea*) is indispensable to the spring garden, giving it a warm, wild, rosy glow, much wanted on a cold spring day; and not less valuable is the *Mezereon*, whose branches, though leafless, are well attired and thickly beset with blushing floral wreaths. With these may be associated the *Poppy Anemone*, concerning which the poet exclaims,—

"See you *Anemones* their leaves unfold,
With rubies flaming and with living gold;"

and *Dog's Tooth Violet*, of humble growth, with spotted leaves and drooping flowers; also our beautiful little early *Squills*, with flowers of celestial blue; or the *Blue Bell*, with its spikes of nodding bells, which deck the woods and groves in imperial hues. Nor must we omit the *Crown Imperial*, or the bold *Daffodil* that defies the winds and storms that sometimes beset it early in the year. With materials such as these there need be no necessity for bare borders or beds in spring.

GEORGE GORDON, A.L.S.

THE FLOWER GARDEN FOR MARCH.

BY GEORGE WESTLAND, WITLEY COURT.

WHERE new lawns have to be formed, the preparation of the ground is of the greatest importance, and except this is attended to in the first place no after management is likely to be so thoroughly productive of that verdant close, even, evergreen turf so desirable; and unless good turf can be secured, perfectly free from coarse grasses and weeds of every description, I would favour sowing with seeds adapted for the formation of a permanent lawn, being particular that the ground is made evenly solid. Lawns that were top-dressed early in winter, and such as are patchy, will be improved by being sown with grass seeds and white Dutch clover; afterwards rake and roll over the ground. Finish turfing repairs, and edge the margins of walks. This is a good time, before the ground becomes hard, to grub up *Daisies*, *Dandelions*, &c. Sweep and roll turf; the rolling should be done the day previous to mowing, and lose no time in having the grass cut with the machine, which will greatly improve the appearance and texture of the turf. Specimen ornamental shrubs should now be pruned. *Aucubas*, *Hollies*, *Bays*, *Portugal Laurels*, &c., will be greatly improved by going over them with the knife, so as not to lacerate the foliage. The branches may also be regulated; cutting back straggling shoots upon such plants as *Junipers*, *Retinosporas*, *Yews*, and *Thujas*, &c. Unless such plants as the *Irish Yew*, for instance, are rendered compact by pruning, they break down and often become unsightly. Borders containing herbaceous plants should be manured and dug; and such plants as require it should be divided and replanted. Herbaceous plants are the first to cheer us in spring and the last in autumn; they therefore deserve a little attention. Towards the end of the month, plant *Gladioli* either in groups, beds, or lines, keeping the crowns about three inches under the surface. That soil is best for them that has been enriched with manure twelve months previously and frequently turned; avoid manure in any form coming in contact with the bulbs, as it is almost sure to generate decay although it gives continuity of bloom. *Gladioli* should be planted at different times. They are also well adapted for pot culture. *Mignonette* may now be sown, and after the middle of the month sow hardy annuals at intervals. Transplant autumn sown annuals, and thin out those remaining, so as to induce perfect development. Sweet Peas should now be sown.

The following is a list of good Bedding *Pelargoniums*; but it must be observed that soil, situation, and other local circumstances often effect such a decided change in certain kinds, that it is impossible to say whether or not they will be equally effective everywhere. They have been, however, all that could be desired here.

SCARLET.

Vesuvius, first-class in every respect.

Waltham Seedling, fine bedder, the finest in the *Stella* section.

Lady Constance Grosvenor, a remarkably bright and effective variety—one of the best.

Bayard, very dark crimson; very effective.

Violet Hill, very dwarf; requires liberal treatment; first rate when well grown.

Tom Thumb, still one of the best for effect when planted in large masses, and good in all seasons.

Warrior, a veritable scarlet, with fine trusses of bloom; for large beds and vases this is a most effective kind.

Duchess of Sutherland.

PINK.

Christine, still the best; *Blue Bell*, a fine variety.

WHITE.

Madame Vaucher, than this we have yet nothing better.

Purity, also a good bedder.

Waltham Bride and *Avalanche*, two silver-edged kinds, with white flowers; both charming and very effective.

GOLDEN TRICOLORS.

Sophia Dumaesque, *Sophia Cusack*, and *Lady Cullum*. These are inferior to the *Golden Bicolor* kinds, with plain yellow leaves, which are best adapted for effect. Such as *Crystal Palace Gem*, a desirable variety of fine habit and constitution, *Golden Chain*, and *Golden Fleece*, may also be grown as the best of that section.

SILVER BICOLORS.

May Queen, one of the most effective, with pure white and green leaves; *Flower of Spring*; *Mangles's Variegated*, still a very useful trailing variety.

Pits and Frames.—Push forward propagation with the utmost dispatch, maintaining a brisk heat; and be careful that soils are properly prepared and aerated, as much mischief is done by potting tender cuttings in cold, wet, pasty soils. Never allow a plant to experience a check if possible. Prick off seedlings as soon as they are fit to handle; and remember that if they are allowed to become

drawn and leggy in the seed-pans, no after management will insure such a perfect plant. Secure a good stock of *Coleus Verschaffeltii* and *Batemanii*, which are the two finest varieties of that genus for bedding purposes. Also *Iresine Lindeni* and *Herbsti*, both of which rank amongst the most useful plants we possess. Do not overlook *Ageratum imperial* dwarf, so serviceable among blues and more effective even than *Lobelia* at a distance. Divide and pot herbaceous *Lobelias*. Pot off cuttings and remove the more hardy among them to cold frames, to make room for the raising of the tender kinds of seeds, which should now be sown in well-drained pans in light, sandy soil.

THE FRUIT GARDEN.

THE DYEHOUSE CHERRY TREE.

ABOUT thirty years ago, an old man named Dyehouse found growing in his orchard, among some English Morellos, a small bushy tree, which differed in form from the others, and also ripened its fruit some four weeks in advance of them. The fruit was about the size



The Dyehouse Cherry Tree.

of that of the Morello, but different in colour and shape; and the tree was found to be much hardier than its supposed parent. It grew vigorously, and soon became a good bearer. The original tree is now dead, but others raised from it have been disseminated to a limited



The Dyehouse Cherry.

extent over this (Lincoln) and a few adjoining counties. The raiser was not a fruit-grower. He lived out in our hill country, far removed from fruit regions, and no one, until recently, except a few neighbours, knew anything of this cherry. Eight years ago I planted fifty plants of it, about five feet high and with stems an inch in diameter;

they grew rapidly, and for the past four years I have gathered full crops from them. They have been in full bearing for three years, and have not wholly failed, even this present year (1871), when all other fruits, without exception, were totally destroyed by the severe cold of April 28th. I believe this variety to be a seedling. It is certainly very desirable. As a fruit for tarts and preserves, it has no competitor in the cherry kingdom. The fruit is quite tart, but when fully ripe is, to my taste, perfectly delicious, having the most pleasant and agreeable acid. This cherry would make a fine wind-break and ornamental hedge, if planted eight feet apart, and cut down at planting time to within a foot of the ground, and annually pruned. It will bear much cutting, with impunity. I saw a small orchard of it, which had been repeatedly browsed by stock, and it grew finely. I cut one down to the ground, and it threw up a dozen vigorous stems, and grew into a beautiful bushy tree.—*American Agriculturist*.

JANUARY'S TEACHING.—FRUIT TREES.

AT first view it may appear somewhat remarkable that fruit trees should be so little influenced by eight weeks of weather more or less mild, moist, and unseasonable. Spring flowers are expanding, and spring plants are making rapid growth, so that we have already a garden chequered by bright blossoms, those of early rhododendrous being conspicuous; but the apricot, which is especially susceptible of abnormal warmth in the early part of the year, is almost quiescent. Peach-buds are scarcely moving; and pears, considering the many temptations offered by a spring-like temperature, betray the same commendable reluctance to burst into bloom. Early plum-buds exhibit a disposition to expand, but are by no means so far advanced as to be liable to injury from frost.

We may learn, from the occurrence of a season such as we are experiencing, that circumstances may exist which tend to modify the effect of temperature on fruit-trees. It seems that dull and cloudy weather, even when accompanied by a vegetating temperature, is insufficient to excite deeply-rooting trees. When the weather is frosty, but clear, apricot trees are more prone to open their blossoms. Perhaps it is not alone the hygrometrical condition of the atmosphere that has kept fruit trees inactive. The soil was chilled by severe frost in December, and frequent falls of rain throughout January surcharged the land with wet, and so rendered it impervious to the influence of the milder condition of the air.

The lesson taught us by the circumstances I have attempted to describe seems to me to be capable of application in the management of wall trees, which are often excited by bright weather early in the year, and are, as a rule, cut off by succeeding frost. It is to exclude the trees, by covering them early in the year, from the existing influence of bright sunlight, and by watering the borders abundantly, or otherwise procuring such a state of things as exist to depress the temperature of the ground at this season, so that the roots may be kept from the stimulating effect of early but treacherous warmth.

An examination of our weather record for January shows but little variation of temperature, the range being only 26°, and an absence of severe frost, unusual in the first month of the year. The lowest reading of the maximum thermometer was 39° on the 20th; a temperature of 52° was recorded on the 4th, and 53° on the 30th; the average maximum temperature of the month was a little short of 47°. The minimum thermometer recorded slight frost on eight nights, the lowest reading being 27°, or 5° below freezing, on the 15th. The occurrence of clear sky and unobscured sunlight was recorded on eight days only; so that there were twenty-three dull and cloudy days; a south-west wind prevailed, and rain was registered on eighteen days—the amount collected was about three inches (2.97 actually). The same dull, moist weather has characterised the month of February up to the present time (February 15th); a change of wind from south-west to east and north-east somewhat lowered the temperature of the air.

Belvoir.

WM. INGRAM.

THE FRUIT GARDEN FOR MARCH.

BY WILLIAM TILLERY, WELBECK.

Outdoor Fruits.—March, the most uncertain month in the year, makes it necessary to devote more attention than most gardeners can give to preserve their fruit blossoms from its scathing power. The month this year is likely to have a great preponderance of easterly winds, for the prevailing currents have been southerly for the last two months, and there is almost sure to be a reaction. Up till this date in February, rain has fallen more or less on nearly every day, and the soil is quite saturated; but a change to slight frosts in the mornings has taken place, and the air is gradually getting drier. Apricots, peaches, and nectarines will want protection as soon as the

blossoms show colour. Glass coverings are certainly cheapest and best where they can be had, and strong canvas the next where it can be rolled up and down, according to the weather. All nailing and pruning should be completed as early in the month as possible, for the blossom-buds of hardy fruit trees on the walls are swelling fast. I find pears on the quince stock to be more advanced in their buds than those on the pear stock. The time for grafting will be earlier in March this year than usual, and grafts intended for using must be placed in the ground behind a north wall till wanted. There are often many worthless kinds of apples and pears in collections, and the best way is to cut their heads off and graft them with good sorts. Gooseberry and currant bushes will soon have their foliage expanded, unless a check comes soon, and protection of some kind may save a crop should there be severe spring frosts. Fern leaves, dry hay, or fir branches, will if put on the top of the bushes on the appearance of a severe night's frost often afford sufficient protection. Strawberry plantations will now want dressing, and if a slight covering of littersy manure is spread over the beds the foliage will grow through it, as well as the flower stalks, and the straw will keep the fruit clean.

Orchard House Fruit Trees.—The mild season has naturally brought all kinds of fruit trees grown in pots into bloom sooner than usual. If the pots have not been top dressed in the autumn they should now be done so by making a rim of fresh cut turf round the edges of the pots with the grassy side down and filling the centre with some well rotted cow or sheep dung. This will give fresh vigour to pot trees which have not been repotted for years. Before the flowering process commences, syringe with Gishurst Compound of the strength of three ounces in a gallon of water, and this will help to keep the trees free from mildew and aphids; soft soap dissolved in water of the same strength is likewise an excellent corrective of mildew on Peach, Nectarine, and Cherry trees.

Vineries.—As soon as the stoning process in the earliest vinery commences, a steady night and day temperature must be maintained. The thinning and stopping the shoots in the succession houses will want frequent attention; and muscats, when in flower, require a high temperature, 70° not being too high. To have this fine variety of grape in the greatest perfection as regards colour and flavour, the forcing of it should be commenced in January or February if possible.

Peach Houses.—The thinning the fruit where too thick, and tying the shoots down as they advance in growth, must be attended to. In the earliest peach house it is better to leave the fruit rather thick on the trees till the stoning process is over, as some may drop off then. The temperature must be kept rather lower and equable till the stoning is over, and the inside borders kept well watered. The dull, sunless weather of the last few weeks has been against peaches and nectarines setting well in the late succession houses without artificial fertilisation.

Fig House.—Figs, whether grown in the borders, tubs, or pots, will now require liberal waterings and syringings over head on fine clear days. Some liquid manure may likewise be given them occasionally until they begin to ripen. The most luscious figs I have ever tasted were grown in pots, and the trees placed on bricks on the flue of a succession pine pit. The sorts were the White Marseilles and Lee's Perpetual, and the fruits, when ripe, were of the most delicious syrupy flavour. The trees were grown in turfy loam brought from the top of a limestone rock, and the pots when placed on the top of the flue had the trees well rooted in the soil. The pots were placed in shallow pans containing water and liquid manure, until the fruit began to ripen, when the watering was discontinued for a time.

Cherry House.—Cherries require to be kept in rather a low temperature when stoning; from 50° to 55° will suit them. Air must be given freely in favourable weather.

Cucumber and Melon House or Pit.—The weather lately has been much against the growth of young Cucumber and Melon plants, for the long continuance of dull days and want of sunshine have given them a sickly appearance, and many of the earliest raised plants have succumbed. If grown in dung beds the linings must be attended to, so as to keep up the requisite temperature. When grown in houses or pits heated with hot water, the trouble of growing them is greatly lessened, for heat and moisture can be better regulated there. Sow now good batches of seeds for succession crops, and keep the young plants in the seed beds till strong enough to harden off.

Strawberries.—The earliest placed plants in heat will now begin to be showing colour, and watering must be more sparingly given to improve the flavour. The Black Prince with me is now beginning to ripen, but I shall discard it in another year for forcing early, for it is only a small fruit with not much flavour, and the plants are very

liable to mildew. Keens' Seedling is, if from selected plants, perhaps, the best early forcing strawberry yet grown, and President is also very good for a second kind for succession.

THE PINERY FOR MARCH.

BY JAMES BARNES.

PAY great attention to fruit swelling in all stages; continue to allow an increase of heat by day and night, as the light increases. Maintain a kindly humidity, taking care to ventilate, but so as to avoid draught. Give tepid, clear manure water to the roots, and syringe round the stems and over the plunging materials with the same. Some charcoal laid about the surface of the plunging material is also beneficial in absorbing and giving off gases and humidity. Take care that such fruits as have nearly finished swelling get neither bottom watering nor syringing about the stems; and if they can be moved to a light, dry situation, let it be done, in order to improve colour and flavour, and make room for others that may be starting. From those now in bloom withhold syringing for a short time till they set, and apply but moderate humidity. Give such pines as are now starting into fruit every encouragement, in order that they may make a bold and strong appearance; taking care at the same time not to stint them for water at the roots. Select for another batch the finest, fittest, ripe, well-grown plants, and place them together on a well-prepared, moderate bottom heat, to come into fruit in succession, and shift on other successions to replace them. In the case of succession plants, there must be no stand-still; shift them on as they require it into good sized, well-drained pots, in which they are intended to fruit, using good, healthy, sweet, well-pulverised soil, charcoal, and soot. Place them on a kindly, moderate bottom heat, increasing the atmospheric heat as light increases, which will also naturally raise the bottom heat a little. Syringe freely now on fine afternoons, shutting up early. Maintain a kindly, humid growing heat, and allow the plants to make full speed while there is light and heat. No check must be allowed, or splendid, well-swelled fruit will not follow in succession at all seasons of the year. Starve or stagnate a young pine-plant, and it will never produce perfect fruit. Suckers, take off in succession as you clear away the fruit, and pot and start them immediately. Thus fine plants and noble, well-swelled fruit will be the result. Push them along at full speed on a kindly, healthy bottom heat in a humid atmosphere, well charged with ammonia, giving kindly methodical syringings early on fine afternoons, airing freely in order to fully maintain robustness and vigour throughout their progress, and never allowing a plant to get dry at the root, or pot-bound for lack of timely re-potting. Attention to little items like these cannot fail to end in complete success.

WHAT THE DATE TREE IS TO THE SAHARIANS.

THERE are eight villages in the oasis of Wodian, in the Desert of Sahara. The chief occupation of the inhabitants is the cultivation of the date tree. At Kreez, one of the villages, there is an excellent spring of water; but it will not supply all the plantations. Therefore deep wells have been made, and by the aid of camels the water is raised from them in earthen jars whose contents are emptied into wooden troughs. The water is conducted by long trenches into channels, which, when one plantation is well watered, is diverted to another grove of trees. The blessings of the date palm are never-ending to the dwellers in the Desert. First, it delights the eye by its picturesque appearance; it affords shade, without which the heat of the sun would be beyond endurance; its fruit is food; its wood is fuel; houses are built of it: and from its leaves baskets, ropes, mats, bags, brushes, brooms, beds, and fans are manufactured. From its branches the natives make cages, fences, and chairs. After the kernels of the fruit have been soaked two or three days in water, camels will eat them with eagerness.

The date tree reaches its highest vigour at thirty years, and continues bearing fruit in perfection until it has reached its one hundredth year. It gradually decays for a hundred years more, and then dies. A date palm yields during its best years between twenty and thirty clusters of dates, each cluster weighing about thirty pounds. If the suckers, of which every date tree throws out a number, are removed and transplanted, fruit can be obtained from them in ten years' time. Trees raised from seed will not yield dates until twenty years old. The Arabs love their palm trees. They would not leave the desert with its groves of dates for the Garden of Eden.—*Hearth and Home.*

Extreme Cold.—A rural American paper says they have no thermometer in their town, so the weather gets as cold as it likes. Another journal of western New York reports the glass "30° below nothing, and it would have gone much lower, only it wasn't long enough."

COLOCASIA ODORATA.

For warm conservatories, large stoves, &c., this is one of the most imposing and easily grown of fine foliaged plants. It is indeed so easy of culture in a warm structure that by merely planting it out in a bed of loam, or even in a gravel pathway, it grows without any further trouble. It is a native of the East Indies, and its stems are usually from three to eight feet in height, but when planted out in warm stoves it will even attain greater dimensions. When well grown the leaves measure more than three feet in length, are very handsome, and of a fine fresh green colour. The flowers are comparatively small for such a large plant, of a pale greenish yellow colour, and delightfully fragrant. As they open one by one in spring they do not attract the eye, but quite fill the air with a delicate odour. This is one of the plants used in the open air in summer for the sake of its fine foliage; but it does not grow so well as *Caladium esculentum* in the open air. It endures the open air in summer in the neighbourhood of Paris, and also in the warmer parts of southern England, but should not be planted out till June. Its chief attraction for the sub-tropical garden, as distinguished from other large plants of the Arum tribe, lies in its somewhat tall woody stems; the other kinds are almost stemless, or have only very short stems. It is quite easily propagated by division, or, in some cases, by means of pieces of the stem.

PLANTS FOR A NORTH HOUSE.

If the light is much obstructed, ferns and Selaginellas will give the greatest amount of unmixed pleasure with the least cost. But if nothing obstructs the light, many things may be grown as well in a north house as in any other aspect, especially in summer. I am assuming the house is heated in some way or other. In a mixed collection, where there is only one house, it is not desirable to attempt growing many hard-wooded plants, and those should all be of very easy cultivation.

For winter and spring blooming grow the following:—Dutch bulbs, potted in October, placed in the open air, and covered over with six inches of ashes, old tan, or cocoa fibre, till the pots are filled with roots (about six or eight weeks); Lily of the Valley will bloom late, but will be none the less beautiful; cineraria, sown twice, first in April and again in July, potted off, and grown in a cold frame, or on the north side of a fence or wall, to be housed before frost comes; *Solanum capsicastrum* (hybrids), sown early in spring, potted off, and planted in a rich border in June, to be lifted and potted in September, will brighten up the house with scarlet berries all the winter; *Cytissus racemosus*; camellias; violets (Neapolitan, Giant, and several double sorts); mignonette, sown in pots in July and August; several annuals, sown in September, such as *Saponaria calabrica*, *Nemophilas*, &c.; musk is a favourite pot plant in large cities; *Lycopodium denticulatum*; myrtles; a plant or two of the fan palm (*Chamaerops humilis*); *Dracaena australis*; *Cyperus alternifolius*; *Abutilon Thompsonii*; several acacias, such as *armata* and *Drummondii*, *Calla aethiopica*, *Primula sinensis*, &c.

For summer: *calceolarias*, sown in July, and the seed pot plunged in ashes under a hand-light, and shaded, when up pot off, and grow in a frame under a north wall, to be taken in before winter. These will flower beautifully in a north house in June and July. Fuchsias will do well in summer, and may be placed under the stage in winter.

Zonal geraniums; lilies, especially the lancifolium section, and auratum. A few chrysanthemums may be grown out of doors for blooming in October and November. Several of the variegated Japanese plants of recent introduction would be useful in winter, when flowers are scarce, but in houses of this kind do not crowd them too much. It is better to grow a few plants, and do them well, than to fill the house too full. Damp is the chief thing to guard against in winter; but do not aim at too high a temperature, and ventilate as freely as possible when the weather is favourable.

E. HOBDAK.

Ramsey Abbey.

VENTILATION DURING WINTER AND SPRING.

WHATEVER views are held, or system adopted, in regard to ventilation, our practice must be modified, or at least ought to be, by times and seasons. For instance, many years' practice has convinced me that, unless for any special purposes and under exceptional conditions, all through ventilation should cease from December to April. Of course I am writing of houses in which a high temperature is maintained, such as plant stoves, intermediate plant houses, early vineries, peach houses, &c.

In winter and early spring ventilation, the primary object should be to renew the atmosphere without creating draughts. The

regulation of temperature is a less important matter. I say this advisedly, knowing that many may think otherwise. But a rise of ten or fifteen degrees caused by the heat of the sun does no injury. And if it did, the injury would be nothing compared with that caused by keeping down the temperature to its proper level by means of a current of outside air passing through the house. Many hardly believe in ventilation at all, unless they feel a rush of air passing through, or at least have the opposite sets of ventilators open simultaneously. In the early months of the year, we ought not to be able to feel the movement of the air. If we do, it should be a warning that the ventilation is injuriously excessive. Air circulates freely enough with only one set of



Colocasia odorata.

ventilators open. It is astonishing how subtle heated air is, and how soon it finds an exit, even if that is at the lower part of the house. This is easily proved by introducing a few dishes of hot water, or burning a little paper or tobacco in a hothouse at work. The steam or smoke will point out the course of the air as it travels with it in a visible form. The top ventilators establish a double current at once, but it takes a little longer for air to find its way out and in at the lower openings. In this way the air of a house gets changed thoroughly without creating draughts. True, the change is more gradual, but this is the chief merit of ventilation early in the season. Hurried ventilation is most mischievous. We want to let out exhausted and to let in fresh, unused air; the danger lies in a too rapid exchange; and in doing it, our chief object is to let out and in no more than is needful, for all excess in either direction involves a loss of heat and of moisture. The air let in is colder and drier than that let out. The first thing this newly-admitted air does is to warm itself and quench its thirst at our expense. This may seem a small matter to some. Water is plentiful, it may be, and there is no stint of coal. It is, however, a very serious affair to the plants, for the cold air does not take the trouble to go and hug our pipes round till it gets warm, nor to run to our cisterns or evaporating pans to wash itself clean and mollify its harsh, biting spirit. On the contrary, it steals heat and extracts water from every tender leaf and flower it touches, and makes them shiver and starve under

its exactions. Hence the more cool air passed over them the more they loose, and the less they have left for themselves. Therefore, unless the air can be both watered and warmed before it enters hot-houses in winter and early spring, the less of it that sweeps through them the better. Neither is there any necessity for rushes of cold air through hot-houses. A change of air is, undoubtedly, desirable; but even the importance of this has been exaggerated. Air is not so readily exhausted by plants as many have assumed, and there are few or no glasshouses so closely constructed as to be air-proof. In almost all of them an interchange is taking place between the internal and external air, and the circulation of the internal atmosphere is incessant. Apart from any exchange between the heat of the pipes on the one hand, and the coldness of the glass on the other, the air has a restless time of it.

I must not, however, be understood as decrying ventilation; on the contrary, I am simply advocating caution. Either set of ventilators may be opened alternately; but, during the winter and early spring, it is best not to open both simultaneously, unless the outside and inside temperatures approximate to equality. D. T. F.

THE CREEPING MYRTLE.

(MYRSIPHYLLUM ASPARAGOIDES.)

For some years the florists around Boston have cultivated a charming greenhouse evergreen, which is extensively used in floral decorations. We first met with it a few years ago in the hands of a New York florist, who knew it only as Boston smilax, and it is by some called Boston vine. The name *Myrsiphyllum* means Myrtle leaf, and *asparagoides*, resembling



The Creeping Myrtle.

asparagus, a likeness which, while it is apparent to the botanist, is not very manifest at first sight. The roots are fleshy; the stems, though small, are strong and elastic, and climb to the height of some twenty feet. The foliage is of a fresh, lively, shining green. The flowers are small and white, appearing two or three together, and are followed by a globular berry. The plant is grown in ordinary greenhouse culture, and is trained upon strings. It will grow well in rooms, especially if

it can have an abundance of light, and when trained over a support of some kind soon covers it with luxuriant green. It may be propagated by dividing the root, but our florists generally raise it from the seed, which is freely produced by old plants. This matures in July, and is sown as soon as ripe. It is a native of the Cape of Good Hope. The engraving gives some reduced branches and a portion of the plant of the natural size. The delicacy and beauty of the *myrsiphyllum* especially adapt it for use in floral decorations, and it has an additional good quality—it lasts a long time in good condition when cut. For making up floral wreaths for the hair it is superior to all other green, and large quantities are used for this purpose alone. It is sometimes used with fine effect to trim a white dress; being obtainable in long pieces it readily forms a graceful tracery far superior to any embroidery. We think that the cultivation of this plant for ornamental purposes must be peculiar to this country, as we do not find it in any of the European plant catalogues, or in foreign works on floriculture. Latterly the florists near New York have engaged in the culture of this plant, some of them devoting whole houses entirely to it. The *myrsiphyllum* bears cutting well, as new shoots spring up in great abundance after each cutting back. [The above charming plant, the figure and description of which we borrow from the *American Agriculturist*, is occasionally seen in botanical and curious collections in this country. In America it is now the most important plant for adding grace and verdure to floral decorations. It is usually trained on strings of twine, led from each small pot to the roof. Each plant forms a beautiful glistening wreath around its string. By cutting this the wreath is easily carried, and may be used without disturbance in many kinds of indoor decoration.]

THE INDOOR GARDEN FOR MARCH.

BY T. BAINES, SOUTHGATE.

Conservatory.—The materials for keeping up an effective display in conservatories will now have become more plentiful than during winter, and one of the most important considerations is, to see that portions of such things as will bear retarding without injury are at once placed under conditions to insure their being made available later in the season. Where, indeed, anything like a continuous supply of blooming plants is required, it is quite necessary to have at command a house so placed that the sun will have little influence upon it, except for an hour or two morning and evening. A lean-to with a north aspect is best. Many imagine that such houses are only required by those who retard plants for purposes of exhibition; this is a mistake. By selecting a portion of the stock of Camellias, Azaleas, Epacrises, Geraniums, Cinerarias, Cyclamens—in fact, any of the numerous greenhouse plants that are used for conservatory decoration, the blooming season may be prolonged to almost double its usual length, especially if judgment is used in selecting varieties that are naturally late in flowering. Camellias—*candidissima*, fine white; *Bealii*, red; *Lavinia Maggi*, striped;—Azaleas—brilliant and *Juliana*, both red; *Extrani* and *coronata*, both bright rose; *Gledstanesii formosa*, white striped;—Epacrises—*eclipse*, *grandiflora*, *rubra*, and *miniata splendens*. These, and others, which the careful observer cannot fail to note, can be retarded without injury, so as to come in at a time when they will be found of great use. And it is not only during spring when such a house will be found of the greatest value; it will also be an excellent place in which to harden the stock of Ghent Azaleas, double flowering Plums, Lilacs, Spiræas, &c., that have been forced, and which frequently, from want of a suitable place, are subjected to treatment ill calculated to render them of use the following season. Later in the season, too, it will suit Camellias well that have set their bloom, and which, from want of proper accommodation, are turned out of doors; further on in the season still, late flowering Chrysanthemums may be kept safely in such a house until the middle of January, at which time they will be found most useful. Large Camellias, which have got leggy from want of judicious pruning when young, or through overcrowding, may be improved in the following manner:—Take, at once, a couple of healthy young plants, in six-inch pots of any approved kind, place these on the surface of the ball of the plant to be operated upon; then inarch the heads of each of the young plants as low down as they can be got on the opposite sides of the large plant. These will become firmly united during the summer, when they may be severed from their original stems; and in the following season, before growth commences, the head of the stock or naked plant may be cut away just above where the young plants have been

inarched, when they will commence to grow apace and in a little time make a handsome plant. Movable shading, of thin material, should be got ready, as bright sunshine on a March day makes short work of many things in flower. Pinch out the points of a portion of the stock of *Pelargoniums*. These will be useful in July, after the early ones are over. Start another batch of *Achimenes*, *Gloxinias*, and *Tydeas* for summer decoration. See that Lilies, breaking through the soil, are not left where they have an insufficiency of light; otherwise they make weak growth, which no care afterwards will put right.

Stove.—Finish potting the principal hard-wooded occupants of stoves as early as possible. *Alocasia Veitchii* and *Lowii* are plants which are frequently not well grown, chiefly through being potted in unsuitable soil. They do not like anything of an adhesive nature; they do best in one-half fibrous peat, one-half chopped sphagnum, with a liberal admixture of sand. *Alocasia metallica* enjoys the same materials. The more easily grown *Alocasia macrorhiza variegata*, on the other hand, requires a different soil. Good turfy loam two parts, rotten dung one part, with sufficient sand to secure quick and thorough drainage, suits this plant well. Palms may now be potted, using fibrous peat, with a moderate admixture of broken crocks and sand; being water-loving plants, unless well drained the roots become unhealthy. With longer days, the temperature of the stove ought to be increased 8° or 10° during the daytime, and 5° at night; closing early so as to shut in the sun's genial warmth, which is much better as well as more economical than fire-heat. Syringe the plants at the time of closing the house; and always let this be done sufficiently early to allow the foliage to dry before night. Stoves that face the south, or in gardening phraseology stand east and west, will require slightly shading during sunny weather; at least some of the occupants will need a little shade, and it is better to place such at one end of the house, and only shade that portion; as the less shade the better, if scorching can be avoided. Stoves that are built north and south do not require shading so early in the season.

Fern House.—Any potting that remains to be done here should be attended to at once. Many of the commoner kinds reproduce themselves freely. It is therefore always well to keep a quantity of these in small pots; they are useful for intermixing with large plants, the appearance of which is much improved by an admixture of small ones; and if the latter are allowed to get somewhat pot-bound, their fronds will last in a cut state much better than those from plants more freely grown, and the better plants are saved from mutilation. All ought to be carefully picked over, removing such fronds or portions of them as are naturally decaying, yet do not cut out much that has life in it, as this has a tendency to weaken the plants. As the days lengthen, raise the temperature a little. Brown Scale is the greatest enemy of the Fern house, and with the approach of warm weather this pest will begin to increase apace if not checked. Every means should therefore be used to keep it down; as it soon renders the plants unsightly. As soon as growth commences, shade slightly during sunny weather, and allow more moisture in the atmosphere as well as at the roots. Give air on all mild days, otherwise the fronds push weakly; a condition that should be avoided, as leaves of that kind never maintain a healthy appearance so long as is desirable. If thrips makes its appearance, fumigate frequently yet not too strongly.

Orchids.—Proceed with potting, carrying out the operation in accordance with former directions. See that the plants are kept as free from insects as possible. White scale and a minute yellow thrips are their greatest enemies. The scale will thrive alike on those from the eastern or western hemisphere, on thick fleshy-leaved plants like *Vandas*, *Saccolabiums*, or *Aerides*, as well as on the thin leaves of *Miltonias*, *Lycastes*, and *Dendrobis*; the thrips attack most frequently the thin-leaved plants, yet if allowed to get the upper hand they will do much mischief to the young leaves of *Phalenopsis*, *Saccolabiums*, or *Aerides*. They usually secrete themselves down in the heart of the plants, where no amount of fumigation that can be used with safety appears to affect them. Continual syringing will keep them in check. Some growers object to syringing overhead; but, if it is done sufficiently early in the morning to allow the plants to get dry before night, with a reduction of atmospheric moisture, no bad results will follow. For the eradication of scale nothing is more effectual than the sponge and a camel's hair brush carefully applied. Increase the temperature 6° or 8° by night, with 8° or 10° by day, according to the state of the weather. Shade with thin material during bright weather, yet never allow it to remain down when not required.

Hard-wooded Plants.—All hard-wooded plants which it is necessary to pot during the spring ought to receive that attention by the middle of the month. If cold, cutting winds accompany bright weather, do not give any side air near where newly potted plants are placed; but let the top lights be opened. Shade and sprinkle water

about the paths and upon the stages where the plants are placed. Let all plants as they are potted receive what tending they require to put them in proper shape, especially young growing stock. Any omission in this matter is frequently fatal to symmetrical appearance, as the plants get older the young wood getting too stiff to bend. If mildew happens to exist on the ripe wood of last year, it will most likely attack the young growth as soon as the plants begin to move. This applies to such things as *Boronia pinnata*, *Hedera tulipifera*, and *Leschenaultia biloba*. If such should occur, dust with sulphur at once. Azaleas that have been much affected with thrips last summer would be much benefited by a good washing with tobacco-water now, as the eggs that were deposited in autumn will soon come to life under increased temperature.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Tree and other Pæonies.—It does not seem to be generally known that these force well, and form valuable additions to the conservatory early in the season. A temperature of from 45° to 55° hurries them into bloom, and they may be had in flower in February or March. Several of them are sweet-scented, and all are interesting, and more or less beautiful. The chief use of such plants forced consists in their anticipating the spring or summer by many months.—D. T. F.

Lilium giganteum.—Will you kindly tell me how I can increase my stock of this noble lily?—J. FRISBY.—[There should be a few good suckers around the base of your old plants, which may be taken off with a heel when potting, and firmly placed in small pots, using a compost of finely chopped turfy peat and loam, some leaf-mould, and a good admixture of sharp river sand. A very gentle bottom heat would accelerate their rooting; they should be kept close for a few days, and shaded from strong sunshine.]

Hydrangea japonica.—I have a few plants of this *Hydrangea*, which I am at a loss how to treat, so as to have them in bloom early. Can you kindly help me?—G. FOX.—[If your plants are young they should be re-potted now, and such as show signs of flowering, if required early, may have a little extra heat to accelerate their blooming season. Should the plants consist of several branches, those not possessing flower-buds may be removed, and used as cuttings, in which case they make nice blooming plants by next spring.]

Myosotis dissitiflora.—This is one of the best of flowers for conservatory or for room decoration in February. Take up tufts of it from the open border, say a month or six weeks before they are wanted, and keep them in a temperature of from 45° to 50°, and they will flower profusely. They remain a long while in flower, and never look so lovely and delicate as when under glass. Everybody likes them in vases and bouquets—in short, this Forget-me-Not is a great acquisition any and everywhere for early flowers. It is not at all particular as to situation, and flowers freely in a room or cottage window.—D. T. F.

White Lilacs.—Where can I get the white variety of lilac so commonly seen early in the Paris markets?—A. WILLIAMS.—[The lilacs about which you inquire consist wholly of the ordinary purple kind, which is forced in pots. After being lifted they are placed in a cool house for a little while, after which they are subjected to a high temperature, with plenty of water overhead and at the root, and kept in total darkness by means of covering the pits in which they are grown with straw mats, &c. The lilac colour by this means is exchanged for one of pure white, and the bloom is of a better quality than if the true white variety had been used.]

Cool Orchids for Conservatories.—Would you kindly name a few cool orchids for the conservatory, those easiest to grow and obtain?—

CLARA.—[Orchids in general require a little extra heat when making their growth, but we think the following may suit you: *Barkoria Skinneri*, *Cattleya citrina*, *Cypripedium insigne*, *Celogyne cristata*, *C. odoratissima*, *Disa grandiflora*, *Epidendrum vitellinum*, *Goodyera macrantha*, *Laelia anceps*, *Lycaste Skinneri*, *Mastrobella ignea*, *Miltonia spectabilis*, *Odontoglossum grande*, *Phajus grandifolius*, *P. Wallichii*.]

Solomon's Seal.—I can endorse all that Mr. Hobday says about this. No plant is easier forced or more useful, either in pots or for cutting. It is improved alike in leaf and flowers by forcing. Few flowers are more striking in tall vases, and the tiny tubes mounted singly or in threes, give chaste variety in a bouquet that puzzle many and gratify everyone. The single leaflets mounted are likewise serviceable for fringing; altogether it is charming. Smaller plants, with from three to six flowers, form model table plants.—D. T. F.

Chinese Primroses.—We beg to send you from our seed grounds at Nice specimens of our Chinese Primroses. Amongst them, as you will see, are some novel things, such as the Madder red-shaded crimson, which we call Florence, and the double variety of the same; the double red, double white, double white fern-leaved, double spotted; then the white with the yellowish green centre, the lilac margined white, and others.—STUART & CO.—[A charming collection of blooms, generally of large size, finely varied in colour, of good substance, and altogether extremely beautiful. Among the best are Village Maid, double and single, blush, mottled, and flaked with crimson; double red, purplish crimson, full and handsome; *carmina alba punctata*, rich deep crimson, thickly dotted with white; double Florence, brilliant in colour and very double, while the single variety is equally fine in colour; *blanca alba punctata*, deep lilac, covered with minute white spots; *lilacina alba marginata*, bright lilac, distinctly edged with white; red fern-leaved, also a fine kind; all, in short, lovely more or less, and well deserving of cultivation.]

THE COW PARSNIP (HERACLEUM).

TIMES and fashions change; colour has had its day, and form now begins gradually to assert its right to due recognition. You have already given in your columns some examples of plants remarkable for fine form, and nobility of aspect, and now I shall proceed to add a few more to their number.

The genus *Heracleum*, numerically speaking, is not a large one; and, owing to the great sameness of general contour that presents itself among its species, I shall not be far wrong when I say that the maximum of beauty as well as of gigantic development appears to be monopolized by one species, and that tolerably familiar to most people by the very appropriate name of the Giant Cow Parsnip—(*Heracleum giganteum*)—a synonym that has become so thoroughly popularized that in referring it to its true specific name, *H. sibiricum*, I have no wish to insist in laying claim on its behalf to the usual rights of priority as regards nomenclature. It is a widely distributed plant in the wilds of Siberia, and one which of all others gives the most marked character to the herbaceous vegetation of our northern hemisphere so admirably illustrated in one of the early numbers of *THE GARDEN*, and exquisitely individualized in the accompanying woodcut.

It was introduced into this country some thirty-five years ago, and is a grand plant for the wild garden, and were it not for the fact that its maximum of beauty is attained soon after mid-summer and succeeded by a very rapid decay, it would deserve a place in the sub-tropical garden. The early removal of the flower stems would not only add vigour to its artistically cut and arranged leaf development, but also protract its beauty for a much longer period than otherwise. I have grown this plant with flower stems as much as fourteen feet high, the crowning terminal umbel being more than two feet across; and in a wild corner during the succeeding winter, long after all trace of foliage has disappeared, the ghost-like reminiscences of former life which these stems present have a beauty of the melancholy type peculiarly their own. It is a most abundant seeder, and after it has become once established, I would recommend the removal of the flower stems while the seeds are still adherent, or it may soon outgrow the bounds allotted to it. For a small wild island in a lake no plant can be more appropriate. There, of course, its vagrant propensities will be curbed by the limit of its island home, and its roots dipping far below the water level will drink in a bountiful supply of that great essential towards vigorous development. I may also state that this plant has qualifications that warrant its claiming a place no less aristocratic than in our metropolitan squares or town gardens generally. In one of the narrowest and oldest streets in Hull, under the very shadow of the house that gave the great Wilberforce birth, it yearly attains a height of ten or twelve feet, and looks wonderfully luxuriant. I should, however, add that possibly some of this luxuriance, displayed under otherwise adverse circumstances, must be attributed to

a bountiful supply of guano and other artificial manures from the adjacent warehouses.

HERACLEUM WILHELMSII claims a near relationship to the foregoing, but is smaller in stature, rarely exceeding six feet, its leaves are less rigidly cut and shorter in the foot-stalk; the individual flowers are also larger and more closely arranged in the umbel, its most noticeable general feature being its denser and more compact habit.

H. FLAVESCENS, with its variety *angustifolium*, which is sometimes elevated into specific distinction, both possess characters sufficiently distinct from each other. The latter has long narrowly-divided leaves, and is decidedly the more elegant of the two. In both the species and variety the foot-stalks and veins of the leaves are covered with soft straw-coloured hairs, whence originates the specific name.

H. EMINENS is a species of more recent introduction, and one which I have not yet seen under circumstances sufficiently favourable to justify me in expressing an opinion respecting it. The dense covering of downy hairs which it has on the leaves, combined with their massive and rounded outline, must, however, I think, have a very charming effect.

H. ABSINTHIFOLIUM.—Some little time since this was noticed in one of the gardening periodicals, and accompanied by a figure which does not appear to me to convey anything like a correct idea of the true plant. I have grown the *Zozimia absinthifolia*, to which the former is a synonym, and its foliage is so finely divided as to come under the descriptive character we find in books of "*foliis decompositis*"; it is with me neither a very vigorous grower, nor does it possess any very marked character worthy of recommendation.

I need only add to the foregoing remarks, that all the species are fond of good, rich, moderately damp soil, and therefore where the latter is poor and sandy it must be sup-

plemented with a bountiful supply of manure.

J. C. NIVEN, *Botanic Gardens, Hull.*

ARTIFICIAL FLOWERS AND THEIR MAKERS.

THERE are about 170 firms of artificial florists in London. Of this number perhaps not more than one-half are manufacturers; the other half, although describing themselves as florists, are either wholesale dealers or importers of foreign goods. Of the manufacturing firms, about ten houses each employ 200 hands, and ten more each find work for 100 hands; the smaller houses keep from twenty to thirty, and some even as few as six or eight. There are outdoor workers as well as indoor, and including both, it may be fairly computed that at the present time from 4,000 to 5,000 women and children find employment in this fancy trade, which is divided into branches: rose-makers, pattern-makers, preparers, cutters-out, jet, silk, satin, and leaf hands, and mounters, being the titles by which the branches are distinguished. First-class hands can earn 20s. to 25s. per week if fully employed, but the average earnings may be said to not exceed 15s. There are, however, highly talented artists, who make from £100 to £150 per annum; these, as a matter of course, are educated women, possessing a knowledge of botany, and skilled in ornamental art.



Cow Parsnip.

Second-class hands earn from 15s. to 20s. per week, but as work fluctuates with this class more than with the first, the average may be taken at 10s. Some years back the trade was found to be a very unhealthy one, as, indeed, were most trades in which colours are used. We have ourselves seen strong men bleed profusely at the nose whilst engaged in dusting emerald green or ultramarine powder on a number of pieces of artistic work. Emerald green (at least the mineral colour known as such) has been abandoned by the flower makers, and something less harmful, we might say harmless, substituted. The only colours now used are aniline dyes, and the trade is much more healthy on that account.

Many buds, grasses, and mosses are of foreign manufacture, and are imported from Paris and Berlin, to be made up and mounted by British hands. Flowers, stamens, petals, pistils, and leaves are mostly of English make. French buds and leaves, combined with English flowers, and mounted by British florists, command the highest prices, and are mostly patronised.

Having ascertained these few facts from the proprietor of a large manufactory in the city, Mr. W. Jones, 16, Redcross Street, that gentleman kindly invited us to an inspection of his workrooms; he himself accompanied us and explained the various processes, often delighting us and calling forth our admiration by exhibiting samples of finished bouquets, as we proceeded on our tour among the roses. First our attention was directed to the huge piles of white muslin as the chief material used in the manufacture. We were next shown some muslin which had been dyed a most verdant green and then calendered; this was ready for forming into leaves, cutting up into blades of grass, or for a hundred other purposes.

We now proceeded to the leaf-makers' room. Here were cutting presses and steel cutters, and some of the large sheets of green muslin were being stamped into various-shaped leaves; there were also embossing presses, fitted with steel dies, on which had been cut the veins of the leaves. After being shaped and duly embossed, the leaves are handed over to some young females who sit beside cauldrons of boiling bees' wax, into which each leaf is separately dipped, and then laid out to dry; this gives the glaze to the leaf, and makes it appear almost natural. One of the young females said she could dip 100 gross of leaves in a day. We ascended to the rose-makers room. We thought we were

"Down in a flowery vale,
All on a summer's morning."

We have many a time and oft visited Covent Garden Market in the early dawn, and revelled in the glorious sight there presented to our view, and in the rich perfume the flowers exhaled. We were strongly reminded of those spring and summer treats by what we saw here, but the rich odour, of course, was wanting. In the centre of a light, lofty room stood a long work-table, on which lay scattered every conceivable particle from which a flower could be made. There were roses, lilies, fuchsias, geraniums, violets, snowdrops, convulvuli, daisies (I might almost continue to the end of the floral calendar), all in bits—as if Master Robin Goodfellow, otherwise known as Puck the Mischievous, had stolen into Queen Titania's conservatory, and wantonly picked every flower, bud, and leaf to pieces.—*Woman.*

PUBLIC GARDENS.

VICTORIA PARK: ITS PRESERVATION AND EXTENSION.

WHEN the ground was purchased by Government, in 1842, for the purpose of forming a park for the use of the dense and rapidly-increasing population of Eastern London, a certain portion was reserved as building land, the ground-rent arising from which might, it was thought, produce an income sufficient for the maintenance of the park, and possibly serve to reimburse, to some extent, the original outlay.

The inhabitants of the surrounding districts are now seeking to prevent further building on the reserved ground, and to have the portion still remaining unlet to the builders thrown into the park. Mr. Lowe, however, turned a deaf ear to the deputations that waited upon him with that view, being determined, as keeper of the national exchequer, to stand upon his rights rigidly, on the prevailing principle of strict political economy. The people of the Tower Hamlets, and especially the inhabitants of Hackney, were indignant at the resistance offered to their prayer, declaring that the vastly increased population of the neighbourhood required a proportionate increase of breathing space in the shape of such open places as might be readily available, like the still open belt of adjoining

land, which was purchased with the national money along with that forming the park.

The press has, to a certain extent, sided with the Chancellor of the Exchequer in considering that the people of Hackney and adjoining districts were unreasonable in demanding a further outlay for their particular benefit out of the taxes of the country at large; while, on the other hand, the advocates for preserving all the open land possible for the benefit of the overcrowded inhabitants of the densely-built district of Bethnal Green insisted that Mr. Lowe was acting with a Shylock-like determination to have his bond, and nothing but his bond, even at the cost of any amount of human life. A good deal of sharpish invective has been used on either side; and by many of those not immediately interested, both among the writers of the public press and the ever-busy letter-writers that are always to be found among the general public, very opposite opinions have been arrived at without a complete knowledge of the facts of the case.

The editor of THE GARDEN, in that portion of the publication devoted to public parks and gardens, has thought it advisable to obtain, on the spot, the fullest information connected with the points in dispute, and to make known the results, accompanied by a carefully engraved plan of the park, the disputed ground, and other open ground lying near at hand, without which assistance it is utterly impossible for the public to arrive at a just conclusion regarding the pretensions on either side.

It will be seen, on reference to the plan, that the original laying out of the park was exceedingly well conceived. In the first place, the park was divided into two main sections, the one for the recreations of walking or riding—to which purposes the West End parks are entirely devoted, to the exclusion of cricket, foot-ball, or any other athletic games or exercises. The second section of Victoria Park was laid out with the express view of rendering it available for cricket, foot-ball, and other open-air games tending to the healthy exercise and amusement of the population of East London. Bathing was also suitably provided for, a lake of considerable dimensions being surrounded by shrubberies, with a private path of approach for bathers only, as will be seen by reference to the annexed plan—an arrangement far in advance of that utter neglect of the decencies which still prevails in Hyde Park in the bathing season. Everyone, on either side of the question in dispute, will be glad to learn that the whole of the plantations in the park have thriven well, and are in a state of vigorous growth, especially an avenue of young elms, which are destined to become a grand feature in Victoria Park some few generations hence. A fine architectural feature in the park is the drinking fountain, one of the first of its class, which was erected at the expense of a well-known munificent lady, then Miss Burdett Coutts.

There was much enthusiasm displayed concerning the original purchase, planning, and embellishment of Victoria Park; even Joseph Hume, generally disposed to hold the national purse-strings as tightly as possible, giving his cordial support in every way; while private individuals aided in the work after various fashions—Mr. Dixon presenting two of the stone alcoves which formerly stood on old London Bridge, which form solid looking park features of a substantial character, both useful and ornamental. They bear suitable inscriptions briefly stating their history, on which account they will long remain objects of considerable national interest.

It will be seen by the annexed plan that Hackney Common, containing something less than a score of acres of open ground closely adjoins the park, and at one point is only separated from it by a roadway. Here there is a means of extension without interfering with Mr. Lowe or his bond, which has not been mentioned in the newspaper discussions. It appears, however, that Parliamentary interference may be necessary to remove a few technical impediments to the incorporation of the common with the park; an addition which some consider, as we were informed by residents in the neighbourhood, would be a sufficient increase of space. This point has not been brought forward in any of the letters and leading articles which the contention for breathing room at the East End of London has led to. It is time, however, to come to the precise point in dispute—namely, the belt of ground



VICTORIA PARK, SHOWING THE DISPUTED GROUND ABOUT TO BE ADDED TO IT.

encircling the park, which was set apart as building ground. A portion still remains unappropriated to that purpose, as is distinctly shown on the appended plan. That portion, amounting to 29½ acres, is the space which it is requested may be permanently annexed to the park land. It is, virtually, a part of the park, being within the ring fence by which it is enclosed; and being still in turf, and only separated from the rest of the land by a slight iron rail, any casual visitor would take it for a permanent part of the actual park, and could not fail to feel both surprise and regret if suddenly informed that it was about to be built on, and the area of the park narrowed by the absorption of that pleasant and tolerably broad green strip into the surrounding chaos of bricks and mortar.

It only remains to state what the advocates urge as their reasons for setting up their claim that the belt of still open green land ought to be permanently added to the park. The position taken up by Mr. Lowe and his supporters is, that the park was purchased and presented to Hackney and the surrounding districts on certain conditions; adding that it would be manifestly unfair that the whole nation should be taxed in order to enlarge a park for the special benefit of East London. As to Mr. Lowe's first proposition, their answer is this: When Victoria Park was first established, it was distinctly stated by two of the Commissioners, at different times, Lords Morpeth and Duncannon, that if the surrounding population very much increased, the space set apart for leasing to builders should be incorporated with the park. This understanding was very soon to a certain extent ratified. It being subsequently conceded that only one-sixteenth, instead of one-eighth should be set aside for building. The principle being thus established of extending the original limits of the park, at all events to the extent of any building ground left uncovered, if greatly increased population should render it desirable. The actual increase of population since the formation of the park is thus stated by Dr. Tripe, the medical officer of the Hackney District:—According to the census of 1841, the population of the surrounding districts was 530,280; while in 1871 it had risen to 839,647; a vast increase, in proportion to which the addition of the 29½ additional acres to the park would be very inadequate. These facts sufficiently dispose of Mr. Lowe's first position.

The logic of his second position is not more tenable. He says it is unreasonable that East London should obtain breathing room at the national expense. If that principle were acknowledged to be unanswerable, then Mr. Lowe is bound to sell the whole of Victoria Park (which he could do at a good profit), and put back the sum realized into the national exchequer; for it was bought with the national money, furnished by the whole of the taxpayers of the United Kingdom. Again, if the shallow argument put forward be sound, how is it that the Chancellor of the Exchequer goes on sanctioning the great annual outlay on the West End parks, which during the last ten years has been at the rate of £53,000 a year, as shown by Mr. Holmes, M.P.? In what does the principle differ, as between East End and West End parks? But Mr. Lowe's argument is neither logical, statesman-like, nor charitable. What were the words of Mr. Hume—Joseph Hume, the friend of the people? Why in speaking of public parks and places of recreation (in reference to the formation of Victoria Park), he said, "I want the business done for the people in every part of the realm; and, whilst I have succeeded for the working classes in Edinburgh, Liverpool, and other places, I look with confidence to the success of those who have taken up the subject in the best possible manner in the Tower Hamlets."

Thus we see that the principle of affording breathing spaces for overcrowded populations wherever they may occur, out of the public purse, has been not only acknowledged, but already acted on. The petty view, that each spot should pay for its preservation from the evils of overcrowding or any other unavoidable evil, is justly and irrevocably exploded. The equalization of poor rates being one of the newer and better principles which apply to this case; in the wholesome action of which, Belgravia and St. James's, with comparatively no poor, will be made to contribute their just quota towards the maintenance of the poor of St. Giles's and other districts where the poor abound. The noble letter of Mr. Fawcett, and

the combined efforts of the members for the district, the Rev. D. Hansard, and other members of the Victoria Park Preservation Committee, aided by the energy and efficient activity of Mr. Heath, their hon. secretary, will doubtless, as there is now every reason to believe, be crowned with the success they deserve.

They have placed the matter in the fitting hands of the Metropolitan Board of Works, and now ask for even more land than the 29½ acres in dispute; suggesting that the 125 acres originally secured as a site of the once proposed concentration of the gas works of the metropolis should be added to the park, its close proximity rendering the junction comparatively easy. This addition, or an equivalent enclosure from the still available open land at Hackney Wick, with the addition of Hackney Common, would scarcely bring the East End park up to the dimensions of Regent's Park; while the surrounding populations are so much more numerous, and so much more densely crowded.

H. N. H.

KEW GARDENS.

INTERESTED by the remarks on these gardens (p. 217) I was induced to pay them a visit, at a season certainly when they were not seen to the best advantage; yet, when free from the dazzle of masses of flowers, one is able all the better to appreciate what has been done, and what is doing, in the distribution and arrangement of the grander features of the place, namely, its noble trees, fine slopes of turf, and other great natural advantages.

On entering the gardens from Kew Green, one used to be pleasingly impressed by the aspect of grand unbroken spaces of turf, varying in light and shade according to their wavy undulations, and out of the smooth green surface of which arose the trunks of finely-grown forest trees, producing an open and park-like effect, full of a kind of repose and grandeur which was very grateful after miles of closely-built suburbs that have to be traversed before Kew can be reached from London. But instead of the well-remembered impression of free space just alluded to, I found, on this occasion, the general appearance of the place at the entrance sadly changed for the worst. The smooth expanse of turf was dotted all over with small, and sometimes very shabby, shrubs, each making a disagreeable spot, that one longed to remove at once, as it impeded and broke up the view of the stately trunks of the big trees, while it presented in itself no characteristic either as to rarity or beauty that could for a moment recommend its preservation; at all events, not on the spot where it had been so obtrusively and tastelessly placed.

The disturbing influence of the petty, dotty plantations has entirely obliterated all appearance of breadth, and imparted a confined and uncomfortable aspect to the place, as though there were not room enough, and shrubs had to be stuck about everywhere, without regard to taste, simply because, from some incomprehensible necessity, they had to be planted, and there was no room for them anywhere else. This new grievance awoke attention to the formal kidney-shaped beds of Rhododendrons which occur, one after another, on each side of the main walk, till their repetition becomes absolutely nauseating; while equally formal masses and hedges of common laurel (a plant which does not thrive particularly well in the soil of Kew), afford the only marked variation that is to be found in the way of evergreen shrubs. Surely, in the noble garden of Kew something more ought to be done to gratify the public eye—say, by planting a few scores, at all events, of some of the thousands of forms of exquisite foliage with which our subject woods and mountains in all parts of the world have enriched us.

Such ill-conceived and badly carried out devices are the more regrettable, as there are closely neighbouring features, both natural and artificial, which must strike all spectators as remarkably fine. The Great Palm House, for instance, notwithstanding certain blemishes in the design of the entrances, displays a grander series of graceful lines and curves than any structure of the class in Europe. Then there are the two noble twin limes, finely grown trees of unusual beauty, which are rendered still more interesting by the great bushes of mistletoe rooted on their branches; the mistletoe being so

rarely seen on the lime. There are also to be seen several very remarkably fine specimens of silver-barked birch, so picturesque in growth and form, and of such unusual size as to suggest that we are enjoying a glimpse into some grand glade of natural forest. Surely, with materials such as these to work with, far better results might have been achieved than those we see in progress in these naturally beautiful grounds. What a noble vista is the Sion Vista, terminated by the glorious waters of the Thames at one of its grandest bends! and there are several other natural features equally fine in this truly royal garden. Yet, that unrivalled vista, thus nobly terminated, is actually threatened with being utterly blocked up by injudicious planting. The great rows of Deodars which were planted to flank it several years ago, and which are now making fine growth, were destined to become a grand feature; but why plant Douglas firs in front of them?

In the Pagoda Vista, which has already been blocked up at one end, similarly injudicious planting is actively proceeding; especially an interior avenue composed of a series of groups of three trees, only four feet apart from each other. These trees, being oaks, beech, ash, and other trees of large growth, will most probably choke each other in a few years; and will, if they should escape self-suffocation, impede altogether the view of the Deodars. The wholesale destruction of natural beauty that is going on close to the Pagoda struck me as still more extraordinary. There is, or rather was, a fine green knoll there (opposite the new winter garden), crowned with an irregular and highly picturesque group of old cedars and other trees. Their great trunks, with the rugged pinky-tinted bark, which assumes a warm, glowing rose-colour in a bright sunlight, rise boldly like noble vegetable columns from the smooth, green sward, crowned with their spreading canopies of dark-green, like the stone pines of the south, which form such charming objects in Turner's Italian scenes. Well, it has been, as it seems, deemed advisable to hide this nobly picturesque group of Pinasters; and several plantations of young firs and other shrubs, enclosed within common laurel hedges, have been already made apparently for that express purpose. The only traceable object which could otherwise have led to this seeming piece of wilful vandalism is, possibly, the intended formation of a series of narrow avenues radiating from the winter garden, one of which, formed by rows of *Arbor vitæ*, is only nine feet wide. Now, can it be possible that it is intended thus to shroud the Pagoda with a kind of "Asian mystery"? or have the devisers some other object to realise? If so, whatever it may be, it is certain that the loss of the fine natural scene they are destroying in order to effect their purpose, will not be compensated for by any results at present apparent.

Next, let the spectator take his stand in front of the conservatory, and look across towards the Richmond Road. He will see, immediately in front, a piece of rising ground, on which stand some remarkably fine trees of various kinds, among them a noble Cedar. This group, with the towering spar of Douglas fir rising from among the mass of foliage, is one of the most picturesque features of the garden. Nevertheless, its view is about to be confused and obstructed, as far as possible, by the interposition of petty plantations of mean shrubs and solid square patches of cropped laurel. Such proceedings appear simply incomprehensible.

NOEL HUMPHREYS.

The Mountain Flowers.—Together with this great source of pre-eminence in mass of colour, we have to estimate the influence of the finished inlaying and enamel work of the colour-jewelry on every stone; and that of the continual variety in species of flower; most of the mountain flowers being, besides, separately lovelier than the lowland ones. The wood hyacinth and wild rose are, indeed, the only supreme flowers that the lowlands can generally show; and the wild rose is also a mountaineer, and more fragrant in the hills, while the wood hyacinth, or grape hyacinth, at its best, cannot match even the dark bell-gentian, leaving the light-blue star-gentian in its uncontested queenliness, and the Alpine rose and Highland heather wholly without similitude. The violet, lily of the valley, crocus, and wood anemone are, I suppose, claimable partly by the plains as well as the hills; but the large orange lily and narcissus I have never seen but on hill pastures, and the exquisite oxalis is pre-eminently a mountaineer.—*Modern Painters.*

THE ARBORETUM.

THE MONTEREY CYPRESS.

(*CUPRESSUS MACROCARPA*.)

GENERAL resemblance, or, what naturalists call, "facies," is a character that rarely fails to lead to a true estimate of the affinities of species. Even the apparent exceptions may, in the end, turn out to be no exceptions, but indications of a connection which we repudiate on the strength of other characters, which, in reality, may be less persistent or less significant, although more structural. Our sketch affords, on the other side, a good example of such a revelation of affinity. Most people, at first, sight, would say, "that is the representation of two or three old Scotch firs, or perhaps of some old stone or umbrella pines (*Pinus pinea*) in Italy." But they are not firs at all; they are Cypresses—fine old specimens of the *Cupressus macrocarpa* growing on the coast near Monterey, in California. In Mr. Hartweg's first account of it, indeed, he described it as forming "a tree sixty feet high, with a stem nine feet in circumference, with far-spreading branches, flat at top like a full-grown Cedar of Lebanon, which it closely resembles at a distance." The reader is now enabled to judge as to this for himself. We have stated the impression which it produced on us.

This species may be regarded as the representative or equivalent of our largest European Cypress (the *Cupressus sempervirens*) on the Pacific Coast of North America. Like it, it reaches a great age and a great size; its foliage is similar, and, as in it, the fruit is large and hard, differently shaped, indeed, being oblong instead of round, but of the same character, and nearer it than any other well-defined type of Cypress.

It has been known since 1838, when Mr. Lambert gave the Horticultural Society a few seeds of it, without name or indication of locality. It then received the manuscript name of *Cupressus Lambertiana*, and, as it was easily propagated by cuttings, it soon got pretty widely distributed in gardens in England under that name. It was afterwards received, through Dr. Fischer, of St. Petersburg, as a new species of Cypress from California, but still unnamed and undescribed. It was next introduced in greater numbers by Mr. Hartweg, who had been sent out to Mexico and California by the Horticultural Society to collect plants for them. In sending it, he gave it the name of *C. macrocarpa*, from its large seeds, and it was described and published under that name in 1849 by Mr. Gordon in the *Journal of the Horticultural Society*. So it stood for a number of years, those who may be styled the old holders calling it *C. Lambertiana*, and the new holders calling it *C. macrocarpa*. But, like many other plants—we had almost said, more than most other plants—the Cypresses indulge in individual variations, every seed-bed producing peculiar modifications; and as with other species so with this, it was soon observed that varieties showed themselves, among which, the most remarkable, from their opposition of habit, were two, one growing straight and narrow, more or less pyramidal, or approaching the fashion of the Lombardy Poplar—the other more spreading, and like the beech or the cedar. Horticulturists, finding that they had two names and two marked varieties of this Cypress, forgetting the origin of the names, naturally set themselves to apply them to the two varieties. At first, of course, confusion became worse confounded, but gradually the gardening world have got to distinguish the two varieties, and habitually to apply the name *C. macrocarpa* to the upright growing plants, and *C. Lambertiana* to the more spreading plants. Mr. Gordon has ascribed this difference to the first plants having been chiefly cuttings; but it is beyond doubt that the upright and horizontal varieties are both found as seedlings in beds raised from seeds of the same tree. As these two forms are generally so well marked as to make it an easy task to assign any plants either to one or the other, it would seem that there can be no harm—nay, that it is rather desirable—that they should continue to be known by separate titles; and as it is never desirable to disturb accepted titles when it can be avoided, we should suggest that the horizontal-growing form should continue to be known by the title of *C. macrocarpa*, var. *Lambertiana*, and the upright-growing one by that of *C. macrocarpa*, var. *fastigiata*.



THE MONTEREY CYPRESS (*CUPRESSUS MACROCARPA*) AT HOME.

The tree is fast-growing and beautiful at every stage of its growth, and in every form. Its verdure is exceedingly rich, dark, and luxuriant; its branches reddish; and the long, whip-like shoots impart a peculiar grace to it. Unfortunately it cannot be absolutely depended on as hardy in every position or district in this country. Mr. Palmer's tables show that out of 109 places reported on indiscriminately and without selection, during the winter of 1860-61, the tree was killed at half of them. In England it was killed at 43 out of 75. In Scotland at 14 out of 30. In Ireland only 4 places are reported on, and at these it escaped without any deaths or much injury. In England and Scotland it was in the midland counties that the chief mortality took place. In 1866—another severe winter—it suffered still more; all the fine specimens in the Botanic Gardens at Kew were then cut off, and generally the finest examples in Britain were swept away. In some more favoured places it escaped, and it may reasonably be expected that it will escape in such places again. Up to a certain age (which it will be long ere we reach in this country), the older the plants the stronger they will be, and the better able to withstand the severity of our climate. The finest examples which we have seen since 1866, are those at Castle Kennedy, in Wigtownshire, which are arranged in a semicircle, so as to show their luxuriance and beauty to the best advantage, and at the same time allow the two different types of form, of which we have above spoken, to be well seen.

Notwithstanding its liability to be cut off when a bad year comes, the beauty and grace of this tree, even in its young stage, are so great that we may be sure it will always hold a place around our English country houses. When killed it must be replaced. It should perhaps be noted that a variety of *Cupressus Lawsoniana* (a much hardier plant) has been met with, possessing exactly the same habit and port as the fastigiata variety of *C. macrocarpa*; its colour, however, is not equal to that of the latter, although very beautiful in its own way; but the green of *C. macrocarpa* is peculiarly rich, and we remember no other Cypress which possesses it. A. M.

[For the sketch from which our plate of the Monterey Cypress was engraved we have to thank Mr. E. Vischer, of San Francisco, a gentleman who has long studied, and most faithfully sketched, many of the most remarkable trees, and much of the most picturesque scenery, of California.]

PINE FOREST IN THE JURA.

AMONG the hours of his life to which the writer looks back with peculiar gratitude, as having been marked by more than ordinary fulness of joy or clearness of teaching, is one passed, now some years ago, near time of sunset, among the broken masses of pine forest which skirt the course of the Ain, above the village of Champagnole, in the Jura. It is a spot which has all the solemnity, with none of the savageness, of the Alps: where there is a sense of a great power beginning to be manifested in the earth, and of a deep and majestic concord in the rise of the long low lines of piny hills; the first utterance of those mighty mountain symphonies, soon to be more loudly lifted and wildly broken along the battlements of the Alps. But their strength is as yet restrained; and the far-reaching ridges of pastoral mountain succeed each other, like the long and sighing swell which moves over quiet waters from some far-off stormy sea. And there is a deep tendency pervading that vast monotony. The destructive forces and the stern expression of the central ranges are alike withdrawn. No frost-ploughed, dust-encumbered paths of ancient glacier fret the soft Jura pastures; no splintered heaps of ruin break the fair ranks of her forests; no pale, defiled, or furious rivers wend their rude and changeful ways among her rocks. Patiently, eddy by eddy, the clear green streams wind along their well-known beds; and under the dark quietness of the undisturbed pines, there spring up, year by year, such company of joyful flowers as I know not the like of among all the blessings of the earth. It was spring time, too: and all were coming forth in clusters crowded for very love; there was room enough for all, but they crushed their leaves into all manner of strange shapes only to be nearer each other. There was the wood anemone, star after star, closing every now and then into nebulae; and there was the oxalis, troop by troop, like virginal processions of the Moïse de Marie, the dark vertical clefts in the limestone choked up with them as with heavy snow, and touched with ivy on the edges—ivy as light and lovely as the vine; and, ever and anon, a blue gush of violets, and cowslip bells in sunny places; and in the more open ground, the vetch, and comfrey, and Mezereon, and

the small sapphire buds of the *Polygala alpina*, and the wild strawberry, just a blossom or two, all showered amidst the golden softness of deep, warm, amber-coloured moss. I came out presently on the edge of the ravine: the solemn murmur of its waters rose suddenly from beneath, mixed with the singing of the thrushes among the pine boughs; and, on the opposite side of the valley, walled all along as it was by grey cliffs of limestone, there was a hawk sailing slowly off their brow, touching them nearly with his wings, and with the shadows of the pines flickering upon his plumage from above; but with a fall of a hundred fathoms under his breast, and the curling pools of the green river gliding and glittering dizzily beneath him, their foam globes moving with him as he flew. It would be difficult to conceive a scene less dependent upon any other interest than that of its own secluded and serious beauty; but the writer well remembers the sudden blankness and chill which were cast upon it when he endeavoured, in order more strictly to arrive at the sources of its impressiveness, to imagine it, for a moment, a scene in some aboriginal forest of the New Continent. The flowers in an instant, lost their light, the river its music; the hills became oppressively desolate; a heaviness in the boughs of the darkened forest showed how much of their former power had been dependent upon a life which was not theirs, how much of the glory of the imperishable, or continually renewed, creation is reflected from things more precious in their memories than it, in its renewing. Those ever springing flowers and ever flowing streams had been dyed by the deep colours of human endurance, valour, and virtue; and the crests of the sable hills that rose against the evening sky received a deeper worship, because their far shadows fell eastward over the iron wall of Joux and the four-square keep of Granson.—*The Seven Lamps of Architecture.*

HARDY TREES AND SHRUBS.

[We this week commence a series of notes on this subject, by Mr. George Gordon, A.L.S., long superintendent of the arboretum in the Royal Horticultural Society's gardens at Chiswick. The notes will be chiefly devoted to valuable, but neglected, rare, or half-forgotten subjects. Few have paid more attention to trees and shrubs than Mr. Gordon, and none are better fitted to advise us in the matter; as, in addition to a rich knowledge of hardy trees and shrubs, he has also the rarer knowledge of the conditions that suit them best, and a taste for arranging them that their beauties may be seen to greatest advantage in our gardens.]

THE SIBERIAN SALT TREE (*HALIMODENDRON ARGENTEUM*).

THE Salt Tree thrives well in any good garden soil, and if a little salt be given old plants of it occasionally, it greatly improves their growth. This plant is propagated by means of seeds, by cuttings of the roots, and by grafting it on the laburnum or the arborescent *Caragana*. When the latter, however, is used for the stock, it is apt to throw up suckers close to the ground, and, therefore, it is not so good for the purpose as the laburnum, which does not do so. The name is derived from "*Halimos*," maritime; and "*dendron*," a tree, in reference to the plant growing naturally in salt fields and saline steppes near the river Irtysh, or Irty, in Siberia. It was first introduced in 1779.

It forms an irregular, much-branched, deciduous shrub, from four to eight feet high, when planted in the open border on its own roots; but when grafted standard high on the common laburnum, it forms one of the most graceful drooping plants that can adorn a lawn or shrubbery. The leaves are alternate, abruptly pinnate, with two pairs of small leaflets, clothed with a whitish silky down, deciduous, and with the petioles and stipules spinose. The flowers are of a fine rosy purple, sweet smelling, pea shaped, tolerably large, and produced in great abundance on two and three-flowered peduncles, from the end of May to the middle of July, or even later, if the season be moist. The young plants, however, flower but sparingly at first; but when they attain size and age, they bloom profusely. The pods are inflated, or bladdery, hard, ovate, brown, and contain but few seeds.

Its synonyms are *Robinia Halodendron*, *Caragana argentea*, and *Halodendron argenteum*.

THE AMERICAN BURNING BUSH (*EUONYMUS AMERICANUS*).

THE American Burning Bush is a sub-evergreen, loose, spreading, recumbent shrub, from three to six feet high, which requires to be planted in a partially-shaded and moist situation. It is a native of North America, and is found from Canada to Florida, among rocks and in moist woodlands. It was first introduced in 1686 by Mr. James Sutherland, at that time curator of the Edinburgh Botanic Garden. The *Euonymus americanus* forms a fine ornament in the autumn, when loaded with deep crimson fruit, intermixed with dark, glossy leaves; and, when viewed from a distance, when the sun is

shining upon it, it appears as if on fire, hence its American name of the "Burning Bush." It is also called the "Strawberry Tree," on account of its warted capsules.

The leaves of the American Burning Bush are elliptic-lanceolate, and serrated on the edges, from one to two inches long, leathery in texture, almost sessile, dark, shining green above, with the upper ones often slightly falcate, and all of them mostly acute pointed, and either tapering to or obtuse at the base, more or less persistent or evergreen, and especially so in mild seasons. Branches, slender, spreading, and recumbent, with the shoots smooth, quadrangular, and deep green when leafless. Flowers, small, yellow tinged with red, and produced in great abundance, in from one to three flowered panicles, in May and June. Fruit, a prickly, warted capsule, of a deep crimson colour when ripe, somewhat resembling the fruit of the common arbutus or strawberry tree, but not nearly so large. Seeds, white, with an outer scarlet covering, and ripe in October.

Synonyms: *Euonymus alternifolius* and *E. sempervirens*. G. G.

THE ARBORETUM FOR MARCH.

BY JAMES BARNES.

FINISH up all trenching, draining, planting, and pruning; clear out water-courses; tie up and remove, or stack, all felled stuff, faggots, and cord wood; cutting out and placing by itself anything fit for charcoal. Bed out all seedling, layered plants, and last year's struck cuttings. Make preparations for, and sow the seed of various forest trees, such as Oak, Beech, Ash, Sycamore, White and Black Thorn, Yews, Evergreen Oak, Hollies, Furze, Broom, &c. See that all newly-planted trees are upright and firm in the ground, and that such as require it are staked and tied. Prepare healthy open, sandy, sweet borders and quarters, in which to sow the seeds of the various kinds of conifers. The Scotch Fir and its varieties, all of which are very hardy, should be sown on well-prepared soil, in beds of four or five feet wide, in open quarters. The tender and more spare seedling kinds, of which one only has small portions of seed, I have always sown on nicely prepared borders in sheltered situations. Very small portions of seed of such as are considered difficult to raise I have sown in boxes or in pans, and have placed them under a cold frame or pit lights; and great rarities I sow always in pots, plunged in sand or cinder ashes, close to the glass of a northern aspect, or placed so as to face north in summer; pricking the young plants off as soon as up into pans an inch asunder each way, or one plant into a small sixty-sized pot. Such has been my practice, which for many years has been very successful. Common and abundant kinds, sow in beds and quarters patted or beaten down gently with the back of a clean spade to firm the seed, covering it according to its size from half an inch to one inch in depth with open, healthy, sandy soil. Those in pots, pans, and boxes, I cover with charcoal dust intermixed with the soil, using it also on the border and beds.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Acer Negundo variegatum.—This beautiful maple has not yet received the attention which it merits, for few variegated trees equal it for effect when planted in masses or singly. I have a few trees of it procured when it first came out; they are now about fourteen feet in height, and the variegation is still as beautiful as when they were young. When planted in shrubberies, or for park scenery, this maple would have the same effect on a large scale as the finest silver variegated pelargoniums have on a small scale in our flower gardens. Cut sprigs of it are likewise useful for mixing with flowers for table decoration, or for other purposes. WILLIAM TILLERY, *Wiltshire*.

Moving a Tree with Nest.—I shifted a yew tree out of a plantation, distant at least 300 yards from my house, and planted it within a dozen yards of my front door. There was a blackbird's nest in the tree, which was finished, but had no eggs in it. To my very great surprise I saw a blackbird on the nest the very next day, and before I left home she was sitting on five eggs. That the old bird should follow a nest of newly hatched young I can imagine; but I never before heard of an instance like the one I name.—*Donfield, in "Field."*

An Old Yew Tree in Bavaria.—In one of your articles on Sequoias you refer to old Yew trees. I have found on a hunting tour in our mountains a yew tree of the following dimensions: circumference, 4.157 metres = 13 feet 6 inches; height, 7.5 metres = 23 feet 9 inches; diameter of the old tree, 1.3238 metres = 50.7-10ths inches; diameter of a young tree, 0.0846 metres = 3.1 inches; annual layers, 28; age of the large tree, 1538 years. As, however, the annual

growth has probably considerably diminished in the last thousand years, the tree is undoubtedly much older. Are there older Yew trees known in England? I send a photograph after a sketch. The tree stands in the Valley of Balderschwang, in South Western Bavaria, on a very narrow ridge.—OTTO FORSTER, *Angsborg*.

"Trees of Liberty" in Paris.—The last of the "Trees of Liberty" planted in Paris during the Republic of 1848 has just been cut down in the courtyard of a house in the Rue d'Amsterdam, which it had embellished and shaded, if not sanctified, during the last four-and-twenty years. The first "Tree of Liberty" was planted on the 24th of March, 1848, in the Champs de Mars. After the 4th of September, 1870, there was a question of planting new trees of liberty, and some were planted in the provinces; but the scheme fell through in Paris, owing to the high price of fuel.

The Monterey Cypress (*C. macrocarpa*).—I did not say that Mr. Barron had lost 999 out of a 1,000 plants of this Cypress which he had planted near the sea. What I did say was, that although Mr. Barron had been unsuccessful, that was no reason why others should not succeed; for I had seen hundreds of fine examples of this beautiful tree doing well in so many places round the sea-coast. To point out all the places in which I have seen it thriving, from Brighton to the Isle of Wight and from thence to Swansea Bay—would take up too much space. I will therefore only state that I saw some fine healthy plants of it close to Sketty, and only a few minutes' walk from Mr. Barron's place, near the Oystermouth station, Swansea Bay, and not far from the road leading to the well-known ruins of Oystermouth Castle.—JAMES BARNES.

THE COTTAGER'S GARDEN.

No waxen blossom stained with rainbow hues,
No crimson-flush of petals, heaven-dyed,
No spoils of distant zones and eastern shores,
Snatch'd from the poisonous woods to feed man's pride;
No spiked and spotted aloes, dagger fenced,
No lilies floating on their leafy raft,
No air-plants dappled like great butterflies,
Spice odours from the Orient isles to waft;
But just one little hush of southernwood,
Fragrant and evergreen as honesty,
And clumps of purple heart's-ease rarely found
In rich man's gardens, whoso'er they be.
A tufted rod of hollyhocks, with rosettes,
For bower-pot or for posy; or a bed
Of blood-red scented cloves, so jagged and quaint,
To deck a Sunday coat with tuft of red.
A plant of marigold, with golden glow,
To spread perennial sunshine o'er the plot;
A winter rose, to bloom when summer's gone,
And cast a gleam of hope when spring's forgot.

—*All the Year Round.*

THE HOUSEHOLD.

THE FAIRY-RING CHAMPIGNON.

(MARASMIUS OREADES.)

CHAMPIGNON is a name applied in France to edible fungi in general, or, if specifically, it indicates more especially the common mushroom. The subject of our illustration is an early species, seldom produced in any quantity late in the season. When of a good size, and quickly grown, it is, perhaps, the best of all agarics. It is so common in some districts, that bushels of it may be gathered in a day, and even on our lawns it is by no means uncommon, where, as well as in old pastures, it generally appears in broad brown patches, either circular, or forming a portion of a circle. *M. urens*, the only species with which it can be confounded, the most acrid of all allied funguses, usually grows in woods, though sometimes in the fairy-ring. However, its flat top and narrow crowded gills cause it to be readily distinguished anywhere.

Pileus smooth, fleshy, convex, subumbonate, generally more or less compressed, tough, coriaceous, elastic, wrinkled; when water-soaked, brown; when dry, of a buff or cream colour, the umbil often remaining red-brown, as if scorched; gills free, distant, ventricose, of the same tint as the pileus, but more pale; stem, equal, solid, twisted, very tough and fibrous, of a pale silky-white colour.

The following are the opinions on the merits of the Fairy-Ring Champignon as an edible fungus:

"On the Continent this species has long been considered edible, but, on account of its coriaceous texture, it is dried, and employed in the form of powder, to season various made-dishes."—DR. GREVILLE.

"The common Fairy-Ring Champignon is the best of all our funguses, yet there is scarcely one person in a thousand who dare venture to use it. With common observation no mistake need be made with regard to it. It has an extremely fine flavour, and makes perhaps the very best ketchup that there is."—REV. M. J. BERKELEY.

"An excellent flavour, as good as that of most funguses."—DR. BADHAM.

MODES OF COOKING MARASMIUS OREADES.—GENERAL USE.—"Cut in small pieces and seasoned it makes an excellent addition to stews, hashes, or fried meats, but it should only be added a few minutes before serving, as the aroma is dissipated by over cooking. It is the mushroom used in the French *à la mode* beef shops in London."—DR. BADHAM.

When stewed, the champignons require rather longer time to insure their being perfectly tender. They are readily dried by removing the stems from the fungus, threading them on a string, and hanging them up in a dry airy place. "When dried, it may be kept for years without losing any of its aroma or goodness, which, on the contrary, becomes improved by the process, so as, in fact, to impart more flavour to the dish than would have been imparted by the fresh fungus; though it is not to be denied that the flesh then becomes coriaceous (or tough), and less easy of digestion."—DR. BADHAM.



The Fairy Ring Champignon.

CHAMPIGNON POWDER.—Put the champignons in a stew-pan with a little mace, and a few cloves, and a sprinkling of white pepper. Simmer, and shake constantly, to prevent burning, until any liquor that may exude is dried up again. Dry thoroughly in a warm oven until they will easily powder. Put the dried agaric, or the powder, into wide-mouthed glass bottles, and store in a dry place. It will keep any length of time. A tea-spoonful added to any soup, or gravy, or sauce, just before the last boil is given, will produce a very fine mushroom flavour.

PICKLED CHAMPIGNONS.—Collect fresh buttons of the Fairy-Ring agaric, and use them at once. Cut off the stems quite close, and throw each one as you do so into a basin of water in which a spoonful of salt has been put. Drain them from it quickly afterwards, and place them on a soft cloth to dry. For each quart of buttons thus prepared, take nearly a quart of pale white wine vinegar, and add to it a heaped tea-spoonful of salt, half-an-ounce of whole white pepper, an ounce of ginger-root bruised, two large blades of mace, and a fourth of a salt-spoon of cayenne pepper tied in a small piece of muslin. When this pickle boils throw in the agarics, and boil them in it over a clear fire moderately fast, from six to nine minutes. When tolerably tender, put them into warm wide-mouthed bottles, and divide the spice equally amongst them. When perfectly cold, cork well, or tie skins and paper over them. Store in a dry place, and keep out the frost. Full-sized champignons may be pickled exactly in the same way, but will

require longer boiling, until, indeed, they become tender.—*Modified from Miss Acton.*

CHAMPIGNONS QUICKLY PICKLED.—Place the prepared buttons in bottles with a blade of mace, a tea-spoonful of pepper-corns, and a tea-spoonful of mustard-seed in each, and cover with the strongest white wine pickling vinegar boiling hot. Cork or tie down as before, but do not expect them to keep above three months.

MODES OF COOKING TRUFFLES.

TRUFFES AU VIN.—Take some good-sized fresh truffles, wash them perfectly clean, put them in a saucepan with a pod of garlic, a bundle of sweet herbs, and pepper and salt to taste; fill up the saucepan, so as to cover the truffles, with some very good stock and white wine in equal parts. Let them boil gently till done, and serve dry in a napkin.

TRUFFES A L'ITALIENNE.—Lay some truffles cut in slices in a dish that will stand the fire; strew over them some parsley and shallot finely minced, some pepper, and a little salt; pour some olive oil over them, put them in the oven, covered close, for a quarter of an hour or twenty minutes, and when done squeeze the juice of a lemon over, and serve.

TRUFFES SAUTEES.—Put some butter in a saucepan, and some truffles cut in slices; toss them for five minutes, then moisten with a glass of sherry, and add pepper, salt, a little powdered nutmeg, and a small piece of glaze; let them stew gently till done. Serve with sippets of bread fried in butter.

Cauliflower Salad.—Boil a cauliflower in salted water till tender, but not overdone; when cold, cut it up neatly in small sprigs. Beat up together three tablespoonfuls of oil and one tablespoonful of tarragon vinegar, with pepper and salt to taste; rub the dish very slightly with garlic, arrange the pieces of cauliflower on it, strew over them some capers, a little tarragon, chervil, and parsley, all finely minced, and the least bit of dried thyme and marjoram powdered. Pour the oil and vinegar over, and serve.

Orange Salad.—Peel eight oranges with a sharp knife, so as to remove every vestige of skin from them, core them as you would core apples, then cut them in slices, and lay them in a deep dish; strew over them plenty of powdered loaf-sugar, then add a large wine-glassful of pale brandy; keep the dish covered close till the time of serving.

Orange Chips.—Cut your oranges longways, take out all the pulp, and put the rinds into rather strong salt and water for six days, then boil them in a large quantity of spring water until they are tender; take them out, and lay them on a hair sieve to drain, then make a thin syrup of fine loaf-sugar (one pound to one quart of water); put in your peels, and boil them over a slow fire till you see the syrup candy about the pan and peels, then take them out and grate fine sugar over them. Lay them on a hair sieve to drain, and set them in a stove, or before the fire to dry. Lemon chips or candied peel may be made in the same way.

THE PROPAGATOR.

THE ART OF GRAFTING.

TREATMENT AFTER GRAFTING BY APPROACH.—The employment of two distinct subjects so as to preserve a harmony of growth necessitates the use of fastenings, supports, props, or hooks, in order to fix the grafted stems and branches as firmly as possible in the desired position. Should the bandage have penetrated the bark, it should be removed, and a fresh one put on if there is reason to think that the union of the parts is not completed. The final detachment of the graft requires the greatest care. It consists in separating the branch or stem which forms the scion from the parent plant as soon as it (the scion) can dispense with its support, and is the last operation in layering and grafting by approach. It comprises two points:—first, cutting off the head of the stock above the graft; second, cutting the scion-branch or stem below the graft. It is prudent to proceed by degrees both in the entire operation and in its details, first cutting off the head of the stock and afterwards detaching the scion from the parent stem. In both cases this should be done by a series of successive cuttings, in order to avoid the reaction consequent on extensive mutilation.

CUTTING OFF THE HEAD OF THE STOCK.—The operations for this purpose may commence a fortnight after grafting, if the graft appears to have succeeded. First, the extremities only of the principal branches are cut off. A week after they are shortened down to four or eight inches. When the union of the graft is certain, the stem is shortened in two or three cuttings, so as to leave a simple stump about two inches above the

graft, and furnished, if possible, with small shoots to draw the sap. With subjects grafted in spring, this operation is performed about the end of summer; the cohesion of the parts will be perfect before winter. But if the grafting takes place later, we should confine ourselves before winter to shortening the branches of the head or the leading shoot as soon as the parts are perfectly united. The final cutting down to four inches above the graft should be postponed to the following spring, when the sap begins to flow. The heel or stump is retained for one season to serve as a prop to which the scion is tied, and also that the shoots left upon it may draw up the sap. It is cut away entirely when the cohesion of the parts is considered perfect and the scion sufficiently vigorous to dispense with it. It would not be amiss to cover the wound with grafting-wax, and to continue the prop for some time longer. This succession of cuttings is only applicable to those cases of grafting in which the stock has not been previously headed down, and when the part above the graft is to be replaced by the development of the scion.

DETACHMENT OF THE SCION FROM THE PARENT STEM.—This is an important matter, as by it the scion is left to its own resources, the parent stem being no longer called upon to support it. We cannot, therefore, set about this operation with too much circumspection. In the first place, complete separation should not take place until the graft has attained one full season's growth. Some persons do not always observe this rule; but we cannot recommend anyone to follow their example, and the grafter will find our opinion confirmed in the course of his practice. However, the scion should continue connected with the parent as long as its union with the stock is incomplete. The time of perfect cohesion may be judged of by the swelling which rises round the edges of the joining, and by the simultaneous growth of the two parts. In case of doubt, it is best to act prudently and prepare the young tree to support itself without the help of the parent. This is done by making cuttings or incisions on the part which joins the parent to the stock. A single incision may suffice, but at the end of a week or a fortnight it should be made deeper. Instead of single incision, the separation may be gradually effected by a succession of cuttings penetrating the bark and the wood, or of circular incisions or rings on the arm of the graft. These are begun at some distance from the point of contact with the stock, and are made deeper and nearer to the graft at each successive operation. At last the arm is cut clean off close to the graft, and the wound covered with grafting-wax.

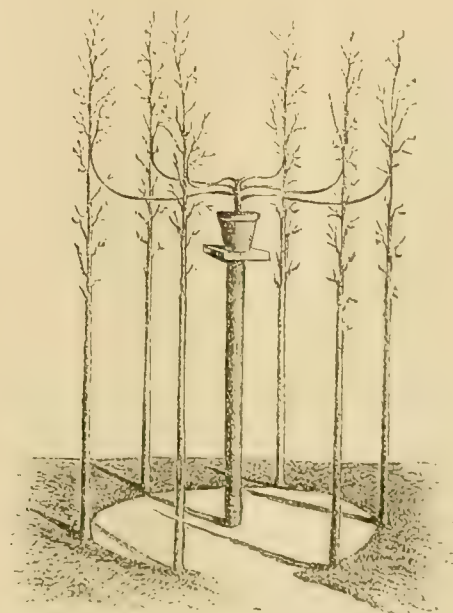
RE-PLANTING.—Should the new tree not find in the place where it has been grafted a sufficient supply of nutritive elements, it should in almost every instance be taken up and transplanted into another place, either in the nursery or where it is intended to stand permanently. It is better not to remove it until it has grown at least a year from the time of its detachment from the parent. It will thus have become inured to exist on its own resources, and will not have been subjected to several severe operations in quick succession. Should the separation have produced any deviation from the desired direction of growth in the grafted tree, a stake or prop should be used, which will keep in a straight line both the stem and the graft at the same time. A few longitudinal incisions on the elbows or curved parts, aid the dilatation of the tissues, the free circulation of the sap, and the straightening of the stem; but trees newly transplanted should not be thus cut.

PROPAGATION BY APPROACH-GRAFTING.—In all cases it is best to have the scion and stock in close proximity to each other, as the work of grafting is thereby simplified. In well-kept nurseries, the parent-trees are planted in positions where grafting by approach is intended to be carried on, either before the stocks are planted, or at the same time. Should parent-trees and stocks, which are strong enough to be grafted at once, be planted, they should not be operated upon for at least a year. They will thus be better rooted, and the union of the graft will be more certain. Those parent-trees and stocks are selected which may be grafted with success, and are trained in a tall or branching form, in order to facilitate their junction at the time of grafting. The same parent may furnish scions to several stocks at the same or different times. The illustration

just given exhibits several methods of placing stocks of various sizes in proximity to a common parent-tree. Here the stock which is high enough is grafted in the upper part with a scion growing at the same elevation, while its neighbour, which is too high for the next scion, must be drawn towards the ground, in order to be brought into contact with it. Another is grafted close to the ground. Among the subjects in pots, some are placed on a simple or double stand, which raises them to the



desired height; another is grafted with the pot buried in the soil, which may answer it better. The stocks being young and the scions sufficiently flexible, they can be brought together in places best suited for grafting them. In nurseries, small samples of new trees are sometimes kept in pots. If it is desired to propagate them on tall stems, stocks of the required height are planted, and the parent-plant is elevated sufficiently by means of a stand. The following representation exhibits a



specimen of this kind of work. In order to protect the parent from the effects of prolonged drought, the pot should be placed inside a larger one, and the space between them filled with moss which should be kept moist, or with fine sand, which is better for keeping cool. An example of a method diametrically opposite to the preceding is very often seen in nurseries, in which the parent-tree is very strong and branching, while the extension of its roots and the shade of its foliage seldom allow young stocks to be planted around it. In order to propagate

it, young stocks must be grown in pots. In the second year of their growth they are placed among the branches of the parent-tree. For this purpose a stage with steps or shelves is erected, on which the stocks are placed within reach of different branches. The pots placed on a shelf are surrounded with a bed of moss, tan, sand, or other material, which will retain a moist coolness; for it will be difficult to water them, and rain and dew will be intercepted by the foliage. When a tree is intended to serve as a parent in grafting by approach, it is well to excite the sap to flow towards the scion-branches, especially at the time of grafting. Accordingly the branches not used for grafting should be lopped or shortened without weakening the tree. This suppression of some of the branches will cause a greater flow of sap to the others, which are to be used as scions. It also enables us to repeat the operation of grafting by approach every year with the same parent-tree. The shoots which are developed by the cutting of the branches which are not grafted, will serve in their turn, should there be need of them, for scions the following season, just when the detachment of the previous year's grafts is commenced.—*C. Baltet's, "l'Art de Greffer."* (To be continued.)

THE SIX OF SPADES.

CHAPTER V.

I REMEMBER that, when we first formed our floral brotherhood, I introduced the name of Joseph Grundy with some anxiety, lest it should not be welcomed as I wished. I was afraid that his occasional wanderings from the garden in the direction of the stable-yard, the sudden transfer of his attentions from his horseradish to his horse, and again from his cob to his cobnuts, might disqualify him from becoming a member of our little guild of gardeners. These noses, I reasoned, accustomed as they are to Orange-blossoms, will inevitably turn up at the mere notion of a groom with straw at his boots. But those noses did nothing of the kind. My nomination was received with hearty approval. "If he is not too much engaged," said Mr. Oldacres, with a quaint gravity, "in laying out the new grounds at Kensington, or in reviewing 'Darwin on Species,' let us have him by all means. Seriously, I am glad to second this candidate. While we teach him something about gardening, we cannot fail to profit in turn from the presence among us of an industrious, an honest, a righteous man."

To these commendatory epithets, I would append the adjective *cheery*, as characteristic of one who is not only happy himself, but communicative of happiness to others. I never meet that Fourteen Stone of healthfulness, crowned with its rosy smiling face, as bright as a good conscience and brown soap can make it, without feeling a certain freshness at heart—a braver confidence in the hopes and joys of life—a more sure emancipation from its cares and sorrows. Like the "bit of blue" which precedes the sunshine when the storm-clouds break, that face beams with fine weather. Here is a delightful barometer, which disdains the influence of atmosphere, rain, and wind, and boldly assures you in the middle of a hurricane, that everything is "set fair." It is a face at which babies of the most reserved and haughty disposition immediately smile and coo; while the most timid children "walk under his huge legs and peep about, to find themselves dishonourable" lollipops. Coming quickly round a corner, upon a recent occasion, I suddenly confronted Mr. Grundy, engaged in the arduous evolutions of hopscotch, and his expression of bashful uncertainty whether he should resume his position as a rational biped, or go on with the game and win it, was a supreme treat, I can assure you. Finally, he got upon the line—I wonder with those boots of his that he was ever off it—and resumed his original standing in society, amid the derisive cheers of his small competitors.

You would scarcely imagine that this festive countenance could ever be regarded with a qualified pleasure, nay even with feelings of discomfort; but there are scenes and seasons wherein I have met it with much perturbation of spirit. I maintain that upon occasions of national humiliation, upon Ash-Wednesday and other days of penitence, Joseph Grundy ought to sit in the vestry. No member of our congregation is more in earnest than he; but his face utterly declines to

identify itself with any internal seriousness, and glows in its amazing joy and radiance, as though protesting against the whole proceeding, and contradicting every word of the service.

And was not that same hilarious visage a sore trial and stumbling-block, when, in days that are past and a gallery that is pulled down, Joseph Grundy performed on the bassoon? He was but poor company as a musician, was Joe, but thoroughly conscientious; and though I never knew him to finish with the choir, he always played out his verse honourably, and came in a few notes behind, blown, but extremely gratified. We have an harmonium now, and the bold bassoonist sings, and sings well, in the choir. Drowsy indeed must that believer be who does not start in his bed upon Christmas morn, when Grundy, lustily and with a good courage, bids his brother "Christians, awake!"

Lustily, and with a good courage, is his rule in all things. It does one good to see him at his work, and I think of the American's striking words, of "the nobility of labour, the long pedigree of toil," as I watch him, manfully accepting that irksome destiny, which the first gardener hath entailed upon us all. A right honest Spade is Joseph. His no "lubbard labour," of which Cowper, in "The Garden," speaks as "loitering lazily, if not o'erseen." If you come upon him when he is resting awhile, he does not hastily resume his labours, and so confess that he has been idle, and does not deserve relaxation (I always distrust those demonstrative gentlemen who are so excessively energetic when their employer is present), but he stands at ease until he feels himself refreshed, and then plies his spade once more, with a determination and energy which induce the idea that he has solemnly pledged himself to dig to the Antipodes before tea-time. It is good, I say, to watch him at his work, for "*laborare est orare*," and that work is prayer, is as true a text this day as when it cheered the hearts of those toilsome monks, who were long the only, and always the best, gardeners.

So we, having seen Joe Grundy dig, were glad to admit him into our Society of Spades. He is not scientific, it is true. I recall mistakes in his nomenclature of plants, discreditable to his etymology. I have heard him speak, for instance, of *Yallermandies*, *Cameleons*, *Dolphiniums*, and the like. I know that in spelling Cactus he leads off with the letter K.; and I am quite sure that he could no more repeat some of the delightful titles which are given to flowers (let me mention, by way of a nice little specimen, *Siphocampylus Manettiaeflorus*) than an Ephraimite could say Shibboleth. But there is a nobler language, my friends, than is to be found in Botanical Dictionaries, grand words of Truth, Goodwill, and Honesty; and these Joseph Grundy speaks. There is a higher task appointed than the precise orthography of tallies, that we "learn to labour and to wait;" and he studies this lesson well.

In his little intervals of leisure, the semibreve rests of his solo on the spade, during which, to quote his own expression, he is engaged in "catching his wind," he is wont to survey with much contentment the pleasant garden around him. It freshens him, he says, to have a peep at the flowers, and to see things looking comfortable and happy, as though they thanked him for his trouble; and, indeed, to look upon that smiling pleasure is a "refreshment to the spirit of man." It is laid out much as gardens were a quarter of a century ago. Large beds, round or oval principally, with flowering trees in the centre, the Lilac, the Acacia, the Laburnum, the Almond, and their kind; next these, the glossy evergreen, the Arbutus, the Aucuba, the Box, the Berberis, the Juniper, Holly, and Yew; and outwardly the border for flowers. "And gravel walks there for meditation," meander about these beds in tortuous course, conducting you to sweet little spots of coolness and seclusion, and giving you a continual change of objects for contemplation, I never wander in those charming grounds, but I ask myself this question—Are we not making a "tremendous sacrifice," (as the drapers say, when they are anxious to dispose of surplus stock, or seedy old "shopkeepers") to that Gigantic Idol called "Bedding Out?" Are not our modern gardens, and these close to our windows, fire-works and kaleidoscopes for three months in the year, with brown fallows for the remaining nine? Don't talk to me about your "Winter Gardens," your Golden Hollies with eight leaves your priggish little Irish Yews, about as big as ninepins

To the Nursery, say I, with those tiny infants. And I won't listen to any nonsense about "grand display of bulbs in Spring!" The grand display costs a fortune, and comes up "patchy," after all. I looked out the other morning from the window of a grand house in these parts, where they have streets of glass and regiments of gardeners, upon a magnanimous but unhappy experiment to beautify the beds with bulbs. There were to be Maltese crosses in silver, and golden coronets upon cushions of purple. The idea was gorgeous, but the result was this—I could scarcely shave for laughing! Oh, the gaps and the blanks, the *hiatus valde deplendi*! Puritanical mice had defaced the crosses, and appropriated the Crown Jewels.

Surely it is better for mind and body to feed regularly upon wholesome food, upon the meats and fruits of the earth in their season, than to have three months of feasting, and nine of fast. At the Grange there is always something close at hand, not exiled to the kitchen garden, to please you.

"The daughters of the year
One after one through that still garden pass,
Each garlanded with her peculiar flower."

From the cheeful parlour, with its oaken panels and large square stone-mullioned window, I see in winter the Laurestinus, the bright red berries of the Holly, the pale yellow Aconite, the white Christmas Rose. There are Violets under that window, waiting for a sunny gleam, and the room itself is redolent now with the delicate perfume of the Chimonanthus fragrans. Soon they will have in abundance the Snowdrop (our Lady's flower)—the Crocus, purple, and gold, and white (the latter irreverently termed by children "poached eggs," and very like them)—Hepaticas, the sweet Mezerion, and all the first flowers of spring. You "would remove that Ribes, because it must look shabby in the winter!" But don't you see that there are too many evergreens around it to allow the eye to rest upon it, much less to be offended by it; and it is so with all the deciduous trees.

"And we seem," said Miss Susan to me (two maiden sisters live at the Grange, Miss Susan and Miss Mary Johnstone, so sweet tempered, and good and graceful, that I often wish they were twenty years younger, and bigamy more in favour), "we seem to have all the happiness of a garden, without those little vexations and disappointments which trouble some of our neighbours. We ought to be very thankful;" and I know that she is thankful, though she neither groans, nor squints at the firmament, and in fact does not care what I think on the subject; "for our home is not only lovely in our own eyes, but seems to endear itself to our friends also. Even strangers are struck at once with the greenness and quietness of our 'fair ground.' Our good Duke, hunching here in September—it is only in the partridge season that we have the privilege of a visit—looked around, and sighed to himself, 'How very, very peaceful!' He was comparing our pretty little plot, I fancy, with his grand terraces, and his geometrical designs, his rain-bows, his ribbons, and his stars, and I verily believed that he preferred the former. Indeed, he confessed as much, by quoting two lines of poetry, which we afterwards found in a translation by Mr. Pope from Martial:—

"But simple Nature's hand with nobler grace
Diffuses artless beauties o'er the place."

And dear Mr. Oldacres, the first time he smoked a pipe in the new arbour, seemed to arrive at a similar conclusion. "Prettier than anything we've got," he grunted. "If a man wants to know what a fool he is, let him go and lay out a garden!"

"And it is a comfort to feel that our old-fashioned style evokes neither jealousies nor comparisons from your anxious modern competitors. If the spirit of any young gardener is troubled at the sight of some to him unknown novelty, and envy with malignant glare is eyeing it, as Greedy Dick the tartlets and pies, he is at once appeared to hear that it has been with us half a century, and is only annoyed with himself for admiring anything so superannuated. No one points out, with lively satisfaction to himself, those 'sad mistakes in arrangement of colours,' which your great artists are as prompt to see in others as they are to overlook in their own parterres. We are never told that our favourite plants are 'quite super-

seded, and gone out of cultivation some years since!' And nobody sneers at our boiler, for the simple reason that we have no greenhouse. Ah! I must tell you what dear Mary said" (Miss Susan, you must know, looks upon Miss Mary as a combination of Sydney Smith and Venus), "when Joseph expressed a wish, the other day, that we would set up what he called 'a bit of a Consartive-Tory.' 'Joseph,' she said, 'so far as I am concerned, I feel more disposed, as I'm losing my hair, to set up a bit of a Wig!'"

"Apropos of Grundy, what do you think that delightful elephant did last evening. We had a few friends to dine with us, and it unfortunately devolved upon Joseph to place a pyramid of jelly upon the table. Carried unsteadily, it commenced of course a series of the liveliest oscillations, and so swayed itself to and fro, when it reached its destination, that poor Joseph called to it in real agony of mind, 'Who-a who-a, who-a!' I need not tell you that he concluded the performance by hissing violently, when he swept away the crumbs, as though manipulating his horse, for that, you know, he always does."

S R. H.

(To be continued.)

ASPECTS OF VEGETATION.

THE TRAVELLER'S TREE OF MADAGASCAR.

MADAGASCAR is larger than Great Britain and Ireland combined, and, therefore, as may be imagined, its vegetation, which is of a rich tropical character, varied by tall Cocoa Palms, groves of Pandanus trees, Indian Acacias, thickets of Bamboos, and other forms of hot-country vegetable life, is interesting in the extreme. Its interior is mountainous and wooded, some of the trees being of surprising beauty, and the woods often so loaded with a luxuriant drapery of creepers, as to render them an almost impassable jungle. Parasitical on the branches of some of them have been found *Angræcums* of the most lovely description, while ground Orchids of other kinds are not uncommon; and Madagascar is said to be the "very Eden of ferns."

In running streams occur the Lace-leaf plant, now so interesting a feature of our stove aquariums; and, in larger rivers, great patches of the beautiful blue Water Lily (*Nymphaea caerulea*).

But it is with the Traveller's Tree (*Urania speciosa*) we wish now more particularly to deal, and whose singular structure and masses of broad foliage impart so peculiar a character to the Madagascar landscape. As our illustration indicates, it is a moisture-loving plant, or rather, tree; but it is also abundant on hillsides, covering vast tracts of the country, intermingled only here and there with the *Rofia* Palm. Ellis, in his interesting book on Madagascar, thus speaks of this singular tree, which is altogether one of the most remarkable that has been discovered in that island:—

"The extent to which it prevails may be inferred from the native name, 'ravinala,' by which it was designated by Sonmorat, its discoverer. Ravinala is, literally, 'leaf of the forest,' as if it was the leaf by which the forest was characterised, which is the fact where it abounds, though in many parts it is not met with at all. The tree rises from the ground with a thick, succulent stem like that of the Plantain, or the larger species of *Strelitzia*, to both of which it bears a strong resemblance. It sends out, from the centre of the stem, long broad leaves like those of the Plantain, only less fragile, and rising, not round the stalk, but in two lines on opposite sides, so that, as the leaves increase, and the lower ones droop at the end or extend horizontally, the tree presents the appearance of a large open fan. When the stem rises ten or twelve feet high, the lower part of the outer covering becomes hard and dry, like the bark of the coco-nut tree. Many of the trees in this region were at least thirty feet from the ground to the lowest leaves. I frequently counted from twenty to twenty-four leaves on a single tree, the stalk of each leaf being six or eight feet long, and the broad leaf itself four or six feet more.

"The whole of these twenty-four bright green gigantic leaves, spread out like a fan at the top of a trunk thirty feet



ASPECTS OF VEGETATION.—THE TRAVELLER'S TREE IN MADAGASCAR.

high, presented a spectacle as impressive as it was to me rare and beautiful; and in this part of the country they were the most conspicuous objects for miles together, and were it not that these vast bright green shining leaves are slit on each side by the winds, and so flutter in smaller portions with the passing breeze, the prevalence of this tree would impart a degree of almost inconceivable magnificence to the vegetation of the country.

"In the fan-like head of the Traveller's Tree, there were generally three or four branches of seed pods. The parts of fructification seemed to be enclosed in a tough firm spathe, like that of the cocoa-nut; but the subsequent development was more than that of the fruit of the Plantain. When the pods, or seed vessels, of which there were forty or fifty on each bunch, were ripe, they burst open, and each pod was seen to enclose thirty or more seeds, in shape like a small bean, but enveloped in a fine silky fibre of the most brilliant blue or purple colour.

"But this tree has been most celebrated for containing, even during the most arid season, a large quantity of pure fresh water, supplying to the traveller the place of wells in the desert. Whenever I inquired of the natives, they always affirmed that such was the fact, and that so abundant and pure was the water, that when the men were at work near the trees they did not take the trouble to go to the stream for water, but drew off and drank the water from the tree. Having formerly been somewhat sceptical on this point, I determined to examine some of the trees, and during my journey this morning, we stopped near a clump of trees. One of my bearers struck a spear four or five inches deep into the thick firm end of the stalk of the leaf, about six inches above its junction with the trunk, and on drawing it back a stream of pure clear water gushed out, about a quart of which we caught in a pitcher, and all drank of it on the spot. It was cool, clear, and perfectly sweet. On further examination I found that there was no filtration of the water through any part of the plant, as I had been led to suppose when I had seen water drawn by Sir William Hooker from one of the specimens in the palm house at Kew. There was a kind of natural cavity, or cistern, at the base of the stalk of each of the leaves, above its union with the stem, and the water which had been collected on the broad and ribbed surface of the leaf, had flowed down a groove or spout on the upper side of the stalk, into this natural reservoir, whence it supplied nutriment to the tree, and refreshment to the traveller or the labourer.

"But in Madagascar this tree might, with propriety, be called the Builder's Tree, rather than the Traveller's Tree. Its leaves form the thatch of the houses on the eastern side of the island. The stems of its leaves form the partitions, and often sides of the houses, and the hard outside bark is stripped from the inner and soft part, and, having been beaten out flat, is laid for flooring; and I have seen the entire floor of a long, well-built house covered with its bark, each piece being at least eighteen inches wide, and twenty or thirty feet long. The leaf, when green, is used as a wrapper for packages, and keeps out the rain. Large quantities are also sold every morning in the markets, as it serves the purpose of table-cloth, dishes, and plates at meals, and, folded into certain forms, is used instead of spoons and drinking vessels."

In warm conservatories planted in the natural style, the Traveller's Tree, in skilful hands, might be made to play an important part, especially in the neighbourhood of artificial water, in which its reflected form would have a striking and pretty effect. If only for the sake of contrast this truly elegant Banana-like plant is well worth attention. It is occasionally to be found in our hot-houses; but not unfrequently *Strelitzia augusta*, which it somewhat resembles in habit, goes under that name.

Washington Irving as a Garden Critic.—"I was once taken down with him," says the author of "Pencilings by the Way," "into the country by a merchant to dinner. Our friend stopped his carriage at the gate of his park, and asked us if we would walk through his grounds to the house. Irving refused, and held me down by the coat, so that we drove on to the house together, leaving our host to follow on foot. 'I make it a principle,' said Irving, 'never to walk with a man through his own grounds. I have no idea of praising a thing whether I like it or not. You and I will do them to-morrow morning by ourselves.'"

THE KITCHEN GARDEN.

ASPARAGUS CULTURE.

BY R. GILBERT, BURGHLEY.

The best soil for Asparagus is a light, rich, friable loam. Towards the end of autumn or beginning of winter select an open situation for its growth. Having judiciously done this, give the ground a thick coat of farmyard manure, say at the rate of sixty loads per acre. Then trench to the depth of three feet, thoroughly mixing the soil and manure, and lay it up in ridges and let it remain in that condition throughout the winter to ameliorate and sweeten.

SEED SOWING.

Asparagus seed should only be gathered from the strongest and earliest shoots, such as have had the full benefit of light and air during the summer. The bed should be light, rich, and sandy, leaf mould affording the principal source of nourishment. Sow the seed in March or early in April, and if the beds are carefully hoed and kept free from weeds during the summer and autumn, the plants will become strong and be in good condition for planting the following spring.

PLANTING.

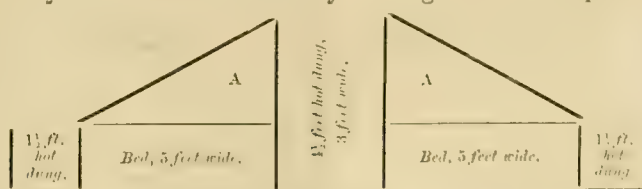
The ground having been trenched and neatly levelled, set out the beds as nearly north and south as possible, five feet wide, with two-foot alleys between them. Plant three rows in each bed, which may be done by setting the line a foot from the outside along the beds, and making a notch or drill with the spade sufficiently deep and wide to allow the roots to be carefully spread out. While the drills are open, scatter into and along them some clean river sand to sharpen the soil and enable the rootlets at once to commence work; this done, fill up, and make all firm about the plants with the hands, keeping the crowns two inches below the surface. The other two lines must be planted in the same manner, and should stand eighteen inches apart. Planting should not be commenced until the roots begin to grow; about the first or middle of April is the usual time.

GENERAL MANAGEMENT.

Throughout the summer and autumn the beds must be kept open and clean by means of frequent hoeings, say once a fortnight. Should the weather prove very dry after planting, a mulching of litter or other dung would greatly benefit the plants. During the first and second seasons cauliflower may be planted between the beds. Cutting should not begin before the third season, and even then it must not be indulged in too severely. The third season the beds should be earthen over from the alleys, which are dug out to the depth of eighteen inches, the soil therefrom being laid on the surface of the beds for blanching purposes.

FORCING.

Our mode of forcing Asparagus is clearly illustrated by the annexed diagram. Our beds are five feet wide, with three-foot alleys between them. The alleys are dug out to the depth of



Section of two Beds with Alley between them, and half of two corresponding Alleys.

two feet, the soil being spread over the surface of the beds, on which frames, covered with sashes, boards, or shutters, are placed. The space between the beds, being four and a half feet deep and three feet wide, is filled with fermenting material, such as stable dung and leaves, as are also the outside half alleys. Before filling these spaces with litter, we make holes into the sides of the beds large enough to admit a one-inch bore drain pipe. These holes we find beneficial in admitting heat to the interior of the bed. The side trenches are filled with hot dung to the height of the frames, the beds in which, marked A A, are also covered with the same

material until the heads make their appearance, when it is removed. If white Asparagus is wanted, the frames are kept dark by being covered with shutters; but, if green is preferred, glazed lights should be put on. After the fermenting material is removed from the beds, the frames are kept close for a few days, after which a little air is given on favourable occasions, a practice which increases both flavour and quality. It is necessary to maintain a temperature of 60° or 65°, but at no time should it exceed 70°. When this heat cannot be kept up, fresh linings must be added. The ordinary plan of forcing Asparagus is by lifting good four-year old roots, and placing them thickly on a hotbed. This is more uncertain than forcing the plants where they grow, inasmuch as the bed may become overheated, which would be prejudicial to the plants. On the surface of the bed should be placed a few inches of old tan, on which the plants are to be thickly stored, carefully spreading out their roots. Some fine soil must then be worked among them. Sashes or wooden shutters may then be placed on the frames, which are kept quite dark till the plants appear, after which, should the produce be required in a green state, light and air may be given in suitable weather.

HORSERADISH.

MR. THURSTON says (see page 112) that he selects roots of Horseradish "as long and as straight as possible," and that by the system he lays down he has grown in one year a stick of Horseradish twenty inches long and six inches round, from a very slender root. I have adopted this system for some years, and I can quite vouch for the practicability of obtaining the stated circumference from a very slender root; but will Mr. Thurston kindly point out to us amateurs how the length is obtained, because my own experience is, that to produce a length of twenty inches, the root as originally inserted in the ground must have been twenty inches; for I have never found a root inserted increase in length. It throws out roots from its base and makes for itself a crown, but it will not grow any longer. If, therefore, Mr. Thurston will explain this point, it will be a boon to us, as we should then know if it were indispensable or not to have long roots. I would also remark that I have done all he says in the way of making the bed in March instead of November. What is his experience on that point? The root has always been an awkward one to keep within limits, but by Mr. Thurston's plan it can always be confined to two beds planted alternately, small or large, according to the requirements of a household.

H. S. WATSON.

The Cottage, Old Charlton.

THE KITCHEN GARDEN FOR MARCH.

BY JAMES BARNES.

A most interesting and busy season has now arrived, and one on which the year's success, or otherwise, to a great extent, depends; for if matters having reference to cropping are not systematically performed in proper time, when the soil is in the right condition to receive the plants or seeds, little else but failure need be expected. In matters of cropping, do not stick to any certain rule as to the day of sowing or planting, whether the soil and weather are suitable or not, but first make a good and kindly preparation, by thorough deep culture and turning over of the soil in as rough and open a manner as possible to admit sun and air. In short, turn and re-turn the soil till it falls to pieces like slaked lime, and is in every way so sweetened and pulverised that, by watching the opportunity for a fine day, a large portion of work may be performed. Having all things in order and in good condition is the very keystone of success. It is even better to be a little out of season, than to begin cropping in the midst of disorder.

Artichokes, Jerusalem, finish planting.

Artichokes, Globe, pull away decayed leaves if any, in order to admit air to the stools and crowns, and set about early thinning out the weakest shoots.

Asparagus, continue to get into gentle heat strong roots; sow seed, and prepare for planting new beds the end of the month. I always like to see the buds pushing forth before I take up the plants; after which, do not allow them to lie about, but replant at once in rows two feet apart, and let the plants stand one foot asunder in the rows. A good deep drill drawn on each side of the line, and the roots spread astride of the drill, will be the right way to plant them, and after two years' time, every other row will furnish rare plants to take up for forcing.

Beet, red, sow for salad use for the whole year, and a small portion

of white sugar beet, for use in place of spinach—should it be dry and hot in July and August, when spinach is hard to be got.

Beans: of these, plant a full successional crop of Long-pod, Broad Windsor, or some other approved kind.

Broccoli of all favourite late kinds sow after the 12th instant.

Brussels Sprouts: of these, make a full sowing the beginning of this month; prick out, and plant early, in order to insure large, seasoned, well ripened plants by autumn, so as to have good solid little heads all up the stems; young, free-growing, late-sown plants will not button or head in to be depended on; a hard-trodden, heavy soil suits them best.

Cabbage, sow a small quantity of the Matchless, Nonpareil, Little Pixie, and London Colewort.

Capsicum and Chilies, pot off; place in moderate bottom heat, and stop at eight or nine inches.

Cauliflower, plant out now a full crop of winter stored plants; sow Veitch's Giant and other late kinds, and prick off, as soon as they can be handled, all early sown plants, first in boxes or frames, then on warm borders.

Carrots: of these, sow a full crop on some open quarters, from the middle to the end of the month, in drills one foot apart, using fresh slaked lime as a dressing. There is nothing with which I am acquainted that insures so heavy or such a clean, finely-flavoured carrot as a good dressing of freshly-slaked lime and a slight dredging of dry chimney soot, applied in showery weather in May.

Celery, sow a pinch in succession; but I never succeeded so well in the way of obtaining a splendid crisp, solid, lasting crop as when I sowed the first week in April, on a gentle bottom heat, thinly pricking out again on some gentle hot-bed. In this way some of the plants are soon ready for early planting out; a batch is then pricked out on half-decayed leaf mould or rotten dung, which can be easily removed with the roots in the form of good balls. In this way no check takes place, and the result is most satisfactory.

Chervil: of this, sow a pinch of curled, first in a warm situation, and, for succession, in a fortnight, on a north aspect, on account of its starting propensities in hot weather.

Cress, &c., sow common and curled, as well as mustard, on a warm border out of doors; and land cress on a north border for summer and autumn use. Of Watercress make new plantings in shallow streams or damp, cold spots, for summer and autumn use.

Lettuces, plant out a full crop, and sow, once a fortnight, a pinch of summer kinds, both cabbage and cos.

Onions, sow a full crop in drills, one foot apart, on well-prepared, thoroughly pulverised soil; if light, make it firm by treading or hard rolling.

Marrow, Vegetable, sow in a little heat, in order to have sturdy, strong plants for turning out under hand-glasses when four or five weeks old.

Sweet and other herbs: sow in a gentle heat Basil and Marjoram, and on healthy borders, Thyme, Winter Savory, Marigold, Purslane, Parsley, in full crop, Skirret, Hyssop, Fennel, Carraway, Borage, Balm, Burnet, &c.

Radishes, of all kinds sow a full crop.

Rhubarb: seed of this should now be sown, and large crowned roots divided, to make new plantations.

Parsnips, sow a full crop in drills, one foot apart, on deeply-trenched, pulverised land.

Peas, sow throughout this month on well-trenched, deeply-cultivated, thoroughly pulverised soil, all the late kinds and the tall sorts, twelve to fourteen feet apart; which is not only a convenient distance, but insures a full supply of light and air to the crop, which is doubled by this treatment; and it forms a partial shade for such summer crops as are planted between the rows. Champion of England, Dixon's Favourite, Harrison's Glory, Laxton's Prolific and Quality, Maclean's Best of All, Prince of Wales, Wonderful, Nonpareil, and Veitch's Perfection are all good peas for succession; and for the last or latest crop of all, British Queen, Premier, and Ne Plus Ultra. Early peas, stick and protect against cutting winds, and dredge with dry dust the base of all crops now up on dry evenings, to prevent canker and shanking.

Savoy, sow a full crop the beginning of this month, then again at the end of it.

Salsify, sow in drills one foot apart.

Scorzoner, sow after the middle of the month.

Seakale, sow in drills, or dibble one foot apart each way, in order to have strong plants for forcing next winter; if sown on well-prepared, pulverised, rich soil, and well attended to through the summer, strong clean plants will be the result.

Spinach, sow the round summer variety in drills, between peas or other ways, once a fortnight. New Zealand spinach sow in heat.

Turnips, sow in drills a few once a fortnight of any small, short topped early kind, in order to have turnips young, sweet, and tender.

NOTES.

THE TEMPLE GARDEN PLANTING.

It would be difficult to find anywhere a more striking illustration of the little knowledge or love of trees possessed by those who lay out gardens, than is now to be seen in the Temple Gardens. A long and noble promenade has been made just within the garden and parallel with the Thames Embankment, which, as everybody knows, is planted with two lines of plane trees. The walk in the Temple Gardens is very close to the north footway of the Embankment and its line of trees. One would suppose that in the selection of the trees for margining the new promenade, some other kinds than the plane would be selected, and that even a contractor's navvy would hesitate to plant another line of the same kind of tree right against those already in position. Not so. A line of planes is planted almost right against the planes of the Embankment, so that both lines must meet and injure each other before the trees are one-fourth grown. Then there is a curved walk leading from the promenade to the buildings, and this again is being planted with planes on each side a few feet from the margin; their tops will touch in a few years! There are at least twenty other trees that would thrive quite as well as the plane, and which differ in size, so that subjects suitable for every position might have been easily found. Not one of these is to be seen. There is no evidence that the planters know any tree but the plane; and that, as we have pointed out, is so placed that they seem to have no idea of the size to which it attains. What a pity it is that such a noble and interesting old garden should be spoiled by such silly blundering!

NOT FOR OUR HEIRS.

WHILE the trees on the Embankment, as referred to in a previous number, have been mutilated by "roughism," the young trees planted a few years ago in the churchyard of St. Mary-le-Strand have just been dug up by the roots to gratify the sight-seeing section of the London public by making way for the erection of stands for viewing the procession to St. Paul's. However laudable may be the anxiety to catch a glimpse of the Queen on such an occasion, it would seem to be carrying the desire to do so too far when a permanent injury is recklessly inflicted in order to gratify it. We may be told that at this time of the year young trees may be dug up with impunity if planted again within a reasonable time. But it is self-evident that the digging up of the trees in question, which had already made considerable progress, will be a severe check to their growth, especially as it is already late for tree planting work. It is, indeed, a question whether it would not be better to plant in their places other young trees fresh from the country instead of replanting those which have been necessarily somewhat enfeebled in constitution by the atmosphere of London, which will have rendered them somewhat less able to bear such knocking about as a summary uprooting must involve. If such a course should be deemed advisable, when the time comes for replacing the ill-used trees, the end will be that we shall have to wait a few years longer for the agreeable effect of a few fine trees in mid-Strand, and all for nothing better than the gaining of a few shillings by hiring stands and seats to sight hunters. H.

MUTILATION OF TREES IN HYDE PARK.

EVEN Mr. Vernon Harcourt himself, on gazing at the destruction of trees in the park last Tuesday between the Marble Arch and Grosvenor Gate, must in his own heart admit that the Magna Charta might with propriety be so far modified as to protect timber from the violence of a heedless mob. If it is quite impossible without an infringement of our constitutional liberties to lay down and enforce such stringent regulations as will be sufficient for the purpose, it surely might be allowable to fence in the trees in the park in such a manner as to render them safe from injury. It will take many years to restore to them all they have lost by one day's rejoicing, and the ghost of Evelyn must have smiled bitterly at the anniversary of his death being marked by the wholesale destruction of trees from no other motive than idle mischief. Not even Peter the Great, when he damaged Evelyn's trees at Sayes Court, Deptford, to the extent of £150 in three weeks, committed a greater act of barbarism than that committed by the playful crowd who amused themselves last Tuesday by destroying their own property and leaving the park in much the same condition as though a whirlwind had passed over it. It is always expected that the people as they grow wiser will learn that no particular end is gained by mutilating timber. As, however, their wisdom on this point seems to linger on the road, it might be as well, pending its arrival, to devise some measure that will be effectual to shield them from the consequences of their own folly, and prevent pulling their playthings to pieces.—*Pall Mall Gazette*.

THE NEW GARDEN AT STEPNEY.

THIS, described by the *Metropolitan* as likely to prove "one of the best of the public gardens of London," is a narrow strip of ground about a quarter of a mile long, and from thirteen to eighteen yards broad. It was lately an unenclosed space, with a few elms and other common trees, but is now surrounded by a strong railing, and is being rapidly converted into a garden. Roads cross it in three places, throwing it into four divisions. Although the sides of each strip are as straight as the sides of Gower Street, and although no curvature of the walk through the centre of each slip could neutralise the formality of the scene, a serpentine walk has been made through all the strips; otherwise the works in progress are very satisfactory. If properly planted with a good variety of deciduous trees, the garden will prove a great addition to its immediate neighbourhood, but it can never lay claim to be called "one of the best public gardens in London."

Blackheath.—A correspondent of the *Standard* says, "Blackheath is doomed! It is no longer a free but a conquered spot. All rights of commons are extinguished, and all industries and sports are for the future to be pursued on sufferance. What does Blackheath want with enclosures for flowers, &c.? A wall only stands between it and the grand old historic park, where, on soft lawns, railed enclosures for shrubs and flowers are tastefully in place. But the heath, with its old and wild traditions, and whose glory has been its untrammelled freedom, winces at the exotic plan. The blots on the heath are the work of cupidity (surely not of the lords of the manor). Excavations for gravel and encroaching structures mar the fair proportions of the heath. Why not give compensation for the houses, pull them down, place seats, and plant flowers here? Then the Board of Works might look for praise. There is the plateau on which the cannons and the flagstaff stand. Here, it is asserted, that no fewer than seven currents of air meet together. Here, too, when the wind blows from the south it is averred, you can taste salt spray on your lips as it bounds over the "purple rim" of the hills. The Knockholt Beeches, plainly desecrated, link us to the sea, for they are a beacon to sailors on the other side. We look on the range which sweeps away to Dover, crowned on its way by Lympne Castle, Caesar's Camp, and Shakespeare's Cliff. Am I sure that this plateau will not be desecrated by enclosure?"

The Albert Memorial in Kensington Gardens.—The Albert Memorial, it is said, will be inaugurated by the Queen in April next. The memorial in itself may be said to be finished, and even now the iron railings are being erected round it. Mr. Foley cannot, however, complete the statue of the late Prince Consort until many months have passed, and if the memorial is inaugurated this spring it will lose its chief charm—it will be "Hamlet" without the Prince of Denmark.

Asphalte Roadways.—The Corporation of London have given instructions for Princess Street, Mansion House, to be laid with asphalte, by the Montrotier Asphalte Company, on a sub-stratum of concrete, made with the natural hydraulic cement from Lyme Regis. The enormous traffic in this part of London will prove a crucial test for roadways executed in the manner proposed.—*Builder*.

A Noble Offer.—The people of Aspatria, in Cumberland, want a new market hall and assembly room; and have resolved that the sum of two guineas be offered as a premium for the best plan of a building.

St. Paul's Churchyard.—A project is before the City authorities for widening the western end of St. Paul's Churchyard by cutting off a portion of the ground attached to St. Paul's. The Commissioners have since offered the Dean and Chapter £15,000 for the ground sought to be taken away from the graveyard at the western end, with a view to the proposed improvement there, and the cathedral authorities and the Commissioners are now in negotiation on the subject.

The Lamp Standards on the Embankment.—These have been designed by Mr. Vulliamy, and are to cost, we understand, £21 each. They are good specimens of iron casting, in very bold relief. The arms and lanterns are to cost £13 each, fixed complete, and this, with about £1 each extra for some little necessary adjuncts, gives the total cost of each lamp, fixed and ready for lighting, as £35.

"The Irish Gardener's Record."—We are happy to announce the re-appearance of this useful little publication, which is for the future to be issued fortnightly.

LAW NOTES.

Moving Vines at Expiration of Tenancy.—I have some young vines planted in a small viney, which I am desirous of moving when I quit the premises I now occupy next quarter day; but my landlord claims them as his. Can he legally do so?—H.—[When you quit possession your vines are, we believe, the property of your landlord, and you cannot claim any compensation, unless you are a market gardener, or there is some special covenant in your lease.]

New Park at Tooting.—A lawsuit of an unusual kind got into the Vice-Chancellor's Court the other day, the object of which was to restrain the Metropolitan Board of Works from promoting a scheme under the Metropolitan Commons Act, 1866, for devoting Tooting Beck Common to the public as a park or pleasure ground, the objection to the scheme in question being that it was intended to sell a part of the common for building ground. In July 1868, the owners of the manor of Tooting Beck agreed with Mr. Drew and Mr. Flower to sell the greater part of the manor to these gentlemen to enable them to convert the common into public pleasure grounds. The plaintiff, a Mr. Telfer, was entitled to 1-24th of the manor under the agreement in question, provided that no part of the waste should be sold or let without the consent of the plaintiff and some of his co-owners, and if the common were not used for the purpose intended one twenty-fourth should be resold to him. The contract was completed, and the Metropolitan Board of Works agreed to buy the common from Messrs. Drew and Flower, and induced the Inclosure Commissioners to prepare the scheme, which was objected to. The Vice-Chancellor was of opinion that the Metropolitan Board, standing as they did in the shoes of those persons from whom they had bought, by promoting this scheme were acting in contravention of rights they had contracted to observe. It had been contended that the defendants were acting in a matter of public duty, and therefore they, as a public body, could not be restrained from such promotion. The scheme itself showed that their object in separating a part of the common was to make money, and there was no trace of anything like an application to Parliament. The injunction, therefore, must issue.

Overhanging Boughs.—My neighbour's trees so overhang my garden as to injure it by their shade. Can I remove the overhanging boughs?—J. F.—[We believe that if a person's trees overhang your garden and fence, to their injury, and the owner of the trees will not cut them back as far as your hedge, you can do it yourself, if you stand on your property. But neighbours should not so act to each other. It is far better to prune by consent.]

Royal Horticultural Society's Show at Birmingham.—It will have been noticed that a resolution was passed at the public meeting, requesting the local committee to give their attention in a special manner to the exhibition of horticultural implements, buildings, &c. If the special prize committee should have ample funds at their disposal, it would be advisable to open a few classes in which prizes should be offered to manufacturers only of some of the leading articles, for example, lawn mowers, garden rollers, garden engines, garden seats, vases for different purposes, flower pots, ornamental and otherwise, collections of spades, forks, hoes, &c. In addition to these prizes, the judges might visit the stands of all other exhibitors, and distribute prizes to articles of merit not included in these classes.—H.

Royal Horticultural Society's Birmingham Meeting.—I see there is to be one class for four pines at this exhibition. Now, the majority of pine growers have not four pines ripe at one time; therefore all small cultivators are shut out; and we get perhaps two, seldom three, exhibitors for one of the best prizes, whereas if for single fruit we should have twenty. The next is for four dishes of grapes. Who beside a market gardener would cut twelve bunches of his best grapes to be spoiled at Birmingham? therefore all the "little men" are again shut out. Next come eight dishes of fruit, a class in which everybody knows few can exhibit. Lastly, what have we poor cabbage-growers done that these most useful products of the garden should not be represented? Had I belonged to the sub-committee (and I was invited to join it), I should have tried my utmost to make classes so that great and small cultivators might meet in the exhibition tent on equal terms, instead of making laws to shut out a deserving, hard-working, and intelligent class of men.—R. GILBERT, *Burghey.*

Leicestershire Floral and Horticultural Society.—The summer show of this society will be held on Wednesday and Thursday the 3rd and 4th July. It is also in contemplation to hold a Chrysanthemum and winter fruit show some time in November.

Warming Greenhouses with Gas.—I have completed an improved system of gas arrangement, and for several weeks past I have used the gas to warm my greenhouse, which is twenty-five feet long, thirteen feet wide in middle, and twelve feet high; part span. The arrangement outside of the house is an improved air and gas burner acting on a conical double jacket copper boiler with ordinary two-inch flow and return joints, and four-inch iron pipes inside greenhouse. When once lighted the gas continues to burn day and night without further attention or labour. The cost of the gas used is about one shilling per day. (The price of gas here is 5s. per 1,000).—James Copcutt, Aylesbury, in "English Mechanic."

THE MANGROVE (RHIZOPHORA MANGEL).

THE note (p. 293) from the Royal Botanic Society's proceedings in reference to this plant is not quite correct. A case of mangroves was sent to Kew by Mr. Prestoe, of Trinidad, in 1868 or early in 1869. Though most of them died on being shifted, one lived, which, as well as one received from the Royal Botanic Society, grew well until one night in the winter of 1870-71 the house in which they stood was allowed to get as low as 48°, and after that they drooped, and died in less than a month. The mangrove naturally inhabits muddy swamps close to the sea shore in tropical climates; there fore, when the plants of it just alluded to came to Kew, they were treated to salt water for a time; but after a few weeks this was exchanged for common soft water—in which they were plunged in a tank half way up the pots, and this, together with strong soil induced them to make vigorous growth and to push strong roots from the stems. After that they were transferred to the tank in the Victoria House, where they passed part of each day with the pots submerged, and part just above water. This pseudo-tidal action, however, did not benefit them; for although they continued to grow, they lost vigour. Mangroves will grow quite freely in a temperature above 60°, if the soil is kept wet. J. CROUCHER.

NOTICES TO CORRESPONDENTS.

TORQUAY.—The tenderer kinds of evergreen oaks from Asia will doubt less live out of doors in Devonshire. One of the kinds you have sent is certainly not an oak; another no doubt is *Quercus dealbata* or glauca, a Chinese species. If you will send us fair specimens of the others we will endeavour to name them.

H. S. N.—Through Vilmorin, Andrieux, & Co., 4, Quai de la Megisserie, Paris.

J. R.—1. THE GARDEN is the work referred to under another name, and modified in plan. 2. We cannot recommend tradesmen; see trade catalogues. 3. Will be answered next week in "Indoor Garden."

C. B.—The narrow leaved *Eucalyptus* is resinifera; for all medical purposes the resin is said to be fully as efficacious as kino; this kind is sometimes called gummifera. The broad leaved one is *Eucalyptus robusta*, a very hardy and rapid growing kind, which attains to an enormous size in Van Dieman's Land.

F. M. H.—W. Thompson, Ipswich.

J. K.—*Lycopodium denticulatum* will succeed in a temperature of between 40° and 50°.

J. O.—We are unacquainted with the stove you name.

M. W.—For red, pink, or purple dwarf edgings to continue in flower till September, we know nothing better than verbenas, nicely pegged down and kept in order.

YOUNG GARDENER.—Use good one-year old vines, and as your fruit wall is on arches plant inside, spreading out the roots well in all directions. Train one rod up each rafter, and, when established, prune on the spur system. Peaches and vines do not succeed well in the same house.

COVENT GARDEN MARKET.—March 2nd.

Flowers.—These continue to be supplied in great abundance and variety, especially such things as Primroses, Cyclamens, Geraniums, and Orchids, among which some charming kinds are furnished in a cut state. Solanums and other berry-bearing plants may also still be obtained.

Prices of Fruit.—Apples, Dessert, 2s. to 4s. per dozen.—Cobs, per 100lbs., 60s. to 65s.—Filberts, per lb., 8d. to 10d.—Grapes, per lb., 8s. to 15s.—Lemons, per 100, 7s. to 10s.—Oranges, per 100, 6s. to 10s.—Pears, per dozen, 3s. to 8s.—Pine-apples, per lb., 6s. to 10s.

Prices of Vegetables.—Artichokes, green, each, 6d. to 8d.—Asparagus, per 100, 8s. to 10s.—Beet, per dozen, 1s. to 2s.—Broccoli, purple, per bundle, 10d. to 1s. 3d.—Brussels Sprouts, per half sieve, 2s. 6d. to 3s. 6d.—Cabbages, per dozen, 10d. to 1s. 3d.—Carrots, per bunch, 5d. to 7d.—Cauliflowers, per dozen, 2s. to 6s.—Celery, per bundle, 1s. to 2s.—Chilies, per 100, 1s. 6d. to 2s.—Cucumbers, each, 1s. 6d. to 3s.—French Beans, new, per 100, 3s. to 4s.—Herbs, per bunch, 2d. to 4d.—Horse Radish, per bunch, 3s. to 5s.—Leeks, per bunch, 2d. to 4d.—Lettuces (French), Cabbage, per dozen, 1s. to 2s., Cos, per dozen, 3s. to 5s.—Mushrooms, per pottle, 1s. to 2s. 6d.—Onions, per bunch, 4d. to 6d.—Parsley, per bunch, 2d. to 4d.—Radishes, per bunch, 1d. to 6d.—Rhubarb, per bundle, 6d. to 1s. 6d.—Salsafy, per bundle, 1s. to 1s. 6d.—Scorzonera, per bundle, 9d. to 1s. 3d.—Seakale, per punnet, 1s. to 2s.—Shallots, per lb., 8d.—Spinach, per bushel, 3s. to 4s.—Tomatoes, per small punnet, 3s.

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All communications for the Editorial Department should be addressed to WILLIAM ROBINSON, "THE GARDEN" OFFICE, 37, Southampton Street, Covent Garden, London, W.C. All letters referring to Subscriptions, Advertisements, and other business matters, should be addressed to THE PUBLISHER, at the same Address.



"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—Shakespeare.

PUBLIC GARDENS.

PARKS AND BUILDING GROUND.

No one can be more desirous than myself that parks, gardens, and open spaces should be multiplied in the vicinity of all our large towns, and that they should be made as extensive as possible; but certain considerations, left entirely out of sight in the article on Victoria Park in your last week's issue, seem to render it advisable, with the view of furthering this very object, that the strips of land in dispute should, as originally proposed, be let for building on. With your permission, I will briefly state what these considerations are.

1. When a sum of public money is voted for a park, and a special provision is made to enable the park to become in time self-supporting, and even to have a surplus revenue which may eventually pay back to the nation its original cost, it seems to me to be bad policy to endeavour to annul these provisions, and thus make it a perpetual charge on the revenue. For, if this is done, it must inevitably render any Government both less willing and less able to entertain the question of establishing new parks. The fact of the great increase of population round the park, which is adduced as an argument for keeping the building land open, is the very circumstance which has rendered the surrounding land so valuable, and which will enable it to produce the required revenue.

2. There is, however, a very important principle involved in this question, which has been strongly advocated by Mr. John Stuart Mill, viz.:—that as much as possible of the increase in the value of land which is directly caused by the public, should belong to the public. Now there is no more certain way of increasing the value of the surrounding land than by making a beautiful park in a densely peopled district; and by reserving a strip of land all round that park at the outset, expressly to be built upon when the demand arises for it, you do actually secure a large share of the increased value to the public. The strip of building land around Victoria Park, for instance, is certain to increase in value; so that, besides producing a good revenue for the first term of the leases, it will probably, as those leases fall in, be re-let at a much higher rate, and so produce an increasing revenue, which may not only suffice to pay for the present park, but may also supply funds towards the formation of new parks in outlying districts where they will be then more needed.

3. But if the strips of land in question are now permanently attached to the park, we not only lose all this present and prospective benefit ourselves, but we make a free gift of the wealth we have created to men who have no earthly right to it. For there will then be a most valuable building frontage to the park, about three miles in extent, in the hands of private persons, whose property will rise to double or treble its previous value the moment we extend the park up to their boundary, and give them the certainty of a perpetual view over it. Many of these freeholders will have purchased their ground at a low price, because it was believed that they would be entirely shut out from the park by a continuous line of houses on the reserved land.

4. It is of the very first importance to establish the practicability of the principle of always securing, at the time when great improvements are first made at public expense, an additional tract of cheap land, the enhanced value of which, created by the improvement, may at some future time repay its cost; and I cannot but think that it is very short-sighted

policy, under any circumstances, to claim this reserved land, and so neutralise this highly desirable result. It is almost as suicidal as the practice of those Governments which, having obtained a loan on the faith of the establishment of a sinking fund, appropriate the revenues set apart for that purpose on the first monetary pressure.

5. On looking at your very clear map of Victoria Park, it is easily seen that the strips in question form a very small part of the whole; and although twenty-nine acres in one lump is a good-sized piece of land, it is of far less importance when in a strip nearly three miles long. For a large portion of this extent, the strips are only one hundred feet wide; and it cannot much affect the park as a place of recreation whether the houses, which will soon inevitably encircle it, are built on the outer or the inner side of the surrounding roads. On the other hand, it is a matter of the highest importance to prove, that in populous districts parks can be made self-supporting, after a few years, by the simple method of surrounding them with a belt of land reserved for building, the constantly increasing rents of which shall benefit the public instead of private landowners. I therefore maintain that it is the true interest of the people at large that the original scheme should be carried into effect, because it is founded on a true and most important principle, which will favour (as surely as the opposite course will check) the multiplication of parks and gardens for the people.

ALFRED R. WALLACE.

[We wholly agree with our correspondent, who puts this case in such a clear light. Apart from the various excellent reasons given by Mr. Wallace, it is desirable that the public should possess the power of determining what kind of buildings shall exist in the immediate neighbourhood of its parks. Again, the gain of a mere riband of ground, such as is shown in our plan, or the gain of the strips of ground around the two most recent London parks, and of which we have heard so much clamour, is as nothing compared with the advantage of securing other parks, however small, in densely populated parts of the City, and which we could secure so easily if the grand principle of allowing the public to benefit by the improvements be adopted. We must secure for the dwellers in our vast cities more than a breath of fresh air on a Sunday afternoon at perhaps a distance of several miles from their houses. With reference to the gain to the public from the construction of parks, we have some evidence from the other side of the Atlantic, which came to hand the same day as Mr. Wallace's letter. It is a report of the splendid new park at Brooklyn, which we had the pleasure of visiting in 1870:—"On reference to the rolls of the city's property, the commissioners find that since the commencement of active operations on the park, there has been added to the tax list the large amount of 77,232,410 dollars, the Board of Assessors having felt themselves justified by its very obvious increase, in adding twenty-five per cent. to the city's taxable property for the year 1869. It should be observed, also, in order to a proper appreciation of these facts, that a large portion of this increase, to wit: the sum of 32,820,059 dollars, has arisen in the wards immediately surrounding the park, including the town of Flatbush, thereby increasing the city's annual income nearly a million of dollars."]

THE ROYAL GARDENS, KEW.

Your correspondent's remarks (p. 217) on the Pagoda Vista at Kew will surprise nobody; it is a legitimate subject for criticism to all interested in ornamental planting. How anyone could have dreamed of disfiguring such a beautiful vista by planting deciduous trees in front of Deodars, has caused much discussion amongst practical men. That fine promenade was originally a grand conception; but for years it has been evident that the Deodars were not succeeding. On the contrary, they have proved a failure; for, from the time they have been planted, they ought to have been twice the size they are at present. It is now proved that, except in the south of England or in certain favoured localities, Deodars are not sufficiently hardy for our climate. But why should not steps have been taken long ago to remedy the error, by planting trees that would have answered the purpose? Surely, from among conifers, plentiful as they have been for years, choice might have been made of trees that would have given satisfaction. It has been long known that the *Cedrus atlantica* is much hardier than the Deodar; therefore, it

might have been planted between the Deodars, the latter being allowed to remain until the *atlantica* had attained sufficient size to be effective. As an additional provision against failure, outside the Deodars might have been planted a row of such trees as *Picea nobilis* or *grandis*, both excellent for avenues; and between them some other sort, for the purpose of having the choice of which should ultimately remain. Again, a row of *Picea lasiocarpa* or *P. nordmanniana*, or any other suitable species, might have been planted inside the Deodars, where the objectionable deciduous trees now stand—for which, surely, some more suitable locality might have been found. Each group, as has been shown, consists of three different species, from widely different parts of the world; they may, therefore, be expected to grow into all sorts of sizes, habits, and hues, quite unfitting them for an avenue where uniformity is an important feature.

With respect to the Sion Vista, your correspondent's remarks do not apply with so much force. Here, also, the original conception was good, but the Deodars have failed to fulfil their mission; and I am disposed to think Douglas firs and evergreen oaks in opposite threes, alternately, rather a good idea, as a choice between the two is thus afforded, and if they succeed, they are both good avenue trees. As to the examples of *Cupressus Lawsoniana* referred to, they extend from the American garden only, on the west front of the Palm House, to the wire fence, and being in keeping with other surroundings, cannot be considered to be very objectionable.

The new vista opened through the wood from the Pagoda towards the head of the lake opposite Sion House, if well carried out, might prove a fine feature; but unfortunately at present it looks as if it were a mere makeshift, being much too narrow, not nearly enough of the old trees having been removed to give light and air to those planted to form the avenue, or to give any tree or shrub a chance of succeeding. What, might I ask, is to be done with that huge heap of earth at the head of the lake which terminates the view looking westward from the Pagoda? Is it to be carried away piecemeal, after having been raised to its present height at so much labour and expense? Could it not be made the foundation for a rockwork, which is so much required at Kew? If properly managed, it might be made to present both shade and sunshine for plants requiring either, and would afford a grand opportunity of getting placed out to advantage that immense collection of hardy alpine plants which Kew possesses, and which is now starving in pots in pits or in out-of-the-way places where the public has little chance of seeing it. It might also be provided with miniature lakes for alpine aquatics; and rude rocky walks might traverse it, so as to enable the public to inspect its nooks and corners in order to find the different gems planted there for its enjoyment. Could not such a feature as this be produced equally well at Kew as at Battersea, and be a noble substitute for that miserable abortion in the way of rockwork that is to be found near the Economic House, and at present the only thing representing rockwork in this, in many respects, fine garden?

Hammersmith, W.

A. Dick.

THE ROCKWORK IN HYDE PARK.

FROM what has been stated in your pages, it seems almost impossible to determine who is responsible for the gardening in our parks. It is intolerable, after putting the best men in these places, that they should be overridden on their own grounds by the Chief Commissioner of Works or his subordinates, who may or may not know a *Pelargonium* from a *Pansy*. Why not hold each superintendent responsible for the furnishing and keeping of each park under his care, Mr. Gibson being head over all? Such abortions as the rockwork at the end of the Serpentine are a disgrace to the taste of the age, a reckless waste of public money, an outrage on congruity, and an exhibition of the very worst sort of Cockney tea-gardening. It is to be hoped that some member of Parliament will move for a return as to the cost of planning (?), building, and hiding that rockwork? Every one has a right to insist that this abortion be removed. Supposing the Commander-in-Chief were to order a regiment of soldiers to stand on their heads, would either officers or men obey? Undoubtedly not. But such a whim would not be a whit more absurd than the placing of rare conifers in rustic vases formed of clinker and cement, or the thrusting of a *Retinospora*, two *Rhododendrons*, an *Ivy*, a *Genista*, a *Daphne*, and a small Cedar, all into a single hole only large enough for a house-leek. Such an exhibition is the more to be regretted, as there are really many fine examples of good gardening and furnishing in the parks. Year by year they are becoming more rich and beautiful, and, if left to their proper superintendents, I have no fear but the future will excel the past. But if this is a sample of our statesmen's style of landscape gardening, for the credit of the nation, I trust we shall see no more of it. A man might arise who could govern an empire, or plant a garden with equal

case; but such combinations are rare; and our statesmen might surely be better employed than ordering *Pelargoniums*, *Verbenas*, &c., by the thousand, and giving instructions where to plant them.

The same want of knowledge is equally apparent in regard to planting trees. For years past horticulturists have been crying out against the folly of planting evergreens in London. The dust chokes, the soot smothers them, and there is speedily an end of them. Deciduous trees and shrubs, on the contrary, get a new start annually; they drop their smothered leaves and begin life afresh; the bare boughs get washed clean in winter, and thus the plants thrive in spite of smoke-dried air and London dust. But the official mind ignores all this, and plants evergreens. The remedy is obvious. Let practical men be supreme in their own sphere, and let statesmen be content with the privileges of paying for and enjoying results; then such a monstrosity as the Hyde Park rockwork would be impossible. Of course the step from the sublime to the ridiculous is easier by way of an artificial rockery than by almost any other path. And, apart from its glaring faults in construction, the whole attempt in Hyde Park was doomed to failure from the smallness of the area. In such a position, unless bold scenery on a commensurate scale with the surroundings could have been formed, nothing of the kind ought to have been attempted. As well attempt to force the grandeur of mountain scenery into a nutshell, as form a rockery, worthy of admiration, in such a spot, with such materials, and without a spark of taste or genius.

D. T. FISK.

GARDEN DESIGN.

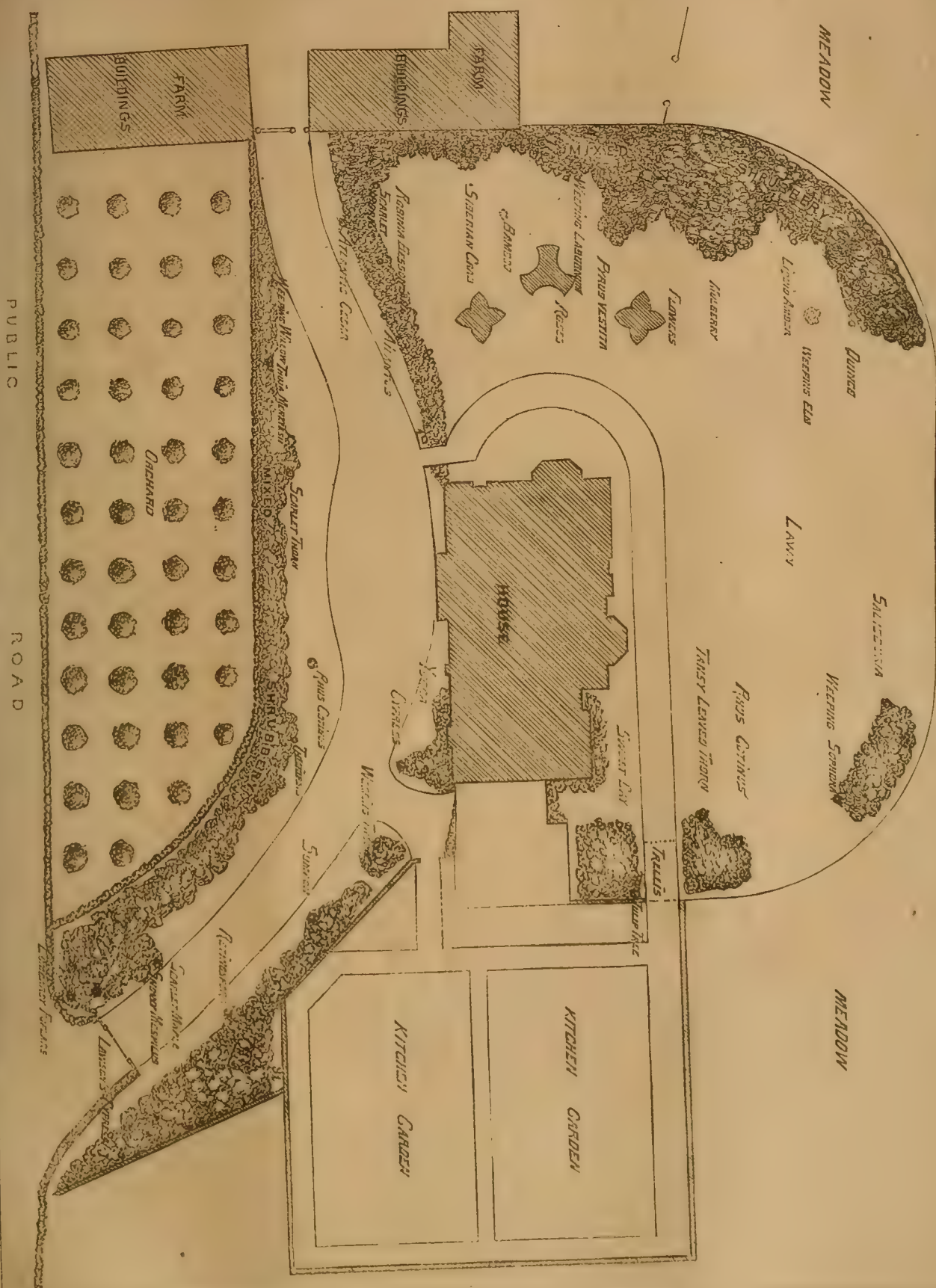
A FARMHOUSE GARDEN.

THE annexed plan represents a piece of pleasure-ground and other features belonging to a garden suitable for a farmhouse. The house in question has been recently erected by Mr. W. H. Smith, M.P., near Henley-on-Thames, and is of a handsome and commodious character, far superior to the generality of erections of this kind. Occupied with the many duties of an extensive farm, the owner usually has but little time and labour to bestow on his garden, and, therefore, it has been considered desirable to confine the arrangement to such a scheme as would present little difficulty in the way of maintaining good order with no great amount of labour. Gravel walks, flower-beds, and the like, have, therefore, been avoided; and for the same reason, the piece of ground that bounds the public road has been allowed to remain as an orchard, in preference to converting it into dressed ground. It will be seen that this strip is screened from the dwelling-house by a belt of shrubbery, as are also the farm buildings and cottages on either side. These shrubbery plots consist of a mixture of ordinary plants, both evergreen and deciduous, with a few light growing trees where necessary, such as *Acacia*, *Mountain Ash*, *Laburnum*, and *Gleditschia*, intermixed with them.

With regard to shrubs or trees for special positions, an attempt has been made to plant only such as would render the garden as interesting as possible, by means either of flowers or fine foliage, and thereby, in some measure, compensate for the absence of flowers in borders and beds.

With respect to planting, considerable attention has also been paid to mix in with the ordinary occupants of the place various trees, which, in addition to their ornamental character, might be found useful for domestic purposes, such as the quince, Siberian crab, medlar, &c. The open grass space on the private front of the house might be made available as a croquet ground; it is therefore kept free from both plants and flower-beds. All the finer hardy herbaceous plants might likewise be arranged on and near the margin of the shrubberies, and in that way a good deal of floral beauty would be introduced with good effect and at little cost.

Adulteration.—The principal of the Inland Revenue Laboratory, Mr. G. Phillips, reports that 432 samples of tobacco were examined by him in 1870 for the Excise Department, and 312 were found to be adulterated, the adulterants being wheat and rice starches, sugar, liquorice, lampblack, catechu, and colouring matter. The amount of adulteration ranged up to 4 per cent. starch, 40 per cent. sugar, 55 per cent. of liquorice. Almost all the samples found adulterated with sugar and liquorice were "Cavendish." It is believed that it is smuggled into this country in small quantities by sailors.



THE INDOOR GARDEN.

GLOXINIAS FOR WINTER BLOOMING.

I do not think it is generally known how easily Gloxinias may be had in bloom in winter, and how very beautiful they are, either for decorating a cool stove or for cut flowers. For this purpose I recommend plants raised from seed. No one who has not been in the habit of raising seedlings of those plants can form any idea how much more vigorous they are than those raised from cuttings; and for merely decorative purposes, they are far superior. Of course, I admit, if it is desired to perpetuate any particular variety, it is absolutely necessary to do so by means of cuttings. Several years ago I saved seeds from a flower of great substance, and of a peculiarly rich dark crimson colour, that had not, so far as I was aware, been crossed with any other variety; but the seedlings produced flowers of all shades of colour, between crimson, purple, and white, but not one like the parent; in this respect they are very variable. The plants we have now in flower were raised from seed about three years ago, and the largest are in nine-inch pots; some of the bulbs are upwards of six inches in diameter, and if we could have spared room to have given them a shift into twelve-inch pots, the plants might easily by this time have been three feet in diameter. Of course, I do not say the flowers are equal to those of the best named varieties for exhibition purposes, but many of them are large and very pretty; I am, however, only speaking of them as decorative plants for winter. I like the erect flowered kinds best; for they are more useful for cutting.

The seeds should be sown in February or March, in well-drained pots, in peat and sand; fill the pots to within half an inch of the top; press down firmly, and make the surface quite smooth with the bottom of a small pot, giving at the same time a good watering. Sow the seeds thinly and evenly over the surface, and scatter over it a little silver sand. To check evaporation, and thus obviate too much watering, place on the top of the pots a little clean moss. The seeds are so small that heavy waterings would be likely to carry them down so deep as to prevent their growing; but by giving the pots a good watering before sowing the seeds, and a thin covering of moss, and afterwards very little water will be required till the seeds germinate; as soon, however, as the seedlings are up, the moss must be removed, and, when they are large enough to handle, prick them off into small pots, and grow them on in the stove, or a warm pit shaded from bright sunshine, shifting them into larger pots when necessary.

They will begin flowering about July or August; but if the object is to grow them for winter flowering, pinch off all blooms till October, when a few flowers may be obtained the first winter. About March gradually withhold water, and allow them to go to rest. When at rest Gloxinias are treated by many cultivators the same as Caladiums, that is they keep them dry in the stove; but in my practice in treating them as winter blooming plants, and of course at rest the principal part of the summer, early in June they are moved out of doors, and laid on their sides in some partially shaded corner. And I find this cool treatment seems to agree with them, for the rest is more perfect, and when housed about the end of September, they have started into growth, and are ready for potting. The second season, if well managed, many of the plants will measure from one to two feet in diameter. In potting them after the first year, use a richer compost. We always use for large bulbs about a sixth part of thoroughly decayed manure with the peat, and a liberal proportion of sand, and small lumps of charcoal to keep the soil open. When in full growth, supply them freely with water, and maintain a moist atmosphere, and when in flower, water them twice a week with weak clear liquid manure.

There is no difficulty in entirely changing their period of flowering, by resting them in summer, and so having them in flower from November till March, and that too without any special forcing, but by simply reversing their period of rest; but, as I previously stated, I find seedlings much more manageable in this respect than plants raised from cuttings, and there is a strength and vigour of constitution about them that nothing seems to injure. Thrips will attack them, and, if not

stopped at once, will destroy them; the best preventive is a moist atmosphere, without absolutely dashing much water over the foliage, with mild tobacco fumigations occasionally, whether insects are visible or not.

Anyone who has a few named varieties should select three or four of the most distinct, and cross them, save the seed, and give the seedlings a trial against the older kinds. Seeds of Gloxinias may also be purchased from most of our principal seedsmen.

Herewith I enclose a few blooms merely to show how useful they are for cut flowers; but of course they give no idea about freedom of flowering, or size of plants, in which resides their chief value.

E. HOBDAY, Ramsey Abbey.

[The blooms in question reached us in the most perfect condition, and were the admiration of all who saw them. The colours were of the most delicate description—clear white, beautifully edged with lavender and crimson.]

STOVE ALPINES.

WHY not have stove as well as hardy alpine? If a more natural arrangement than has hitherto been practised is to be carried out in our glasshouses, of course we shall want now and then a bit of rock-work, and in the following list of dwarf plants many will be found useful for that kind of ornamentation, as well as for other positions of a similar character, in a tastefully planted stove. Where plants of larger size are desired, they may readily be found among Caladiums, Achimenes, and Marantas.

<i>Æschynanthus fulgens</i>	<i>Dichorisandra undata</i>	<i>Jerdonia indica</i>
<i>Æ. Paxtonii</i>	<i>D. musaica</i>	<i>Monolena primulaeflora</i>
<i>Æ. tricolor</i>	<i>Dipteracanthus affinis</i>	<i>Nematanthus longipes</i>
<i>Agalmyla staminea</i>	<i>D. calvescens</i>	<i>Oplismenus imbecilis</i>
<i>Asystasia capensis</i>	<i>Dorstenia maculata</i>	<i>Oxalis mandiocana</i>
<i>Barleria flava</i>	<i>D. arifolia</i>	<i>O. sensitiva</i>
<i>Begonia albo-coccinea</i>	<i>D. Bahiensis</i>	<i>Peperomia arifolia</i>
<i>B. conchifolia</i>	<i>D. argentata</i>	<i>P. brachyphylla</i>
<i>B. hermudifolia</i>	<i>Eranthemum igneum</i>	<i>P. marmorata</i>
<i>B. hydrocotylifolia</i>	<i>E. leuconetrum</i>	<i>P. misgolfolia</i>
<i>B. Rex and varieties</i>	<i>E. verbenaceum</i>	<i>P. reflexa</i>
<i>B. scandens</i>	<i>E. venosum</i>	<i>P. rubella</i>
<i>B. Thwaitesii</i>	<i>Ficus repens</i>	<i>P. variegata</i>
<i>B. Peirecii</i>	<i>F. falcata</i>	<i>Pilea muscosa</i>
<i>Bertolonia maculata</i>	<i>Pittonia argyreneura</i>	<i>Scindapsus pictus</i>
<i>B. marmorata</i>	<i>Gymnastachyum Pearcei</i>	<i>Stigmaphyllon pictum</i>
<i>B. margaritifera</i>	<i>G. Verschoffeltii</i>	<i>Streptocarpus Rexii</i>
<i>Caladium argyrites</i>	<i>G. zeylanicum</i>	<i>S. polyantha</i>
<i>Centroselema picta</i>	<i>Higginsia (Campylobtryx) argyreneura</i>	<i>S. Saundersii</i>
<i>Centradenia rosea</i>	<i>H. discolor</i>	<i>Selaginella, any</i>
<i>Chamæranthemum Beyrichii variegatum</i>	<i>H. porphyrophylla</i>	<i>Scutellaria cordifolia</i>
<i>Columnea scandens</i>	<i>H. refulgens</i>	<i>Stenogastera conoidea</i>
<i>Conradia neglecta</i>	<i>Hoya Bella</i>	<i>S. multiflora</i>
<i>C. multiflora</i>	<i>H. Paxtonii</i>	<i>Tapeinotes Carolinae</i>
<i>Coccocypselum repens</i>	<i>H. Shepherdii</i>	<i>Tillandsia muscosa</i>
<i>C. metallicum</i>	<i>Impatiens glabra</i>	<i>T. acutifolia</i>
<i>Cyrtodieria chontalensis</i>	<i>Impatiens polypetalata</i>	<i>T. zehriana</i>
<i>C. metallica</i>	<i>I. repens</i>	<i>Vriesia speciosa</i>
<i>C. coccinea</i>		<i>Ferns, various</i>

J. CROUCHER.

VIOLETS.

THANKS to a mild winter, Violets are in bloom a month earlier this season than usual, and thousands of our labouring poor have been for several weeks past, and still are, busily engaged in the gathering and selling of this early spring flower. All round London Violets are grown by acres, and in such a way as would astonish our country friends, who, beyond the culture of a few double kinds in a frame or two, seldom bestow much attention on the cultivation of this delightfully sweet-scented flower, with which just now London markets are almost flooded; the sort being an improved form of the single Russian Violet. They are commonly planted in rows, about three feet apart; the plants being about eighteen inches from each other in the rows. This allows of the hoe to be freely worked, of a plentiful application of manure, and of the growth of crops between the lines during the summer. New plantations are made upon ground on which vegetable crops have been growing, and consist of the strongest and best rooted side shoots taken from the old stools immediately the blooming season is over. With due attention these make strong plants, and yield a considerable quantity of the finest flowers the next spring, and the second year bear a first-rate crop of bloom. Some let them stand another year, but the flowers, although most abundant, are not so fine as from younger plants. The stools will also, by this time, have covered the major portion of the ground. If anyone has some out-of-the-way path that wants an edging, by all means let him get some of these Violets and plant them out along the sides; they will make both an excellent edging and furnish abundance of beautiful flowers.

A. D.

THE FRUIT GARDEN.

APPLE ORCHARDS—PRUNING AND TRAINING.

It is gratifying to witness the great improvement seen throughout the country in the training and management of apple orchards. Formerly, it was the general practice to allow them to grow without care; now, well shaped and well cultivated trees may be seen in every neighbourhood, on the grounds of good cultivators. But still there are many who begin at the wrong end in pruning their orchards, by waiting till their deformities become developed in large or bearing trees, and then lopping off large limbs to remedy the bad shape. This practice not only makes large wounds, which are long in healing over, but it is a sacrifice of what would otherwise be a valuable growth of wood. It is far better in every way to give the young tree the right shape in the first place, and then by proper attention it may be kept so by the easy process of simply rubbing off any wrong or supernumerary shoots as they appear, or, at most, cutting them out with a knife, without the necessity of resorting to the use of the axe or saw.



Fig. 1.

Fig. 2.

Fig. 3.

We give a few illustrations of the proper mode for keeping the tree in the right shape through the successive stages of growth, until it becomes the large handsome shaped bearer—contrasted with deformed shapes not unfrequently seen on the grounds of slovenly cultivators.

Fig. 1 represents a well shaped tree from the hands of the skilful nurseryman. The head consists of four or five branches, which are to form the framework of the future tree—the only subsequent care



Fig. 4.

Fig. 5.

being the preservation of just enough side shoots along these branches as they increase in growth, to form a thrifty, evenly distributed head—these shoots in their turn to supply others, as they become larger. Purchasers of trees, however, who desire to get their trees at as low a price as may be, are unwilling to pay for these which are thus handsomely worked, and receive such as are shown in fig. 2, which have grown three or four years with very little attention.

These will need special care to give them a right shape as soon as practicable, the best treatment for which is to cut the top off at the dotted line, which will give a form like fig. 3, and from which a good shaped head may be made.

Sometimes unskilful nurserymen trim up their young trees so closely, in order to supply the call for "tall trees" from equally unskilful planters, that the slender stem is unable to sustain the mass of leaves and shoots at the top, and they assume the form shown in fig. 4, reminding one of the "bowing bean." Avoid buying such trees—or, if once on your hands, they may be cut back as already described, and possibly a head may be obtained from the new shoots.

It should be borne in mind that all cutting back and pruning for this purpose must be done very early in the season and before the buds begin to swell; for if done later, it will only check instead of helping growth.



Fig. 6.

By keeping an occasional eye on the young orchard, and rubbing or cutting out any needless shoots which may spring up, the trees in a few years will present the appearance shown by fig. 5; and by continuing this care as they grow larger, they will appear like fig. 6, which shows the bare branches without leaves.

A well managed tree, as it begins to come into full bearing, is shown by fig. 7; and when of larger size, by fig. 8. If the lower branches of such large trees become too drooping by the successive loads of fruit giving them too low a position for easy cultivation, a few may be readily removed with the saw. Where nothing very particular is grown under them the branches may be allowed to



Fig. 7.

remain near the ground for the convenience of picking, and treated thus they will also furnish a larger bearing head.

Having now given suggestions for keeping the trees of an orchard in proper shape (which to be successful must always be accompanied with good, clean cultivation, except on the very richest soils), we add additional illustrations of badly cut and mutilated trees by way of contrast, and for the purpose of inducing young planters to avoid

such management. The mode of pruning old trees shown in figs. 9 and 10 may still be occasionally seen, but we are glad to state that it is rapidly giving way to a better treatment. Workmen who know nothing about trimming trees, are sent into old orchards with axes,



Fig. 8.

by owners who know no more, and soon reduce good old trees to such distorted forms as these figures represent—the first being what may be termed a “sprawler,” and the second “a two-story” tree with a scant attic.



Fig. 9.

Fig. 10.

When apple trees become old, new vigour is sometimes imparted to them by a moderate pruning of the tops at a season when destitute of leaves, and before the buds swell. This pruning should be gradual, or performed in two or three successive years, beginning at

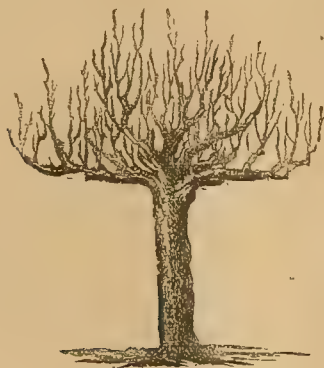


Fig. 11.

the top and working downwards, leaving the main branches; and not as figs. 9 and 10 represent, by beginning at the bottom and running upwards. But as a general rule, we do not advise any attempt to restore quite old trees in this way. When the trees have reached old age, they ought to be replaced by new ones. It is rare that apple

trees live much over sixty years in the best fruit regions of the eastern and middle States, and rarely over forty years at the west, and when they have thus fulfilled their destiny, they may be discharged, and new ones brought on. But trees which are not over twenty or thirty years old may be often much improved, especially if in connection with re-grafting to better sorts. In this case work downwards, taking two or three years for the operation, as already described, giving them, not the form of fig. 10, but of fig. 11, which shows the young shoots, from grafts or otherwise, springing up and forming a new, handsome, symmetrical head.—*Albany Cultivator*.

GRAPE ROOM AT ASWARBY PARK.

Our grape-room—that is, the apartment in which we keep our bottled grapes—is on the second floor in a north aspect, and therefore dry and free from sunlight. The three great evils to guard against are damp, frost, and artificial heat. Our room is twenty-one feet by sixteen feet, and seven feet six inches in height. The walls are thoroughly plastered, the ceiling having three coats; and above the ceiling and between each rafter is packed clean dry sawdust, to act as a preventive against frost. The north and east walls of the room are exposed to the open air; the west and south are inside walls, which assist in keeping out frost. The floor, which consists of composition, is always covered with clean dry sawdust. There is no ventilation from the roof, but two windows look towards the north, and are fitted with shutters inside to be closed in severe weather. The space between the shutters and windows is padded with clean, dry material in frosty weather. The door, which is on the south side, can be converted into a double door when required; the space between being, like the windows, closely padded, so as to make the room in frosty weather almost air-tight. Ventilation is wholly derived from the door and windows, which open and shut as required, as thorough ventilation with a good amount of light is required at all times whenever the weather will permit. When the day is damp and cloudy, or the wind in the north, the room is not opened; still, I never lose a chance of admitting light and air, if only for half-an-hour. On the 8th of December, when we had 20° of frost, the temperature in the room did not get lower than 38° without artificial heat. The temperature is kept as near 48° as possible, and with careful attention the room will stand for weeks at that temperature. At each end are arranged fruit shelves for the best varieties of dessert pears and apples; the centre being devoted to the grapes. We have eight standards, 6½ feet high and two inches square, with brackets let into two sides of them alternately; the brackets are 1½ inch thick, and after being let into the standards are 4½ inches by 3½ inches. Four of these standards are placed on each side of the room, leaving a passage-way all round them. The bottle receptacles are then laid on the brackets, on which they rest perfectly flat. They are then made fast with a screw, which passes through from the underside of the bracket and enters the underside of the receptacle. A light facing of wood is fitted to the face of the standards from the underside of the bracket, and rests on the top of the bottle receptacle. This prevents the receptacle from rising up behind, and gives the whole a neat and finished appearance. Each pair of standards carries seven ten-foot lengths of bottle receptacles, four on one side and three on the other. Each length holds eleven bottles, so that each pair of standards carries seventy-seven bottles. Each standard has an iron spike in its top, which, passing through laths of wood fixed there, binds all firmly together.

After trying experiments in many different ways, I find nothing to equal charcoal and pure rain water for grape preserving. The shoot with the bunch of grapes on it is placed in the bottle close to the water, but not in it. When the grapes were nearly ripe, I thought to myself I must not cut all, if I can, at once—for this reason, that every bunch of grapes in the house does not ripen at the same time, nor yet in the same week. Ten or twelve days before cutting any to take to the room, I went over all the bunches in the Muscat house, and selected from forty to fifty that had arrived at maturity; I shortened back the shoots to two eyes above the bunch, and the small laterals attached to those two eyes were allowed to remain. I am now speaking of Muscats alone, the foliage at the time being quite healthy and green. My vines are trained on the extension system, and forcing was commenced on the 7th of March. Cutting back the shoots ten or twelve days previous to cutting off the bunches to take to the room obviates the use of sealing wax or any other material in that way, as the wound becomes perfectly hard and dry of its own accord, and will neither take up nor give off moisture. The day before cutting I have the charcoal and water put into the bottles. I then have all the selected bunches cut and taken to the room, cutting the shoots off at two eyes below the bunch when possible to do so, with all the green foliage attached, allowing it to

die off of its own accord, which takes from three to four weeks. After the grapes are in the room the leaves must be carefully gathered up as they drop, and at once removed. Having disposed of the first lot of grapes, I go to the vinery again, and select another quantity to come in in succession. This to some may seem a slow process, but I am satisfied that it is a better plan than leaving the grapes on the vines.

The foliage was nearly all off Lady Downe's Seedling when I cut my bunches of that sort. This autumn I shall select them the same as I did the Muscats. I may add that the bottles are all stoppered with wadding. The time, I apprehend, is not far distant when grape rooms will be as common as fruit rooms, and they will answer the end in view quite as well, provided they receive proper attention. People must not think that grapes will keep in a room for four or five months without careful looking after.

RICHARD NISBET.

Asbury Park, Falkington.

FORCING STRAWBERRIES.

It is an old and familiar truism that "there is nothing new under the sun"; still, as time progresses fresh readers spring up, for whose advantage it is sometimes desirable to discuss questions that some of us look upon as definitively settled. Forcing strawberries is in many places an important part of a gardener's duties; and to keep up a constant succession from March—which is as early as they are required in most establishments—till they can be gathered in the open ground, requires a good deal of forethought and attention. After trying a good many varieties, I think the following may be relied upon:—Keens' Seedling, President, Sir Charles Napier, and British Queen. If very early fruit is required in January or February, Black Prince forces well, and may be grown to a fair size by severe thinning. Bicton White Pine I have found very useful when several dishes are wanted at the same time, as it gives more variety. Trollope's Victoria is a heavy cropper and sure bearer, and a large showy fruit, but not first-rate in flavour.

In preparing the plants the best way is to lay the earliest lot into small pots, and it is important that this should be done as early as possible in the season; for later crops I have often laid them into the fruiting pots at once to save time, and always found them do well. I would strongly recommend the following plan to anyone who has a difficulty in procuring early runners in sufficient quantities. I need not say how important it is that plants for early forcing should have plenty of time to develop and mature their growth. In September take a sufficient number of the late runners and plant them six inches apart in a prepared bed in a frame, give them a good soaking of water, and after they are established take off the lights and only cover them in severe weather; pinch off all flowers that show in the spring, and about the third week in May pot them in the fruiting pots. I have never known plants so treated fail. They have plenty of time to fill their pots with roots; and to plump up their crowns, give them a few doses of weak liquid manure, but don't over do it, or late growths may be excited when the aim should be rest by a moderately dry treatment. Shelter of some kind from heavy rains and cutting winds is necessary from October till forcing begins about Christmas. In selecting the runners, care should be taken to obtain them only from the most prolific or fruitful plants, as the absence of this care is often the cause of strong healthy-looking plants turning out blind or unfruitful. Thirty-two sized pots are the most suitable for the fruiting size; but good crops may be grown in forty-eights by plunging the pots in troughs or boxes, half filled with rich soil, or by plunging them into other pots two sizes larger in the same way. Don't be deterred from adopting this plan by any exaggerated ideas about the labour, for it is a mere trifle, and time will be saved in watering, and I am sure the result will be satisfactory. The best soil for strawberries is a good sound loam, adhesive rather than sandy, moderately enriched. The best way to prepare it is, when the sods are cut to pack them in long square heaps in alternate layers of sods and manure, putting in of course only the proper proportion of manure, which must depend upon the quality of the loam. In about eight months it will be ready for use.

I have known gardens where there was great difficulty in procuring loam of good quality, from the natural soil of the

district being of a light sandy nature, without sufficient body or strength to suit strawberries well in pots; and, although by adding manure it could be made rich in organic matter, still that did not supply the necessary weight or firmness, if I may so term it. I believe in most light land districts beds of marl or clay are commonly found, the value of which is pretty well known to light land cultivators. It may generally be had on most estates for the carting, and nothing rectifies a light soil like clay. In such cases it is always desirable to keep a few loads in the compost yard and a few bushels dry in a shed ready for use for strawberries, melons, or any other crop that does best in a strong soil. When required for use, break it up as fine as sand, which, as it is dry, there will be no difficulty about doing; take out all stones, and in this state it will mix thoroughly with any soil, so as to be in a condition for plant food. I have generally found about one-sixth of clay the right proportion; but no hard and fast line can be laid down. I am convinced, if anyone who has hitherto had a difficulty in growing good crops of strawberries from the sandy nature of the loam will try this plan, he will find his difficulties disappear. In potting, ram the soil in firmly, keeping the crowns well up.

In commencing forcing, if a pit can be spared, fill it with leaves to within six inches of the glass, treading it down as the work proceeds. Plunge the pots about half their depth, and introduce a fresh batch in succession every fortnight. Give a little air night and day except in severe weather. Don't water too freely till the flowers appear, in order to induce the flowers to come away well with the foliage. At this stage, if desirable, they might be moved to a light house to make room, where the night temperature does not exceed 60°, and where air can be given freely till the fruit is set. Thin the fruit to about ten or twelve on each pot, removing all late blossoms. Push the plants on rapidly with a higher temperature and plenty of moisture, using the syringe freely amongst them twice a day; if not looked after well in this respect, red spider may attack the foliage and spoil the flavour of the fruit. Although I recommend the mild genial warmth of a pit filled with leaves for starting strawberries in January and February, still good fruit may be obtained without its aid by utilizing the back shelves of peach houses and vineries in the usual way; and the gradual advance in temperature in such houses will suit them. After the fruit is set the plants may be moved to the pine stove or any other warm house or pit if wanted early. Place a saucer under each pot, but don't allow the water to remain in it to become stagnant, or the roots may become unhealthy. In forcing strawberries, and, indeed, this remark is applicable to all other kinds of forced fruit, the great secret of success lies in the previous year's preparation. If the plants have been well selected, well grown, and well matured, there will be no difficulty under reasonable treatment in fruiting them. With successional crops, as the days lengthen and there is less risk of their setting, thin the blossoms without waiting for the fruit to set, as it is only a waste of force to leave all on till that is accomplished. Place a small stick to each cluster of fruit, tying it neatly up; it brings the fruit nearer the sun, and keeps it clean from the manure water; and I have an idea that the fruit swells more rapidly when kept in a vertical position, from the admitted tendency of the sap to flow upwards in a direct line. In using liquid manure, there is nothing much better than that made from sheep droppings with a little soot added. I prefer to use it weak at every watering from the time the fruit is set till it begins to colour, rather than give strong doses at intervals. In preparing the stock of plants, provide liberally, so as to have a hundred or so to come on in a cold pit without forcing, as there is often a break in the supply in many places between the forced fruit and those in the open ground, which such an arrangement will prevent.

E. Hobday, Reasey Abbey, in "Field."

THE AMERICAN BLACKBERRY.

The Rubelle or Lawton blackberry has been despitely spoken of by many: first, because the market fruit is generally bad, being plucked before it is fully ripened; and next, because in rich clayey grounds, the briars, unless severely cut back, and again back, grow into a tangled, unapproachable forest, with all their juices exhausted in wood. But upon a soil moderately rich, a little gravelly

and warm, protected from wind, served with occasional top-dressings and good hoeings, the Lawton briar bears magnificent burdens. Even then, if you would enjoy the richness of the fruit, you must not be hasty to pluck it. When the children say with a shout, "The blackberries are ripe!" I know they are black only, and I can wait. When the children report, "The birds are eating the berries," I know I can still wait. But when they say "The bees are on the berries," I know they are at full ripeness. Then, with baskets we sally out; I taking the middle rank, and the children the outer spray of boughs. Even now we gather those only which drop at the touch; these, in a brimming saucer, with golden Alderney cream, and a *souppçon* of powdered sugar, are Olympian nectar; they melt before the tongue can measure their full roundness, and seem to be mere bloated bubbles of forest honey.—*My Farm of Edgewood.*

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Grapes in Bottles.—There are few subjects upon which all agree. Therefore I am not surprised at Mr. Tillery supporting the bottling system. Muscats, I am aware, suffer less by it than any other kind, on account of their being naturally higher flavoured. I am personally acquainted with no fewer than a score of gardeners who adopted the system because of the convenience it afforded, but who have been compelled to abandon it, because their employers complained that grapes so treated were deficient in flavour. I can assure Mr. Tillery that long before I grew specimen plants I grew grapes; and that I found it easier to produce them up to the required standard than plants. I am ready to admit that the practice of preserving grapes in bottles is admissible under certain circumstances. Twelve months ago, I bottled about half a hundred weight, the produce of vines I found here two years ago in a condition impossible to produce first-class fruit. My object in bottling them was to relieve the vines. When I get them into the condition which I hope to be able some day to have them, no bottling for me.—T. BAINES.

—We have recently received from Mr. Wm. Tillery, of Welbeck, examples of Muscat grapes, preserved in bottles for three months, which, for flavour and general condition, were all that could be desired. They have begun to shrivel since being taken out of the bottles; but even the most shrivelled and uninviting-looking of the berries still retain their good flavour.

Profits from Strawberries.—Our friend, William Parry of Cinnaminson, N.J., gives some details about strawberry culture. He says: "In the spring of 1870, before planting strawberries, we opened furrows three feet apart, and spread along them a mixture of fine ground bones, unleached ashes and marl, then turned a ridge on it and set out the plants. They made a vigorous growth, and in the summer of 1871 produced the finest crop of fruit we ever grew. Six acres, mostly of Boyden's No. 30, Charles Downing, Wilson's Albany, and Kentucky, yielded 46,000 quarts, and sold at an average of 16 7/8 cents per quart in market, amounting to 7,682 dollars, or an average of 1,230 dollars per acre. The Boydens were the best strawberries we grew. One whole shipment sent to New York brought 38 cents per quart, being the highest price obtained during the season."—*American Paper.*

Scale on Currant Trees.—Are the scales on the enclosed currant sprays the eggs of insects? and, if so, what kind? and how can I exterminate them? They are too numerous to cut off. Would a daub of Baltic tar, or of that and cart-grease, be likely to imprison them, and so cause their death?—R. V., *Seaford Grange, Pershore.*—[What you have sent us is *Coccus patelliformis*. We should recommend washing with Gishurst Compound, and brushing the scales off with a nailbrush where practicable. It is probably too late now; but in mild weather in winter, when the buds are quite dormant, hot water, varying from 150° to 160° is reported to kill scale.—A. M.]

THE GARDENS OF ENGLAND.

SHRUBLAND.

LIKE most fine gardens, those of Shrubland owe much to their site; they occupy more than half a hundred acres of beautifully hanging ground, on the side of a well-wooded deer park. The mansion, a fine specimen of the Italian style, remodelled, extended, and improved by Sir Charles Barry, crowns the gardens, and has impressed much of its character upon a considerable portion of them. The position of the house is most commanding, and it forms the chief feature in the landscape for many miles round. It overlooks not only the grounds, but the Valley of the Gipping, that winds out and in among the green fields like a silver thread, till it expands into the deeper, broader Orwell at Ipswich. Standing in front of the mansion, overlooking the grand flight of steps seen in the accompanying representation, the whole of the middle distance and foreground is a series of gardens, following each other in different styles, until the eye seeks rest on a belt of wood that fringes the garden boundary in the far distance. Near to this a large artificial lake has recently been formed, and between the steps and this

like, broad glades of sweeping turf and huge masses of shrubs bring the eye forward to a natural-looking labyrinth, planted with all sorts of semi-wild and common plants. Rough irregular mounds of earth have been thrown up, and furnished after the manner of undressed nature. This style is carried right up to the retaining wall that bounds the panel garden. The annexed illustration furnishes a good view of this part of the gardens, as seen from the grand steps. Immediately beyond the panel garden is nature wild and free, then lawn dressed with shrubs—lower down fringed again with flowers, merging finally into wood



Shrubland: View from the House.

or water. The sudden transitions from the wildness of nature to the trimmest formalities of art are not uncommon throughout these gardens. Such violent contrasts are fairly open to criticism; but where a picture, as at Shrubland, has to be spread over a surface sixty acres wide or long, strong lights are needed to prevent the scenery becoming monotonous.

The great garden terrace stairs, so prominent a feature in our illustration, consist of about a hundred steps, twelve feet wide, with four rests over twenty feet wide, and a central landing, from which they swerve to the right and left within about a dozen steps of the bottom. Their whole flight connects the panel garden with the balcony garden, immediately in front of the mansion. A broad belt of evergreen shrubs, mostly box, hug and hide each side of the staircase to the base of the balustrading. At each projecting rest these shrubs are carried up higher, and thus the even line of green, that might otherwise be objectionable, is broken. The vases with which the balustrading is ornamented break it in another manner, by means of masses of scarlet pelargoniums, with which they are crowned. Pyramidal trees also run up among the shrubs, which merge into the adjoining wood. At the bottom of the steps, and almost close to them, two beds of yew, with a mixture of variegated box, so disposed among it as to represent a light coloured serpent lying lazily on a green cushion, have a unique

as well as a singular effect. There are also several beds or masses of *Juniperus sabina*, which likewise, in some measure, tend to subdue the white appearance of so much stone. And a beautiful hanging wood cuts the house, balcony gardens, and lawn off from the series of other gardens lying a hundred or more feet lower down.

At the bottom of the grand steps, a noble grassy glade stretches so far to the right and left in straight lines as to lose itself almost in the distance. This glade is one of the finest features of Shrubland. It skirts the base of the hanging wood on the one side, and a whole series of gardens in different styles of form and planting rest upon it on the other. Proceeding to the right from the panel garden, one gets glimpses of the fountain garden, burnished with colour; and half enclosed, as it were, with a conservative wall, further on, are the quaint Chinese garden, the box embroidery, verberna garden, and máze. Below these again, the poplar, rose, and tent gardens are situated; and from these, detached groups of flowers and shrubs stretch away towards the outer fringe of wood and the lake. On the opposite side of the glade a huge ribbon border, consisting mostly of Dahlias, occupies a niche out of the wood; and further on, near the gate leading to the park, the Swiss cottage, with its garden and rocky fernery, is placed. From this point, and from what may be termed the looking-glass garden, two brilliant borders lead up to an open summer-house with a glorious picture—the subject a charming landscape in front. Coming closer, this is found to be a far-reaching view of the surrounding scenery, all the more enjoyable because of the illusion. From here, the upper lawn is immediately reached, which rises up to the noble conservatory attached to the drawing-room, and sweeps onwards to the balcony garden at the top of the steps, and far beyond it. The lawn, which slopes beautifully from the house, skirts the base of the mansion on one side, and top of the hanging wood already adverted to on the other.

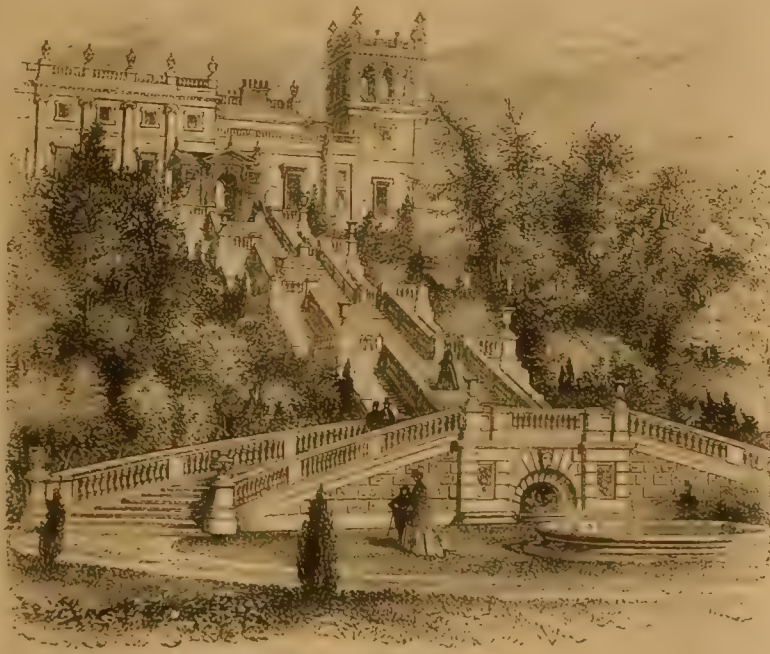
Shrubland, like most buildings in the Italian style, has a series of terraces, with retaining walls of great massiveness and beauty, and on these terraces garden art is made to fraternise with that of the architect. Tiny beds, bordered with the whitest of silver sand, are furnished with flowers of various sorts, in thin lines and little grouplets. By-and-bye these fringes become wider, and the grouplets broaden into masses, till hollyhocks lift their towering stems proudly above heavy stone walls, and are supported with rich masses of glowing pelargoniums. As regards the intermediate space between the mansion and the grand steps, some large beds, placed on each side of the centre walk, are filled with several hundreds each of pelargoniums, chiefly in broad bands, the varieties used being such as pink cerise unique and Golden Chain, finished with the old brilliant Baron Hugel as an edging. Then, on each side of the walk are set fine standard Portugal Laurels. Further, masses of *Humex elegans*, spiral Juniper, and similar plants, together with stone baskets and vases,

link together the house and the steps and form the balcony garden.

Proceeding to the left of the balcony garden, a wide walk sweeps the extremity of the pleasure-grounds and lawn, and passes under, or near, nine of the finest Sweet Chestnut trees in the kingdom. They are supposed to have endured the changing seasons of probably a thousand years, are marked with the scars of many a storm and whitened with the proofs of hoary antiquity. This walk terminates in a seat, from whence a fine dell in the deer park is seen, mostly furnished with Sweet Chestnuts of almost equal size and age. Passing down the end of the grounds, here a lower level is reached, and a straight path leads along between a raised bank on the right, furnished with blocks of wood, &c., covered with a rank growth of wild, rampant vegetation. On the other side a modern ribbon border is placed—nature and art once more in violent contest, rather than contrast. And here nature has the best as well as the most of it. A few steps more, and we are in the panel garden again, at the bottom of the steps, with its splashing fountains and all the glory of its floral and architectural accompaniments.

Of late years, perhaps, art has dominated somewhat too strongly over nature at Shrubland. This is almost the inevi-

table result where great architects become also landscape gardeners. They naturally carry their building tastes with them. Still, both architectural and natural beauty have been on the whole well blended at this fine place. Shrubland is one of those uncommon places where the nature of the ground near the house really demands a terraced garden. Our illustrations have been lent by Mr. Murray, from "The Life and Works of Sir C. Barry." D. T. FISK.



Shrubland from the Gardens.

THE LESSON OF THE LEAF.

WE men sometimes, in what we presume to be humility, compare ourselves with leaves; but we have as yet no right to do so.

The leaves may well scorn the comparison. We, who live for ourselves, and neither know how to use nor keep the work of past time, may humbly learn—as from the ant, foresight—from the leaf, reverence. The power of every great people, as of every living tree, depends on its not effacing, but confirming and concluding, the labours of its ancestors. Looking back to the history of nations, we may date the beginning of their decline from the moment when they ceased to be reverent in heart, and accumulative in hand and brain; from the moment when the redundant fruit of age hid in them the hollowness of heart, whence the similitudes of custom and sinews of tradition had withered away. This lesson we have to take from the leaf's life. One more we may receive from its death. If ever in autumn, a pensiveness falls upon us as the leaves drift by in their fading, may we not wisely look up in hope to their mighty monuments? Behold how fair, how far prolonged, in arch and aisle, the avenues of the valleys; the fringes of the hill! So stately—so eternal: the joy of man, the comfort of all living creatures, the glory of the earth—they are but the monuments of those poor leaves that flit faintly past us to die. Let them not pass, without our understanding their last counsel and example; that we also, careless of monument by the grave, may build a in the world's monument by which men may be taught to remember, not where we died, but where we lived.—*John Ruskin.*

THE SIX OF SPADES.

CHAPTER VI.

AND thus those gentle ladies survey with an amused benevolence the anxious difficulties of their faithful Joseph. Who, indeed, could be seriously angry with him, beaming, as he does, from a desire to please, and glowing with a determination to do his best? If on your coat some venial gravies fall, look in his face, and you'll forget them all. He impinges, I confess, upon his fellow-servants, at times when their equilibrium ought to be especially respected, as, for instance, when they are engaged in the administration of coffee, in the setting on of lamps, and the like; but only from an earnest, affectionate wish to hand you your muffin hot, an anxiety to get at you with something to eat—a noble sympathy, which, to feed you, my friend kicks the shins, treads upon the corns, and ignores the proximity of meaner men. You do not approve, and I do not justify, the deep immersion of his thumb in the Trifle, as he places it proudly before you, although his Berlin glove is of snowy whiteness (“I would I were a glove upon that hand,” whispers your comic neighbour, “that I might kiss those sweets”); but we must both of us admire his attentive care of that beautiful crystal bowl, which he insists on carrying, to the intense terror of the whole household, knowing, as we do, that rather than break it, Joseph Grundy would prefer to be “set quick” the earth, and bowled to death with turnips.”

Only once, within my cognizance, has he been seriously, nay sternly, censured; and this on the occasion of an appeal which he addressed to Miss Susan, for the loan of a certain single-barrelled gun, “to shoot them audacious blackbirds.” He affirmed that they not only stole his fruit, but that, when he drove them away, they just “popped on to the top of the wall and then turned round and *sauced* him.” He had invented scarecrows of such repulsive aspect as would have scared, he was sure, any decent birds into fits; but those brutes had come back, as imperent as imperent. One effigy, that of a gentleman fully armed with the artillery which Joseph desired to realize, and threatening grim destruction to all around, they had treated with conspicuous scorn, sitting upon the fowling-piece, “disgesting,” as Mr. Grundy said, and using the entire creation as a kind of lounge, and worse. So had they exceeded in effrontery those their naughty brothers of whom we read in a recent delightful biography,* that when the ladies set up an old packing case, with a piece of red bunting affixed thereto, as an object which could not fail to dismay the winged banditti of the neighbourhood, “they stood upon the box to eat the cherries, and then wiped their beaks on the rag!”

Were not these provocations sufficient, think you, to disturb even the placid spirit of a Grundy, and to make sour within him the rich custards of his human kindness? A mouse, we read, set the lion free; and a blackbird may rouse the British ditto, even as the twopenny tin horn of the bird-tenter may excite the startled hunter, or speak to the charger of war. So there he stood, erect in all the majesty of wrath, bold as Ajax defying the lightning, and suggesting that he should like a gun.

And wherefore is Miss Susan mute? Stands she aghast, astonished, speechless, at the indelicate behaviour of the feathered tribe, or wherefore is she dumb? She loved those blackbirds well, and now she wears the strangely piteous look of one hearing, for the first time, harsh things of her beloved, and listening to the most respectable evidence that the joy of her soul is a thief. There she stands, grandly indignant, like the Lady Ida, when she found three men in petticoats among her “sweet girl-graduates”:—

“A tide of fierce
Invective seem'd to wait behind her lips,
As waits a river, level with the dam,
Ready to burst, and flood the world with foam.”

But Miss Susan keeps the flood-gates closed, and without a word, the heart's stream too flush and deep to ripple, she walks slowly, sternly, to the house.

But it is not the birds, my reader, who have caused this sad dismay. It is “animal implume”—it is Joseph Grundy, for

whom this stillness in the air portends a thunder-storm. Two hours afterward it fell.

I must tell you, first of all, that a real shower, material not metaphorical, had just refreshed the earth, and all the leaves of the glossy evergreens were shining, “as if” (Mrs. Verjuice beautifully said) “every one of ‘em had been French-polished,” when Miss Susan went forth to speak her mind. Poor Joseph's mocking bird was singing on the tree, as though he had wet his whistle to some purpose, and had clarified and strengthened his throat with raindrops, as the operatic songstress with stout.

“Then Ida, with a voice that like a bell,
Tolled by an earthquake, in a tumbling tower,
Rang ruin, answered, full of grief and scorn.”

“Grundy,” she said (he told me subsequently, with intense pathos, that she had not addressed him by his surname since he upset “them gold fishes,” fifteen years ago, and he would much have preferred that she had commenced with “Pick-pocket”); “Grundy, be good enough to listen to that flute, and tell me which particular tones are inferior in sweetness to your big bassoon. And tell me at the same time, Mr. Joseph” (he would repeat the “Mr.” with an extreme disgust, as though it were an epithet too vile and dreadful for any but the confirmed garotters), “tell me why that chorister in his black cassock should not sing his anthems all the year round, as you once a week in the choir. It may be my want of taste, Joseph Grundy, but I prefer the tune which he is now singing, to your favourite, ‘Bobbing Round!’ *Shoot the Blackbirds! Kill our Minnesingers!* I will not dwell upon the perils which must result, both to life and property, from your first experiments with a gun; I pass over the trifling inconvenience of our compulsory residence in the cellar while you broke every pane in the house; but I pause to ask you how you dare to propose the murder of those sweet musicians, who not only sing for you as you work, but eat your grubs’ and wireworms by the bushel? Cover your cherries with nets, Joseph Grundy—and your head with shame! You are worse, I declare, than that dull yahoo from the mining districts, who, coming to spend a few days in the country, ‘could not sleep o’ nights for them nasty nightingales.’ Shall I take our cage to Verjuice, and order her to make you a canary dumping? or would you prefer that four-and-twenty blackbirds be forthwith baked in a pie? Seriously—do those birds no hurt. ‘Taught by a Power that pities me, I learn to pity them;’ and I commend the lesson to you.”

Then her neat figure, in its grey silken dress, moved away upon the gravel homewards; and he was left lamenting. And now befell a visitation, too common in an unloving world; a lancer rode forth to prick the wounded; a donkey came to kick the ailing lion. Like a pirate upon some helpless wreck, sweeps down Mrs. Verjuice upon Joseph's grief. With bad taste and worse grammar, she announced her solemn conviction that it was his, Joseph's, desire and haim to break his missuses arts, and it was her opinion, though she judged no one, that he was in Co. (by which she meant in partnership) with most of the internal powers; and she only hoped he might not some day find himself where the worm never should be quenched. This and much additional rubbish she discharged with great volubility, and then, imitating her mistress, retired with dignity.

But distinct and separate, as the orators themselves, were the effects of the two orations. Miss Susan's speech left her hearer sad, ruthfully penitent concerning the blackbirds, and as thoroughly ashamed of the subject, as the Ancient Mariner must have been of the albatross hung about his neck. Mrs. V.'s remarks appeared, on the contrary, the rather to cheer and comfort him; and he so far regained his animal spirits as to wink, when she finished, to an attendant robin (presiding, like an Emperor, over his Diet of Worms, hard by), and pointing with his thumb to her retreating form, to murmur, “Poor old runt.”

They are good friends, nevertheless, these two fellow-servants; and Sleet and Sunshine, as Miss Mary calls them, enjoy together life's April day. “When the old gal is on the big,” says Grundy—irreverently alluding to those seasons in which the lady's temper is especially acetose, her observations of the pointed order, and her enunciation so exceedingly

*“The Life of Patrick Fraser Tytler,”

nimble, that, as Schiller said of Madame de Stiel, "a man must be all ear to follow her"—"when the old gal is on the high, I never counterdix nothink. Beautiful, says I, as if I were admiring of a pin-wheel; and off she goes, just like one, a blazing, and fizzing, and spluttering, till all her gunpowder and brimstone's burnt out, and she stops as still as a hystor." Artful Joseph! shrewd in thy reticence, as the monk Eustace with Elspeth Glendinning, when he remembered that a woman of the good dame's condition was like a top, which, if you let it spin untouched, must at last come to a pause; but, if you interrupt it by flogging, there is no end to its gyrations!

At an earlier period of their acquaintance, Joseph had essayed by various demonstrations to intimate to Mrs. V. that her monologues were a little tedious, yawning with extended arms, and consulting his watch from time to time in a very anxious and ostentatious manner. Such a watch! After an entire derangement of the owner's vest, a liberal display of brace and button, and some powerful tuggings at a steel chain, out it came from its well, like the diving-bell at the Polytechnic. Mr. Chiswick pretended to covet the case, as "a sweet tank for the Victoria Lily," and affirmed that when Grundy travelled on the rail, his timepiece was charged as extra luggage. But the exhibition of this huge chronometer, displayed and brandished as some intimation that Time was on the wing and precious, by no means produced the effect proposed. "The old mare" (you must really excuse Joseph's stable mind) "began to rear and plunge like anythink; and says I to mysen, this here's a hanimal, which she'll stand no ticklings by whips nor straps, and if you dont give her her 'ed, Joe Grundy, you'll be having her heels through your splashboard!"

If evidence were required to show the prudence of these reflections, and I wished to demonstrate the happy consequences of allowing the old mare her head, I should point triumphantly to the scarlet "comforter," which, coming through foul weather to "The Six of Spades," Mr. Grundy is wont to wear, and which was wrought expressly for him by the swift needles of Verjuice. Mr. Oldacres never beholds this neckerchief without addressing an inquiry to the Curate (of whom anon, my readers) "whether he is aware that one of the Society has serious thoughts of petitioning Parliament to legalise marriage with grandmothers;" and then he will address the brother in question, and promise him a dish of "the Duke's Potatoes," whenever they are needed for the wedding feast.

But what does he mean by "the Duke's Potatoes?" A good many years ago, when Joseph Grundy first came among us, with horticultural experiences of a very limited range, he was invited to attend a general meeting of our Floral and Cottage-gardening Association. The proceedings terminated with a supper, and at this supper were landed round some Jerusalem Artichokes, which Mr. Oldacres had kindly sent from the Castle. Now Joseph is a very impartial feeder, accepting all things (I was compelled on one occasion sternly to reprove a fawning waiter, whom I caught winking at his assistant, as he offered to my friend the sweet pudding-sauce, and watched him pouring it liberally all over his boiled rabbit)—and he now helped himself accordingly. Presently an expression of extreme disrelish passed over his rosy face, and beckoning to the landlord of our village inn, the Gunter of our feast, he asked, disdainfully, to be informed, "Whose swilltub he had robbed of them things?" The reply was, that they had come from the Castle, a present from Mr. Oldacres. A momentary surprise and hesitation fitted over Mr. Grundy's lineaments, and then he spoke bravely, as he ever does, his thoughts: "Duke or no Duke, if poor ould chap gets no better taters nor these, he'd be foine and pleased with a Turnip!"

Hence the allusion of Mr. Oldacres. But Joseph is generally ready for him with some amusing rejoinder, and is never indeed to be lightly regarded as an adversary in jest and banter. There came a stranger to one of our meetings, I forget by whom introduced, and who must have possessed, if phrenology be true, so large an organ of self-esteem as considerably to perplex his latter. This gentleman was pleased during the evening to turn his attention to Joseph Grundy, and, rightly inferring from his appearance that he was not a highly scientific gardener, to inquire, in ridicule, "what Orchids he thought of exhibiting at the next Crystal Palace Show?" J. G. took four long pulls at his pipe, and then answered very

meekly, "I have n't no Orchids, if you please, sir, and I'm not much of a shower; but I think I know what prize you'll win, sir." "Indeed," said our visitor, evidently pleased with the notion that his fame as a florist was known to us all: "and which may that be?" "Well," said Joseph, "thou'lt be first i' Cockcombs, and thou'lt not be very far behind i' Greens."

And now that I have brought Spade No. 4 in safety back to our club-room, let me express the hope that he has not wearied you; and let me introduce you to his Reverence, the Curate.

(To be continued.)

S. R. H.

THE GARDENING OF THE HUGUENOTS.

As a contribution to the early history of cultivation, the following article from Mr. Smiles's work on "The Huguenots" will be found interesting:—

At page 46 we read:—"Among the first things the Flemings did on arriving at Sandwich, was to turn to the best account in gardening the excellent qualities of the soil in that neighbourhood." Though long before practised by the monks, gardening had become almost a lost art in England, and it is said that Katharine, Queen of Henry VIII., unable to obtain a salad for her dinner in all England, had her table supplied from the Low Countries. It is reported that vegetables were formerly so scarce that they were salted down. Even in the sixteenth century, according to Foxe's "Life of James II.," p. 205, a cabbage from Holland (save the mark) was deemed an acceptable present. Hull then carried on a thriving import trade in cabbages and onions. The rarity of vegetables in this country may be inferred from the fact that in 1595 a sum equal to twenty shillings was paid at that port for six cabbages and a few carrots, by the purveyor of the Clifford family. (Whittaker's "History of Cromer," p. 331.) Harttel, writing in 1650, says, that an old man, then living, remembered the first gardener who came into Surrey to plant cabbages and cauliflowers, and to sow turnips, carrots, parsnips, and early peas, all of which at that time were great wonders, we having few or none in England but what came from Holland and Flanders. It is also supposed, though it cannot be exactly ascertained, that the Protestant Walloons introduced the cultivation of the hop into Kent, bringing slips with them from Artois. The old distich,—

"Hops, Reformation, Bays, and Beer,
Came into England all in one year."

marks the period (about 1524) when the first English hops were planted. There is a plot of land at Bourne, near Canterbury, where there is known to have been a hop plantation in the reign of Elizabeth. Another kind of crop introduced by the Flemings at Sandwich was canary grass, which still continues to be grown on the neighbouring farms, and is indeed almost peculiar to the district. It may be added that to this day the "Sandwich celery" maintains its reputation. Mr. Smiles continues:—"The first Flemish gardeners proved highly successful. The cabbage, carrots, and celery produced by the foreigners met with so ready a sale, and were so much in demand in London itself, that a body of gardeners shortly removed from Sandwich and settled at Wandsworth, Battersea, and Bermondsey; where many of the rich garden grounds first planted by the Flemings continue to this day the most productive in the neighbourhood of the metropolis." Again, treating upon subsequent events, Mr. Smiles, speaking of the refugees at Portarlington, in Ireland, observes (p. 383), "that the dwellings of the strangers were distinguished for their neatness and comfort; and their farms and gardens wore patterns of tidiness and high culture. They introduced new fruit trees from abroad; amongst others, the black Italian walnut, and the Jargonelle pear—specimens of which still flourish at Portarlington in vigorous old age. The emigrants also introduced the espalier with great success, and their fruit became widely celebrated. Another favourite branch of culture was flowers, of which they imported many new sorts, while their vegetables were numerous and excellent."

Again, at page 113, it is remarked of the French handloom weaver, who introduced the silk trade into Spitalfields and other places, that while their domestic habits were the purest and their industry unbounded, they indulged in simple pleasures, and were especially noted for their love of flowers. They vied with one another in the production of the finest plants; and wherever they settled they usually set up a domesticated society to exhibit their products. Among the first societies in England was that established by the exiles in Spitalfields; and when a body of them went over to Dublin to carry on the manufacture of poplin, they proceeded to set on foot the celebrated flower club which still exists in that city. Others of them, who settled in Manchester and Macclesfield, carried thither the same love of flowers and botany which still

continues so remarkably to characterise their descendants. At page 431 it is stated that there are still some of their old mulberry trees to be seen in the gardens near Spital Square. One of the streets, too, is named Vine Street—probably from the culture of the vine by the refugees. In a recent letter to the *Times*, the Rev. Isaac Taylor says, that in addition to the many names and surnames and their traditions, the only relic which these exiles retain of their former prosperity and gentle nurture is a traditional love of birds and flowers. Their rooms, however wretched, are decorated with a sickly plant, struggling, like its sickly owner, for bare life; or a caged bird warbling the songs of heaven to the poor imprisoned weaver as he plies his weary labour.

The Huguenots were farmers as well as gardeners. They introduced improved modes of husbandry, and were the first to turn their attention to the cultivation of waste lands. In Languedoc the cantons inhabited by the Protestants were the best cultivated and most productive. The vine dressers of Berri and the Pays Messin on the Moselle restored those districts to more than their former prosperity; and the diligence, skill, and labour with which they subdued the stubborn soil and made it yield its increase of flowers and fruit and corn and wine, bore witness in all quarters to the toil and energy of the men. Indeed, it is impossible to exaggerate the influence of these exiles upon the industry and household economy of our country.

THE ARBORETUM.

HARDY TREES AND SHRUBS.

THE BEAUTIFUL NEPAL SPIRÆA (SPIRÆA BELLA).

This is a native of Nepal and Bhootan, where it is found in ravines and mountain woods, at an elevation of from five thousand to nine thousand feet. It is perfectly hardy, grows freely in any common garden soil, and is easily increased either by cuttings, or by means of suckers, which, if separated in the autumn, soon make nice plants. It was first introduced in 1820. No garden, however small, should be without it.

It forms a beautiful, open, and rather loose-growing shrub, from three to four feet high, which throws up strong shoots annually from the ground, that, in the following season, produce laterals, terminated with loose corymbs of pretty deep rose-coloured flowers in May and June. The leaves are alternate, on longish footstalks, ovate, acutely pointed, sharply serrated, light green, and smooth on the upper surface, somewhat glaucous beneath, with the peduncles and principal veins on the under side pubescent. The stems are somewhat diffuse, flexuose, reddish, and branching; branches, loose, slender, spreading, and downy. The fruit, which is composed of five reddish, shining carpels, is ripe in September.

The late Mr. Loudon called it "a very beautiful species, which every cottager ought to have in his garden."

THE NEPAL WHITE BEAM TREE (PYRUS VESTITA).

This forms a splendid small tree from twenty to thirty feet in height, which flowers in May and June. It is a native of Kamaon and Upper Nepal, at elevations of from nine thousand to twelve thousand feet, and was first introduced in 1820. The leaves are very large, ovate-acute or elliptic, acutely crenated or coarsely serrated towards the points, on rather long footstalks, and when they first appear, which is very late in the season, they are clothed with a thick white coating of wool, but as soon as the warm weather advances, they throw off their fleecy coat on the upper surface, and at length become smooth and of a glossy green. In the autumn, before they drop off, they assume a fine pale yellow colour. The branches are whitely tomentose when young, but smooth when old. The flowers, which are numerous, and white, are borne in branched terminal woolly racemose corymbs. The fruit is round, tubercled, glossy, and about the size of a common marble, and greenish brown when ripe in October.

The subject of adapting the size of trees to the extent of the grounds in which they are to be planted, is one which is very generally neglected, notwithstanding its great importance; for almost every one who plants a garden of a few rods in the neighbourhood of London, finds in eight or ten years afterwards that a few of the coarser-growing trees have attained to such a size as to smother everything else, and to render it altogether impossible either to have smooth turf or healthy flowers. Now the *Pyrus vestita* is one of those small trees which are most suitable for planting in such places, not only on account of the beauty of its foliage, but also on account of its growing rapidly till it attains a height of from fifteen

to twenty feet; then it becomes comparatively stationary for many years.

The following are the synonyms under which it is often sold:—*Pyrus crenata*, *lanata*, and *nepalensis*. G. GORDON, A.L.S.

Trée-wives.—I must tell you about some of my tree-wives. I was at one period of my life much devoted to the young lady-population of Rhode Island, a small, but delightful State in the neighbourhood of Pawtucket. The number of inhabitants not being very large, I had leisure, during my visits to the Providence Plantations, to inspect the face of the country in the intervals of more fascinating studies of physiognomy. I heard some talk of a great elm a short distance from the locality just mentioned. "Let us see the great elm," I said, and proceeded to find it; knowing that it was on a certain farm in a place called Johnston, if I remember rightly. I shall never forget my ride and my introduction to the great Johnston elm. I always tremble for a celebrated tree when I approach it for the first time. Provincialism has no scale of excellence in man or vegetable; it never knows a first-rate article of either kind when it has it, and is constantly taking second and third rate ones for Nature's best. I have often fancied the tree was afraid of me, and that a sort of shiver came over it as over a betrothed maiden when she first stands before the unknown to whom she has been plighted. Before the measuring-tape the proudest tree of them all quails and shrinks into itself. All those stories of four or five men stretching their arms around it and not touching each other's fingers, of one's pacing the shadow at noon and making it so many hundred feet, die upon its leafy lips in the presence of the awful ribbon which has strangled so many false pretensions. As I rode along the pleasant way, watching eagerly for the object of my journey, the rounded tops of the elms rose from time to time at the roadside. Wherever one looked taller and fuller than the rest, I asked myself, "Is this it?" But as I drew nearer, they grew smaller, or it proved, perhaps, that two standing in a line had looked like one, and so deceived me. At last, all at once, when I was not thinking of it—I declare to you it makes my flesh creep when I think of it now—all at once I saw a great, green cloud swelling in the horizon, so vast, so symmetrical, of such Olympian majesty and imperial supremacy among the lesser forest-growths, that my heart stopped short, then jumped at my ribs as a hunter springs at a fire-barred gate, and I felt all through me, without need of uttering the words, "This is it!"—*The Autocrat of the Breakfast Table*.

THE TIMBER FORESTS OF THE ANDAMAN ISLANDS.*

MR. KURZ, Curator of the Herbarium of the Royal Botanic Gardens of Calcutta, was directed by the Government of India to proceed to the Andaman Islands (now, unhappily, brought into prominent notice by the sad death of Lord Mayo), and, in order to prepare a detailed report of the nature of their vegetation, he visited most of the eastern coast, as far as Macpherson's Straits and Rutland Island, and afterwards explored the Labyrinth Islands, and a good part of the western coast, as far as Port Campbell. Mr. Kurz next proceeded, on board the *Diana* steamer, northward along the eastern shore as far as Middle Straits. On the 11th of May, however, when on the point of starting to explore the interior of South Andaman from Escape Bay, Mr. Kurz was seized by the Burmese convicts who had been assigned to him as servants to aid him in prosecuting the exploration of the island. Having tied him hand and foot, these good and faithful servants left him lying on the ground in the jungle, and effected their escape. Mr. Kurz, though thus deserted, succeeded in reaching the coast in safety; but this mishap, combined with subsequent circumstances, compelled him to relinquish the further prosecution of the intended explorations, and he unwillingly returned to Calcutta, leaving a great part of the work assigned to him uncompleted. His report of the observations he was enabled to make previous to his misadventure is, however, full of interest as far as it goes; and it is to be hoped that he will be enabled on a future occasion to complete his botanical survey of the islands under more fortunate conditions, and especially at a more fitting season of the year. The hot and dry months—March, April, May, and part of June—were found, when too late, exceedingly unfavourable for botanical explorations; the herbaceous plants being scorched up almost beyond recognition, and the deciduous trees entirely bare of flowers, fruit, or even foliage. Mr. Kurz arrived at the conclusion, seeing that the heavy rains occurred in July, August, and part of September, that October, November, and December would

* Condensed from the "Blue Book" Reports of the East India Forest Conservancy.

be the most favourable for his purposes; and it is possible that a future expedition may be made at that season.

The following summary is a condensed abridgement of the detailed report submitted by Mr. Kurz to the Government of India in 1868, with several additions and corrections subsequently appended. The whole of South Andaman was found to be hilly, and almost mountainous on the eastern coast, but having a good extent of level land on the western side. Rutland Island, however, rises gradually into a central mountain, which attains the height of about two thousand feet.

The diversity of soils of South Andaman, considering the extent of the island, is very great. Over decomposed serpentine rock a brick-coloured soil is invariably found. A yellowish clay follows the course of the sandstone formation, and is the most extensive and important of the soils. A greyish black soil, full of silicious particles, follows on the greenstone rock, while a black humous soil is predominant in the valley, and especially on Termoklee Island, where the Kuppalee trees flourish in great luxuriance. According

except in the rainy season, which sets in in the middle of May, is tolerably dry. During the rains the temperature falls occasionally to about 75°. In the middle of July the continuously heavy showers cease, and rain generally falls only on alternate days, or after two or three days' interval. This weather, Mr. Kurz was informed, continued, with little variation, till January and February, when the hot, dry season sets in. It appears that, since considerable forest clearings have taken place, the occurrence of the spring rains has been retarded by about half a month.

The general botanical aspect of the eastern coast of South Andaman is richly picturesque, the hills being in many parts densely clothed with forests of finely-grown trees, running up with a straight stem to a height of one hundred feet or more, many of them forming the support of climbing plants, which, reaching the summit, hang in leafy drapery, and form gigantic festoons from tree to tree, where they put forth their various and brilliantly coloured flowers far above the reach of man. Among these climbers *Dinchoea*, *Calamus*, *Dischidia*, and others may be recognised. At Corbyn's Cove the



An Indian Forest.

to the degree of moisture there these soils are more or less mingled with decayed vegetable matter, and in consequence more or less fertile.

Upon observing stumps of trees rising from the sea near the coast, Mr. Kurz came to the conclusion, after careful investigation, that the Andaman Islands are slowly sinking, and that the submerged land in which these stumps are still standing, formed, at a comparatively recent period, high and dry land, many of these stumps being found to belong to species which never grow in mangrove swamps, nor in any locality such as that in which they are now standing. They were *Pongamia*, *Erythrina*, *Thepis*, *Mimusops indica*, and *Bruguiera gymnorrhiza*. It is, in fact, known that the sea has encroached from forty to fifty feet at Chatham Island, in Port Cornwallis, where the storehouse has been destroyed by the sea since the abandonment of the place in 1796; while a similar encroachment is now in progress at Port Blair.

The temperature in South Andaman in April is 86° to 87° at six in the morning, and about 91° in the middle of the day. Even in the night the thermometer seldom falls below 85°. The atmosphere,

vegetation of the deciduous trees becomes more stunted, rarely exceeding eighty feet, and other trees are of less straight growth. The general verdure, however, becomes brighter after the rainy season, long tracts occurring with leaf-shedding trees which are found also among the predominating evergreens of the forests.

In the mangrove swamps *Rhizophora* and *Ceriops*, with their glossy foliage, fringe most of the little bays and straits, and *Phoenix paludosa* is a characteristic feature all along certain parts of the coast, *Barringtonia* and *Excoecaria agallocha* being conspicuous by their red decaying leaves in June and July. *Lagerstræmia* and *Portulacarpus* exhibit profusely in their season their rich lilac or yellow blossoms; and *Mussaenda*, with its snow-white calyx segments, forms a remarkable feature in the botanical array. A large *Crinum*, with broad leaves, appears abundantly along the sandy parts of the shores; while arborescent *Euphorbiaceæ* impart a singular character to the coast scenery; and *Screw Pines* and a kind of *Cycas* of considerable height carry the imagination back to the earlier geological epochs. Most varied tints of green may be everywhere seen among the forest

mass, and suggest the existence of a most luxuriant flora, which, however, is only developed during the rains.

The mangrove vegetation is most remarkable about the flat shallows of Mangrove Bay and Middle Straits, extending into the sea as far as low-water mark. The trees get higher towards the land and up the banks of the creeks, and they attain the height of eighty feet when supplied with fresh water instead of salt. *Carapa obovata* is the most curious feature among these mangroves, and is often quite covered with the still more curious *Hydnophytum formicarum*, the tubers of which attain an enormous size. Among the most frequent orchids of the region are *Eria Kurzii*, *Pholidota imbricata*, *Dendrobium crumenatum*, *Oxystophyllum*, *Cleisostoma*, *Cirrhopetalum Andersonii*, and *Bolbophyllum*; and among the most conspicuous climbing plants are a handsome *Hoya* and *Dischidia*. It was observed that the rough bark of the trees was almost entirely clothed with a great variety of cortical lichens. A coarse glaucous *Cyperus*, *Acanthus ilicifolius*, and *A. ebracteatus* were almost the only phanerogamic perennials observed growing in the swamps.

At a certain point in the Middle Straits on both shores the palms *Phoenix paludosa* and *Licuala paludosa* suddenly appear in great abundance, occasionally mixed with mangroves, but usually growing in the rear of them; and *Fimbristylis andamanica* was found abundantly near the same point, but nowhere else in South Andaman.

In places where from the steepness of the shore there is no swamp, and mangroves do not find a congenial habitat, a zone of vegetation of another kind occurs, consisting chiefly of *Thespesia populnea*, *Hibiscus tiliaceus*, *Pongamia glabra*, *Erythrina indica*, *Guetarda speciosa*, *Heritiera littoralis*, *Pandanus verus*, *Cycas Rumphii*, and many other plants usually found in similar situations in the tropics. *Calophyllum inophyllum* of enormous size was also observed; and among the more conspicuous climbers of the region are *Ipomœa campanulata*, *Mucuna gigantea*, *Brachypterum scandens*, *Entada Pursetha*, and several kinds of vines. *Ipomœa pes capræ* sometimes forms a striking feature near the sea, and there are various creeping grasses, such as *Ischemum muticum*. Among the Ferns of this part of the coast, *Polypodium quercifolium* was observed in great profusion on the branches of trees standing near the sea. Immediately behind the seashore zone of vegetation a greater variety occurs, and several plants were observed which until now were only known from southern India, such as *Freycinetia*, *Anaxagorea*, *Dinochloa*, &c.

The evergreen forests are most extensive in the Andaman Isles, but most difficult to penetrate, in consequence of the rank growth of gigantic climbers, such as climbing bamboos and prickly canes with terribly strong and sharp thorns, the growth of climbing plants of this kind being fostered by the warm moisture and congenial shade furnished by the evergreen foliage of many of the great forest trees. Those forests, which Mr. Kurz indicates as Kuppalee forests, occupy the land at the mouths of creeks and the zone immediately behind mangrove swamps. Sometimes they consist almost entirely of Kuppalee (*Mimusops indica*), a tree ranging generally from seventy feet to eighty feet, with a girth of twelve feet to fourteen feet, and growing up as straight as *Dipterocarpus*. The Burmese name of this tree (Kuppalee) signifies "tree of the Andamans." *Calophyllum* in elevation, and *Hernandia*, and also *Macaranga indica*, are occasionally associated with the *Mimusops*.

Farther inland or more mixed forests begin, in which the typical tree is *Dipterocarpus*, the other and far less predominant trees being *Dipterocarpus alatus*, *Mesua ferrea*, *Lagerstrœmia hypoleuca*, *Pterocarpus Dalbergioides*, *Irina glabra*, and several others; and, at this season (April), there often appears a group of leafless *Bombax malabaricum*, *Tetrameles nudiflora*, and some other leaf-shedding trees.

Under the protection of the more lofty trees, others of smaller growth occur in abundance, such as *Myristica* and the delicate *Baccaurea sapida*, *Mangifera sylvatica*, several *Tetrantheræ*, a large-flowered *Mussaenda*; and a number of other rubiaceous trees are also tolerably abundant. Beneath these the shrubby under-wood, which is extremely dense, is difficult of classification in a general statement; but it may be stated that among the most common are *Claoxylon*, *Rottlera*, *Glycosmis pentaphylla*, *Unona longiflora*, and *Grumilea elongata*.

The climbing vegetation comprises *Dinochloa Tjankorreh*, several vines, *Thunbergia laurifolia*, *Uvaria sumatrana*, *Zizyphus Oenopia*, several *Cucurbitaceæ*, *Brachypterum scandens*, *Flagellaria indica*, *Gnetum scandens*, and so many others, in so much that it may almost be said that every family of tropical climbers has its representatives. They are so numerous, and of such robust growth, and many of them so formidably thorny, that, as before stated, they render parts of these forests, especially near the ridges, almost impenetrable.

Palms are numerous in the Andamans; and on Termoklee Island

a gigantic but stemless *Corypha*, with leaves thirty feet long, presents a most striking appearance.

The herbaceous vegetation, both annual and perennial, which is to be found during the dry season, is exceedingly scanty, and confined to about a dozen genera, the only real annuals which appear during the heats being *Urena lobata*, *Blumea virens*, and *B. myriocephala*.

Among the deciduous trees, which are leafless during the same period, are *Bombax malabaricum*, several kinds of *Sterculia*, *Calosanthus indica*, *Albizia Lebbeke*, *Ficus infectoria*, *Canarium euphyllum*, and several others, which give those parts of the coast where they occur a barrer appearance during three or four months of the year. But in June, when the rains bring them into leaf, various tints of red, brown, and yellow quickly enrich the buds, the fully developed foliage exhibiting the richest greens of various tones, while the broad, hemispherical crowns of the trees produce a most agreeable contrast to the more spiral growth of the evergreens. Owing to the little shade afforded by these deciduous trees during the hot season, climbers cannot develop their growth beneath them; and the regions of deciduous trees are, therefore, nearly free from them, the few that occur being of weakly and stunted growth. The immense buttressing of some of the large trees was specially noticed by Mr. Kurz, who states that trees having a girth of twelve feet at a height of eight or ten feet, may have a girth of forty feet close to the ground, in consequence of the vast ridges or vegetable buttress, by means of which the trunks are steadied and kept erect against the fierce wind of a cyclone.

The bamboo jungles, which form one of the leading features in the Andamans, were found by Mr. Kurz to occur invariably in connection with the indurated chloritic rocks; and wherever bamboo jungles appear, it may be safely inferred that chloritic rock or serpentine is present. The mean height of these bamboos is thirty feet to thirty-five feet, and they consist principally of *Bambusa andamanica*. In the midst of these cane jungles forest trees of the largest growth occur at distances of one hundred feet or so, and many of them reach a height of one hundred feet. *Dillenia aurea* and *Careya sphaerica* are the most common. These tall trees, when seen from the sea, stand out from the bamboos like slender palm trees from a low jungle.

The central portion of the forests of South Andaman remain still nearly a *terra incognita*, Mr. Kurz having penetrated into that region for a few hours only. The trees that he observed to be most numerous were *Dipterocarpus laevis*, *Dracontomelum*, two species of *Irina*, *Bassia calqueura*, *Chickrassia tabularis*, and others. The principal shrubs were *Alsodeia bengalensis* and *Unona longiflora*; the chief climbers being *Dinochloa*, several vines, and *Calamus*.

On Bird Islands the large number of orange-red fruits of the *Trichosanthes palmata* produce a rich and picturesque effect, looking like a number of bright-coloured balls suspended from the rocks.

In summing up his observations on the character of the Andaman flora, Mr. Kurz observes that its peculiarities do not consist in the presence of new and rare species, but rather in the remarkable absence of many of the common forms which are so abundant in the surrounding countries. Among the most important of these deficiencies is the total absence of *Magnoliaceæ*, *Onagrarieæ*, *Umbelliferae*, *Vaccinieæ*, *Antirrhineæ*, *Labiatae*, *Polygonaceæ*, *Amarantaceæ*, *Salicaceæ*, *Cupuliferae*, *Coniferae*, *Pontederiaceæ*, *Hydroxideæ*, and a number of smaller families. The absence of *Nymphaeaceæ* and other aquatic families is to be accounted for by the great scarcity of water in the dry season. The extreme scarcity of annual plants and of so-called weeds beyond Port Blair is also one of the most remarkable features in the flora of the Andamans.

Of the importance of the Andaman forests in regard to trees valuable as timber, Mr. Kurz has obtained much interesting information, and yet he believes that in consequence of the circumstances which prevented the completion of his survey he is not yet acquainted with more than two-fifths of the different kinds of timber trees which exist in the several islands. The mean height of the largest forest trees he estimates at about a hundred feet, with a girth from eight to twelve feet. They occur from twenty to forty in an acre, but in the bamboo jungles there are not more than ten in a similar area. On the sandstone formation, *Dillenia aurea*, *Mimusops indica*, *Sterculia ornata*, *Pterocarpus Dalbergioides*, and a number of others, form immense trees from eighty to a hundred feet high, with a straight, unbranched stem like a wood-oil tree; but the same species are stunted and of inferior growth where the presence of chalk much influences them. Mr. Kurz remarks that we do not as yet possess a thorough knowledge of the relative value of the timber trees of British India itself, attention having been attracted to comparatively few kinds. Much less do we know of the value of the different kinds of Andaman timber, which must be tested by experiment before any trustworthy conclusions can be arrived at. No trees of such enormous size as are noted from Burmah have been observed by Mr. Kurz in the Andamans.

The largest wood-oil trees which he measured did not exceed fifteen feet three inches in girth, with a height of one hundred and twenty feet, while Dr. Wallich notes them in his reports as having a girth of twenty-one feet four inches and being two hundred and fifty feet high. No teak was found during Mr. Kurz's explorations, nor any timber of equal quality, except perhaps the Kuppalee (*Mimusops indica*), of which there is vast abundance, and which yields the wood so much used for gunstocks by the Madras Ordnance Department, where it is known by the name of bullet wood. This tree grows with a straight stem to the height of eighty feet before it branches, the average girth being twelve to fourteen feet. It appears that at the lowest computation the forests abounding in trees of this genus occupy thirty-square miles in South Andaman. The Kuppalee is esteemed by the natives as a very valuable timber tree, and it has been sold at fifty rupees a ton. For house building and furniture it may be found too heavy, but for machinery and railway work it is invaluable. Mr. Kurz recommends to the Indian Government the careful conservancy of the forests producing it, which are in the flat country near the coast, and easily accessible.

Among the trees yielding second-rate kinds of timber Mr. Kurz mentions the Pemah (*Lagerstroemia*), the Kengan (*Mesua ferrea*), the Padouk (*Pterocarpus Dalbergioides*), the Kokkoh (*Albizzia Lebbek*), and also *Careya sphaerica*, which all occur in the high forests of the hilly interior.

Among the mangrove swamps the following trees are notable for their strong wood :—Penlay-cong (*Carapa obovata*), Pinlay-kana:œe or Soondree tree (*Heritiera littoralis*), and Bewbœ (*Bruguiera gymnorhiza*). All these trees occur in Burmah, but are not worked, as teak, of which there is still a good supply, is deemed preferable. On the whole, Mr. Kurz does not recommend resorting at present to the Andamans for our Indian supply of timber, but the preservation of those forests he deems to be highly important, as the whole of the vitally important water supply and general moisture depends greatly on the preservation of large forests, so that every precaution should be taken to prevent needless and wasteful encroachments; a point strongly insisted upon by Mr. Dalzell, in his valuable report on the influence of forests, preserved in the records of the Bombay Government.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Lopping Trees.—Some Birches, Laburnums, Acacias, and Weeping Willow obstruct the view between my window and the public road. Can I, at present, lop off some of the offending branches?—**ANSWER.**— If you lop the trees without your landlord's consent, he can bring an action against you for damaging his property.

Killing Tree Stumps.—Your correspondent "W. T." in planting young trees on ground where, he says, the roots of the existing trees cannot be got out, has committed a mistake that will, in all probability, prove fatal to those he has planted. I never knew a single instance where a new plantation was made on ground that had been previously occupied with trees that ever succeeded, unless the whole of the ground was trenched over as deeply as the roots of the trees removed had gone, and every root, as thick as a person's finger, got out, or an operation that costs as much as the ground is usually worth. The result is generally this: the young trees for a time grow, but in two or three years they begin to look sickly, and die off. On examining the roots, they are found to be destroyed by a fungus, which has done nature's work in assisting the decomposition of the dead roots, and, for want of a further supply of food, attacks the living ones, which, in turn, succumb to its over-achments. —T. BAILEY, *South, &c.*

Dwarf Shrubs for Edgings. Will you kindly give me a list of dwarf shrubs, &c., for permanently furnishing the margin of beds and masses of shrubs now naked in winter? I should like them dwarf and neat in habit. — DILLON. — The following will perhaps answer your purpose:

<i>Adiantum</i> , in floribus	<i>Eucynurus</i> , Indian's fol.	<i>Mangifera</i> , several kinds
<i>Adiantum</i> , sp. (V. Pers.)	variegata	<i>Ononis</i> , 1 kind
<i>Adiantum</i> , Taguana fl.	<i>Gaultheria procumbens</i>	" " " " "
<i>Adiantum</i> , fl.	" " " "	<i>Passiflora</i> , common kinds
<i>Adiantum</i> , caucasic	<i>Geum anglicum</i>	<i>Polypodium</i> , several kinds
<i>Adiantum</i> , vulgare, in var.	" " <i>hispidum</i>	<i>Polygonum</i> , <i>flaccidum</i>
<i>Adiantum</i> , various studies	" " <i>saxatile</i>	" " " "
<i>Adiantum</i> , caucasic	" " <i>triacum</i>	<i>Rh. " "</i> , many kinds
<i>Adiantum</i> , <i>aster</i> <i>thymophyllum</i>	<i>Helleborus</i> , many kinds	<i>Ribes</i> , 1 type of species
" " <i>thymifolia</i>	" " " "	" " " "
<i>Adiantum</i> , <i>scutellaria</i>	<i>Hydrangea</i> , several kinds	" " " "
<i>Daphne</i> , <i>alpina</i>	<i>Hypericum</i> , <i>coccineum</i>	<i>Sax. " "</i>
" " <i>Chama</i>	<i>Indigofera</i> , <i>Diss.</i>	" " " "
" " <i>clarea</i>	" " <i>discolor</i>	<i>Sedum</i> , <i>Comm.</i> <i>cyper.</i>
" " <i>floribunda</i>	<i>Ixora</i> , <i>negunda</i> , <i>varieg.</i>	" " " "
<i>Empetrum</i> , <i>naizum</i>	<i>Juncus</i> , <i>negunda</i> , <i>varieg.</i>	" " " "
" " <i>rubrum</i>	" " <i>triacum</i> , <i>scutellaria</i>	<i>Stachys</i> , <i>linaria</i>
<i>Epigaea</i> , <i>repens</i>	" " <i>triacum</i>	" " <i>linaria</i>
<i>Eriua</i> , all hardy species	<i>Kalmia latifolia</i>	" " <i>linaria</i>
<i>Eucynurus</i> , <i>cap. mers.</i> <i>td.</i>	" " <i>naizum</i>	" " <i>linaria</i>
" " <i>argentea</i>	<i>Lechium boxfolium</i>	<i>Sax.</i> , 1, several kinds
" " <i>naizum</i>	" " <i>thymifolium</i>	<i>Vaccinium</i> , 1, or 1 kinds
	<i>Mahonia aquifolia</i>	<i>Vinea</i> , various kinds.

Hybrid Conifers.—Have any of your readers tried, now we have cone-bearing trees of *Abies Douglasii*, nobilis, &c., to raise hybrids between *A. pectinata* and these beautiful conifers? Such hybrids would probably be much hardier than their parents, and would be of great value in our climate, where even Nordmanniana was killed last winter in low situations in Bavaria.—OTTO FORSTER, *Leipzig*, &c.

Mistletoe Growing on the Oak.—But few authentic instances of the common mistletoe being found growing spontaneously on the oak in England are to be found on record; the most reliable is that by the late Mr. Donald Beaton, who, in March 1837, exhibited at one of the meetings of the Horticultural Society in London a branch of the common oak, with two plants of ordinary mistletoe attached to it, and which had been found growing on the estate of Lord Somers, at Eastnor Castle, near Ledybury, in Herefordshire, by Mr. Moss, then the gardener there. The oak tree on which the mistletoe was found had several large plants of the parasite upon it, and was the only instance known to Mr. Moss, although he had made diligent search through a large extent of woods and other plantations in which mistletoe abounded on other kinds of trees; he, however, had noticed mistletoe growing on that particular oak for more than fifteen years, and he also remarked that the oak on which it grew was close to a large willow loaded with the parasite, and from which, no doubt, it had escaped.—G.

GARDEN DESTROYERS.

BULLFINCHES.

THERE are very few gardens or orchards in this part of the country that altogether escape the depredations of Bullfinches. Except in a slight weakness for raspberries, these birds are not particularly troublesome during the summer, but when winter fairly sets in they leave their woodland haunts and visit with undesirable frequency the neighbouring gardens and orchards, blighting without scruple the hopes of the gardener by removing with marvellous expertness and rapidity the blossom buds of his cherished trees. Just when winter is leaving us, and the days have perceptibly lengthened, and we may notice that the buds of the early plum trees have begun to feel the influence of the season by a slight expansion of their substance and by the relaxing grasp of the imbricated scales that hold the embryo blossom—at this moment more than any other we are pretty sure to have the self-betraying piping note of the Bullfinch sounding in a satisfactory key from the plum and cherry orchard, and we know from experience that our chance of crops of fruit from these trees will be small indeed if prompt measures are not taken to drive off these marauders.

During the winter and before the pairing season, Bullfinches move about in small family parties of five or six members—probably the parent birds and the nestlings of last season. Knowing something of the social habits and instincts of these birds, we are pretty well assured that the discovery of a good store of sweet fruit-buds will not be preserved as a secret in the family circle, but will be confided to the very extensive range of acquaintances birds in general and Bullfinches in particular seem to possess. Hence the best, and in the end the most merciful, course to pursue is to effectually terrify or destroy the first flight that appears amongst the fruit trees. The attempt to frighten by means of blank cartridge may precede the more decided course which involves a certain expenditure of No. 8 shot. We have tried to keep Bullfinches from our trees by interlacing white thread amongst the branches and by dusting the buds with soot and lime; but in each case the birds gave us to understand that they saw through such flimsy pretences by devoting themselves more particularly to the trees operated upon.

In the open woods we can well believe that the removal of a certain portion of the buds from the wild fruit trees—cherry, plum, and thorn—tends to repress and restrict the profusion of growth and excess of fruitfulness that, without the corrective action of birds and insects, might ensue. When we enter upon the scene, it but too often happens that we disturb the order and economy of nature by capricious acts of destruction or by injudicious favour. The merciless extinction of hawks has led to an undue increase in certain tribes of small birds, that of the Bullfinch among others. Were this not the case the Bullfinch might have been recognised, in their diminished numbers, as birds of positive utility, both in the forest and orchard, and be named as benefactors, instead of being included among "garden plagues."

W. INGRAM, *Belvoir*.

THE NEW VINE PEST.

(PHYLLOXERA VASTATRIX).

DR. LICHTENSTEIN states that this pest is still continuing its ravages in the south of France, and that after having destroyed almost all the vines in the department of Vaucluse, and a very large part of those of Bouches du Rhone and du Gard, it has made a descent on the vineyards of l'Herault, on several points simultaneously. It, however, does not attack all vines alike; it has a marked preference for some particular kinds, and of those it does attack, it does not carry on its ravages on all in the same way. He saw at Bordeaux a vineyard where the proprietor, M. Laliman, had brought together numerous varieties of American vines alongside those of the district. There are, as most people know, hundreds of varieties of vines in France; so are there in America; but they are all derived from three typical species, of which one is European, the *Vitis vinifera*, and two American, the *Vitis cordifolia* and *Vitis labrusca*. Now, from what he had himself seen, and from the observations of M. Laliman and Mr. Riley (for America), it has seemed to him to result that the *Vitis vinifera* is attacked through the roots, the *Vitis cordifolia* through the leaves, and the *Vitis labrusca* is not attacked either through the leaves or the roots. Starting from this, he suggests that the ravaged vineyards should be replanted with stocks of *Vitis labrusca* (whose roots would be safe), on which might be afterwards grafted the plants of the country (whose leaves would be safe). The *Vitis vinifera* alone has the elegant form of our deeply-cut vine leaves with which everyone is familiar. The *Vitis cordifolia* has coriaceous leaves, formed like the leaf of the ivy. Its foliage is sombre above, veined below. The *Vitis labrusca* has the leaves soft denticulated, shaped like the leaves of the lime or sometimes of the maple. Its foliage is a tender green, and of a uniform grey and a little silky below. M. Lichtenstein adds he is far from maintaining his hypothesis against all comers or as one incapable of contradiction; a caution wisely given, because it seems to have been well ascertained that the Phylloxera passes from the leaves to the roots of the same plant. Mr. Riley (in 1870) stated, with ample details, that he had ascertained beyond doubt that after it has eaten up the leaves, or after they have fallen, it migrates to the roots below, there casting their skin and assuming a slightly different form (more tubercular than before). But it would appear that M. Lichtenstein has satisfied himself that the mischief done by this migration is slight, and different from that done by the insect when it settles to the root in the first instance. "A fact exists," he says, "which is, that in a vineyard which has been attacked, one kind of vine dies because it is attacked by the roots—it is the French one; another suffers because it is attacked by the leaves in summer, and by the roots (but feebly) in winter—it is the cordifolia and its descendants; a third resists and grows vigorously—it is the labrusca and its varieties." We agree with M. Lichtenstein that, at all events, his plan is surely worth trying.

A. M.

ANTS AND APHIDES.

PERMIT me to thank Mr. E. Newman for disposing of that mischievous fallacy that ants eat or destroy aphides. On this assumption many cultivators have welcomed ants as their best allies, thus harbouring two evils on their plants instead of one. There is no longer any doubt that the ants and aphides are sworn allies, unitedly bent on the discomfiture and defeat of cultivators. Each rather formidable by itself, they become well nigh exterminable when associated together. For instance, the locomotion of the aphid in its most ravenous state is comparatively slow; and the space between plants is to it an impassable gulf. But can any one insure any part of a plant, in any place, against the visitation of a daring ant, either with or without wings? Their skill and daring carry them anywhere—everywhere; and they take the flies, green or black, with them. Again, tobacco smoke or water deals death to the aphides; but the ants seem rather to enjoy a smoke than otherwise, and nothing weaker than arsenic seems to disagree with them, either outside or in. Further, I believe the ants not only hide up or guard the aphides from each other, and thus establish new colonies, as Mr. Newman points out, but that they likewise shelter them in their earth casemates in times of danger. On fumigating plant houses where both abound, the ants seem to be all excitement at first; and it is no uncommon occurrence to see them forewarning the aphides of their danger, gently agitating and driving them off, as Africans do their cattle when an enemy is at hand, and carrying off the more lethargic to a place of safety. Again, when the tobacco-sick aphides fall down on the surface, there are their friends the ants waiting ready to receive and bury them. The earth is heaped over them, not to cover the dead but resuscitate the living. This slight covering of earth shuts out the smoke, and they quickly revive. Even when the aphides are too

sick to fall down in a fainting fit, the ants are equal to the emergency, and mount up the stems or leaves, where their distressed friends most do congregate, with bits of earth wherewith to protect them. And such earth shields are effectual, and the aphides emerge from the casemates hungrier and more ravenously destructive than before.

And then as to the milking of the ants. I have no doubt it increases their capacity for sap sucking. This explains another fact with which I have long been familiar, but the reason of which I could not comprehend till now, that is, that aphides and ants together always seemed to do more mischief than the aphides alone; and yet the ants never appear to do anything but dance attendance on the aphides. I should like Mr. Newman's opinion on this point. But my previous observations would lead to the conclusion that the oftener the aphides are milked the more they eat, hence the more ants the more destructive the aphides. It is quite certain that the aphides like the attendance of the ants. It was the apparent pleasure they manifested under their manipulations that first convinced me that they did them no injury.

The simultaneous appearance of ants and aphides is a very curious phenomenon, and might suggest the inquiry at times of whether the aphides do not carry the ants. Naturalists will tell us whether this is possible. If it is, I should certainly be prepared to believe that they do. This much is certain, that they tread upon each other's heels so closely that it is impossible at times to say which comes first. Of course this would be so, on Mr. Newman's supposition that the ants transport the aphides; but it would be a curious instance of reciprocal service in the insect world, could it likewise be shown that the aphides transport the ants in embryotic form.

A handy, certain remedy for the destruction of ants is still a desideratum, which I trust some of your readers will be able to provide. Boiling water and arsenic are fatal to ants; but the difficulty is to get the former on them without injury to the plants at root or top; and the latter they often refuse to eat, though treasured nicely to suit the supposed sweet tooth of the ants.

D. T. F.

MOLE HUNTING IN GARDENS.

AN old man, well up in mole-lore, though not a professional mole-catcher, like Warps (see Professor Owen's article on "Mole Hunting in Gardens," page 249), assured me that the best way to get hold of some moles that had proved very troublesome in a carnation border and adjacent flower-beds, was to watch for them and pitch them out. He added: "It is easily done, for moles only work periodically, and for a short time at each spell. Eight, twelve, four—night and day—are their working times, as regularly as the clock." This seemed to me such a novel view of mole-working that I at once started to their haunts to test its accuracy. I had little faith in the stated-hour theory, so I went all unprovided for a hunt. I reached the ground just as the clock struck one of the working hours—I forget which, at the moment. Presently, as if the clock had summoned the mole to duty, the ground was turned up in a fresh heap beside me. After the heap there followed a run. Quick as possible I followed the track with my hands; the mole, greatly wondering, doubtless, what it had got at its heels, did its best, and went ahead at a gallop. But fate was against it. It had to make and clear the way, and it loosened the earth for me; so, after an exciting chase, I overtook and caught him. I have seen a good many pitched out since then with a spade; but I believe my success with hands only, against the boring snout and short, stout fore-feet of the mole, is unique.

My chief object, however, in writing, is to have it on the authority of Professor Owen, or some other gifted naturalist, whether the mole adheres to these periodical workings; and whether or not it devotes the same hours always to work, sleep, and play.

D. T. FISH.

[Professor Owen has kindly favoured us with the following remarks on this subject:—"Moles," he says, "do work, with pretty regular intervals of rest, four or more times in the day; but not all at given hours. Your correspondent has drawn his conclusion from probably an accidental coincidence."]

Bees Destructive to Fruit.—In France, it is said, there are no greater pests to the fruit garden, especially to the grapes, than the common honey-bees. They are not content with levying a very handsome tithe, but they often devour no less than four-fifths of the crop, besides attacking all the best pears and apples. In short, they are much worse than wasps, as these are not abundant and troublesome every year, as the bees are.

Tenacity of Life in Cockchafer.—M. le Marchant, a pharmacist in Caen, has made many experiments on the tenacity of life in cockchafer when apparently drowned, and he has found that after complete immersion for a considerable period, if taken out of the water and exposed to light and air, they have still shown signs of life.

THE GARDEN IN THE HOUSE.

CULTURE OF PLANTS IN ROOMS.

(Continued from page 315.)

DOUBLE WINDOWS.

The following general rules may be found useful in the case of plants grown in double windows:—

1. When the mercury stands below the freezing point, the ventilators should not be opened.

2. During hoar frost, if the wind strikes the window, the ventilators should be closed even if the mercury stands above 32°; as otherwise the immoderate influx of the wind cannot be prevented.

3. In mild, fine weather greenhouse plants may receive as much air as possible, but hothouse plants only so when the temperature outside is higher than that within, and when the air is calm and not too dry. In spring, before the greenhouse plants are placed out for good in the open air, the double window should be previously ventilated by day and by night.

4. In opening the ventilators from without, care should be taken not to open them too much, as too great an influx of dry summer air would destroy all the advantages which the double window affords. In summer, during stormy or very dry warm weather when ventilation from within is impossible, fresh air may be freely admitted through all the ventilators which have been made to open inwards.

5. The windows which open inwards should not be opened during dusty summer weather, nor when, in cold weather, the other windows of the room are opened.

SHADING.

In intimate connection with ventilation and the regulation

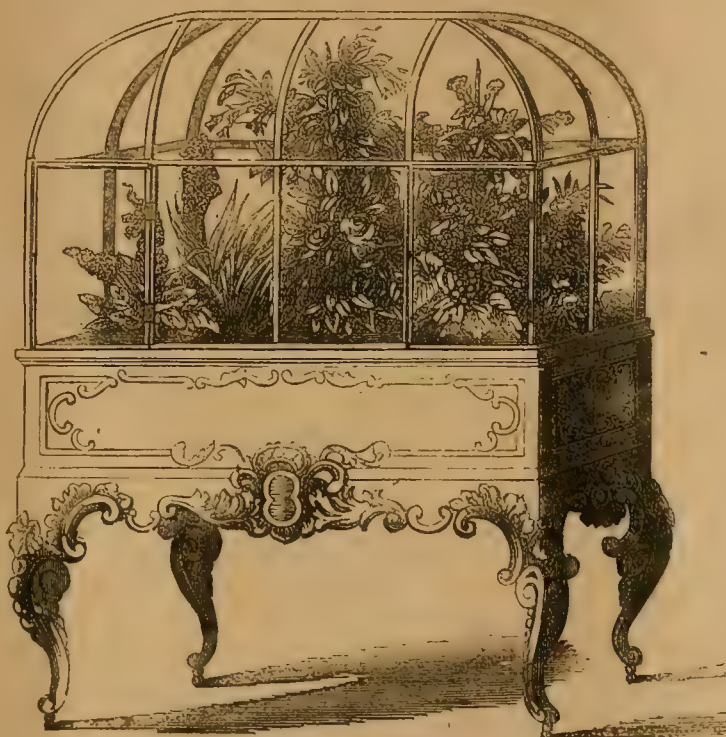
of the temperature stands the subject of shading. In bright, strong sunshine, when there is no ventilation, the temperature inside the double window is raised not only to a considerable degree, but it will also dry the air very much. If, at the same time, there is a flow of air, either from within or without, the greater number of greenhouse plants in the double window require no shading in the course of the autumn, winter, and

spring. But when, during constantly cold nights and clear, open sunny weather, greenhouse plants must be kept longer in their winter quarters, they may have a slight shading in spring by giving the outer window a thin coat of lime-wash. As soon as the weather becomes permanently warmer, greenhouse plants are put out for good in the positions intended for them in the open air, having been previously hardened off by the admission of air.

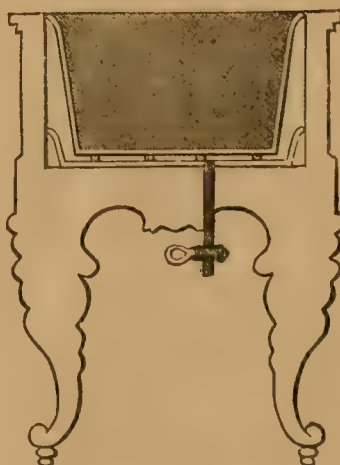
As the double window must always occupy a sunny position, it must always be artificially shaded when it is used in the end of spring and during the summer for the culture of tender hothouse plants. This shading may be effected either by means of lime-wash, as mentioned, or by suspending a covering of thin canvas, or some suitable material. The first method is the simplest, but it has this disadvantage, that it remains during gloomy weather, and then does not look well either from within or without. This disadvantage may, to some extent, be diminished by laying on as thin a coating as possible, so as to

break the force of the direct rays of the sun, and yet admit sufficient light.

The plants in a common double window are best shaded on hot and bright summer days by hanging a shade of sailcloth outside which can be raised and lowered by a cord. The same mode of shading may be used for the double window, only



Plant Case.



Section of a Plant Case.

here the raising and lowering of the shade must be from the outside, or the cord may be passed over rollers, and brought in through the frame of the window, so that the shade may be raised and lowered from within at any time when necessary. This arrangement is, of course, the best.

As the erection and maintenance of such a shade is always costly, we may suggest two other methods. The first of these resembles the limewash plan in being a permanent shade formed of some shading material fastened over the outside of the window. For this purpose wide-meshed muslin, or a shade woven of reeds, or twigs with interstices at least as wide as the width of the materials, is used. This shade, which is to remain fixed all the summer, and which merely breaks the force of the sun's rays, and yet looks better than the limewash, is first applied in spring, when there is reason to dread that the increasing heat of the sun may injure the plants.

The other mode consists in hanging on the inside of the glass a shade of thin linen or cotton material. This plan is easily adopted, but the shade can only be properly managed by raising and lowering it with cords close to the glass, as the ordinary method of doing so by means of rollers would be injurious to many of the plants in the window, or could not be used at all. If this inner shade be raised and lowered by some contrivance similar to that which is employed for the windows of railway carriages we may consider it the best kind of shade, as it can be used or removed at all times, is not affected by the weather, is easily managed, and, lastly, is not expensive.

With reference to shading in general, it is to be particularly observed that it promotes a luxuriant and strong growth of the plants by inducing a moist atmosphere; but if it is carried to too great an extent, it is unfavourable to the production of flowers. Therefore, wherever a permanent shade is employed, it should not be used sooner than the season of the year renders it absolutely necessary, and should be removed early in autumn; at the time when no shade can be given, ventilation both from within and without should be employed according to the weather. But where a movable shade is used, the plants should have the benefit of the morning and evening sun, and should be shaded only from eight or nine o'clock in

the morning until three or four o'clock in the afternoon. In winter, the sun may be allowed full access during the entire day.

INTERIOR ARRANGEMENTS.

Double windows, which always possess a greater depth than ordinary room windows, should bring safely through the winter as large a number of plants as possible, or supply flowers during the winter months for the other windows or for flower stands. For this purpose, in addition to the lowest shelf, or that which rests immediately on the window-sill, one

or more shelves should be added. In order not to interrupt the circulation of the air, instead of boards, the upper shelves should be made of laths placed at the distance of an inch from each other. These laths should, moreover, be moveable, so that they may be all or partially removed at any time when the growth of the plants below them renders this necessary.

The uppermost of these shelves will occupy the warmest and the driest position, and on that account are the most suited for the forcing of flowers. The plants placed on them are reached by means of a movable ladder with steps on both sides.

Finally, in "inserted" double-windows, at the bottom of which there is no reservoir for heating purposes, the taller plants are placed on a board which lies on the ground, and only single small plants on the window-sill, which is not more than $1\frac{1}{2}$ foot broad, and immediately in front of the lowest panes. The height of the lowest shelf from the ground depends on the height of the plants, the tops of which should receive as much light as possible. By the arrangement of



Large Plant Case

the plants on separate shelves, the smallest and weakest specimens will be next to the window, and the larger ones placed farther back, so that each may have as much light as possible.

Further, the plants in the double window should not be placed so closely together that their branches will touch each other, or even that some of them may lie against others, otherwise only thin bad specimens will be grown, as occurs in plant houses under the same circumstances. We may here repeat what has been already said, that it will afford the cultivator more pleasure and satisfaction to raise a few good specimens than many bad ones.

PLANT CASES.

A contrivance much adopted for the culture of plants in rooms, especially for such plants as do not thrive in the dry air of a room, and which has been frequently employed with the best results, is a large glass case arched at the top; or it may be of small size and constructed of glass and iron, and placed on a table or stand near the window. When it is of small size, the whole of the top may be taken off in order to attend to the plants, and when of large dimensions, windows or openings are made in the sides for the same purpose. The particular form of the case and the table or stand may be varied in a manifold degree.

The figure on p. 359 is an illustration of one of these plant cases of moderate size. The stand bears, firstly, like most flower-stands, a box or case, made to fit it exactly. Inside this case is another made to lift out, and formed of zinc or of tinned iron, with a pierced bottom, and a tray underneath to receive the water which drains down, and which is carried off through a cock underneath. In order to expedite the drainage from the upper case into the tray, the upper case should stand on hollow supports. We have also given a vertical section of this arrangement, on which the permanent thriving of the plants cultivated in the plant case depends, for unless the drainage is perfect, the earth ceases to be percolated by air, and becomes sour and unfit to furnish proper nutriment to the plants.

In the culture of stove plants, this most important point must be attended to, not only in reference to the plant case, but also wherever plants are grown in iron boxes which stand in wooden cases (as, for instance, for forming arbours in windows, &c.), similar precautions must be taken with regard to the drainage.

The iron case is now filled with earth, in which are planted Ferns, Aroids, Marantas, Bromelias, Selaginellas, Palms, &c., or pieces of stone may be placed in it, between which earth is to be filled in and planted with a suitable selection of plants which can be grown between the stones.

In plant cases of larger dimensions, little landscapes with fountains, cascades, and tiny mountains may be represented. Dead branches of trees, of not too great a size, and knotty roots, may be placed here and there, and planted with Bromelias, Orchids, and Aroids; handsome baskets and other contrivances containing Orchids, *Æschynanthus*, &c., may be suspended at intervals, while dwarf Selaginellas and neat Ferns cover the turf between the plants.

On the preceding page is an illustration of the gable end of one of the largest plant cases that we have seen, and which Herr Graveur Zimmerman has constructed and set up in a room of his dwelling-house in St. Petersburg. It is 9½ feet long, 5½ feet wide; the windows are 5½ feet high, and the height of the gable end is 7½ feet. The stand supports a reservoir of zinc filled with water, the surface of which is for the greater part covered, with the exception of an irregular space in the middle, where numerous fountains play and gold fish swim about, while water drops continually from the cliffs in the foreground. This water passes into the under basin. Where water is not used, the basin is covered over with a perforated plate, on which a layer of soil is placed, and in this many kinds of handsome indoor plants, such as Ferns, Palms, Aroids, Scitamineæ, Lilies, &c., are planted, the surface under them being covered with a green carpet of Selaginella, *Ficus*, and *Tradescantia*, while here and there handsome small specimens of variegated *Caladiums*, *Eranthemums*, and *Gloxinias* in flower add greatly to the effect. Between these plants arise several higher cliffs, of which the one represented in the foreground contains a zinc reservoir at the height of four feet from the bottom, which feeds the fountains and the little cascades which fall from the rocks. The water is forced into this reservoir from the larger one by means of a pump placed under the stand. On the cliffs and in their crevices grow all sorts of ferns, *Dasyliirions*, Aroids, &c., and here and there knotty branches are furnished with climbers, Orchids, Bromelias, and similar plants, which attain a luxuriance equal to that which ones sees in a regular plant house.

We know that the Japanese delight to give a representation of a whole landscape on the smallest scale in their little gardens; but in the plant cases we may have before our eyes,

the whole year through, the luxuriant vegetation of the tropics on a small scale; and, confined to a town life, may cultivate for our enjoyment a pleasing collection of the finest and most tender plants from all countries.

CONSTRUCTION OF A PLANT CASE.

The roof of the plant case may be of various shapes—angular, round, vaulted, &c.—but it should always be made as light as possible. The frame may be of cast iron, wrought iron, or sheet iron, and should be painted and varnished to preserve it from rust. In plant cases of small size the entire glass cover can be taken off, or a large bell-glass may be used; in those of moderate size single panes are used as windows to open and shut. In those of larger size, a cast iron or wrought iron frame is used, covered with lightly constructed iron-framed windows, which can be raised at pleasure to put in and take out plants. In Herr Zimmerman's, the framework is made of wrought iron, and all the lower windows open on hinges. A similar structure of wood would be too clumsy, and would, from the effects of the summer air and the moisture inside, soon warp and require to be repaired.

POSITION OF PLANT CASES.

In order to secure good results in the plant case, it should be placed near the window in a position where the sun may shine on it during the greater part of the day. Where the room is not exposed to the sun, the plant case should be placed near the window, and a selection made of such plants as thrive in the shade, such as Ferns, Aroids, &c.

Plant cases of large dimensions, like that of Herr Zimmerman's already described, should be placed at a distance of about three feet from the window, as if placed nearer, the shade of the window piers would be injurious to the plants, and yet the window should be near enough to allow of the beneficial influence of the sun. Where the locality permits, a corner room exposed on both sides to the sun should be selected for plant cases of large size. While small plant cases on stands as high as the window-sill are best placed in the window recess, those of larger size, which must be placed some feet from the window, should be on stands not more than from one foot to one and a half foot high, this being the best height for light, management of the plants, and also for the decoration of the room.

WARMING PLANT CASES.

As the plant case stands in the apartment, special heating is usually unnecessary. Only when variegated tropical plants like *Anacardium*, *Marantas*, *Caladiums*, &c., are grown in cases of smaller size, or when East Indian orchids, such as *Vandas*, *Saccolabiums*, &c., are grown in those of greater dimensions, can heating be employed with advantage. For this purpose, as in the case of the double window, a hot-water apparatus only can be employed, and that may be either such a one as was there described, or a small covered reservoir may be placed underneath, at a few inches distance from the bottom of the plant case, and kept heated by a lamp. To conduct the heat, pipes should be laid under the soil of the plant case and along the surface of the stand. If the reservoir or the pipes are placed in immediate contact with the soil in which the plants grow, so much vapour will be developed from the soil, which will be condensed on the inside of the glass, as to obscure or totally hide the plants from view, and so all the effect of the arrangement will be lost. Finally, wherever large cases are placed in rooms with a temperature of from 60° to 65° Fahr., instead of employing artificial heat, it will be sufficient to water and sprinkle the plants daily with tepid water and to keep closed vessels of hot water near the cases.

ADVANTAGES OF PLANT CASES.

The glass covering of plant cases not only shelters the plants from the effects of dry air, from great changes in the temperature produced by air and heat, and lastly from the hurtful dust, which in all dwelling-rooms covers the plants more or less, but it also prevents an undue exhalation of moisture from the soil and the plants, so that in the inside a moderate, equable, moist, and warm temperature is maintained, which, for a large number of the handsomer tropical plants, is an essential condition of successful culture and strong healthy growth. By the double glass covering the quantity of light

which reaches the plants is somewhat diminished. But as the greater number of plants which love a moisture-laden atmosphere do not naturally grow in localities exposed to the full sun, but rather in the shade of shrubs and forests, such as ferns, the greater number of the monocotyledonous plants of warm countries, and many of the most admired fine foliage plants (*Aralias*, *Rhopalas*, &c.) of our hothouses, they will not at all suffer when the case is placed in an otherwise favourable sunny position near the window, if a suitable selection of plants has been made. Thirty years ago bell glasses and water glasses were very much used in rooms, and placed over cuttings to induce them to strike root. The plant case is merely an expansion of this idea, which however, was first practised on a large scale by Dr. Ward, of Clapham Rise, about thirty years ago.

MANAGEMENT OF PLANT CASES.

With respect to special treatment, we add some instructions which, however, are particularly applicable in the case of plants from the warmer latitudes. Every day the plant case should be visited once, and every withered or fallen leaf and shoot should be removed. Moreover, should any mouldy or disagreeable smell be perceived, the cause must be sought for and removed, and all the windows should be opened for some hours, or the glass covering removed, so as to give free access to the fresh air. The windows must always be kept clean, and be regularly wiped inside and outside. Small cases should be washed on the inside once a week. A mouldy smell, foul air, and a diminution of light are the consequences of neglecting to cleanse the cases. Plants in a plant case do not require to be watered so often as those in the open room. In dull weather, and during the short days of winter, care should be observed in this respect, and no more water given than is absolutely necessary. In fine, sunny spring and summer weather, it will be proper to sprinkle and water carefully with tepid water. This will also remove any sourness that may exist at the bottom of the case. As it is chiefly plants from the warm latitudes which should be grown in plant cases (*Ferns*, *Orchids*, *Marantas*, &c.), a watering and sprinkling of tepid water, will prove very beneficial even in winter. When the room windows are opened in mild, warm, dull weather, the windows of the case should be opened, and the bell glasses raised in order to give the plants some air. In dry, hot summer weather, the plants should be slightly sprinkled in the morning and evening, and air should be admitted at night as well, to renew the air in the case as well as to lower the temperature.

When the growth of individual plants is so luxuriant as to interfere with that of other plants, or to produce crowding and choking, they must either be trimmed or removed altogether. If in bright, hot summer weather the case comes under the direct rays of the sun, it should be shaded during mid-day by suspending a curtain in front. If no shade is used, then air must be admitted, and the plants should be sprinkled.

ARRANGEMENTS WITH REGARD TO PLANTING.

When, for purposes of planting, earth is to be placed in the case, the perforated bottom which serves for carrying off the water should first be covered with potsherds, in such a manner that a concave piece may be placed over each of the holes. In this way the bottom will be covered with a layer of potsherds half an inch deep. On these should be placed a layer of clean sphagnum, and on this the soil, the most suitable mixture for which is meadow loam with some loose peat and sand. A stiffer mixture may be used between the stones of the rockwork, consisting of heath soil or turf or well-rotted leaf mould and loam.

In consequence of too strong a growth, deterioration of the soil, and the decay of individual specimens, certain parts, or even the whole, of the plant case must be planted afresh from time to time; in which case, fresh soil must be added under the directions already given. The most suitable time for this operation is in February and the beginning of March, when the new growth commences. The *Selaginellas*, which form the green turf, must be removed as often as they grow too thick and too long, as this spoils the appearance of the turf. With these (*i.e.*, the kinds generally used for making a turf) there is very little trouble. They are simply pulled up, and in their place fresh roots or growing cuttings are put in in tufts, and

from these new and similar turf will soon be produced. This however, should not be done from the middle of October to the beginning of January.—*From the German of Dr. Regel.*

(To be continued.)

DRAINAGE.

[The following admirable essay was recently read before the Institution of Surveyors by Mr. R. B. Grantham, C.E. It merits the attention of all interested in garden drainage.]

Arterial drainage and outfalls are the leading works in all systems of land drainage, and to them I have paid particular attention as the means by which minor or subterranean drainage can be carried out safely, effectively, and permanently; but, without a knowledge of the requirements of pipe drainage, arterial drainage cannot be properly designed and executed. The end of all pipe drainage, let the depths be what they may, is to keep the subsoil water at such a level as not to allow it to rise to the roots of the plants, and injure their growth by its coldness and non-fertilising properties; and to render the soil above the pipes more friable and open, by making it moderately dry, and causing a circulation of air through it. A very prevalent opinion existed that the sole use of pipe drains was, to take off to an outlet, water which descended upon the surface of the land as rain, or overflowed it from springs, &c.; and with many farmers this idea is still prominent, and they cannot understand that if drains are sunk in clay soils as deep as four feet, the drainage water will ever reach them, or the land ever be improved; and if left to themselves, they would not lay the drains deeper than two feet or two feet six inches. I have many times tried to convince them what is the source of the water, by showing it to them by trial holes dug in stiff clay, and asking them where they thought it came from, as there was no appearance of its having run down the holes from the surface of the land, or of its having percolated from the sides of the holes. I have shown them that it could only rise from the bottom; but in few instances only have I found that the conviction, even if arrived at, lasted very long. I have also shown them that, after a drain has been dug out to its proper depth, in a few hours water will gradually rise where there was none before. Many instances are well known in which shallow draining, say from two feet to two feet six inches, has been taken up and the pipes relaid at depths of four feet and upwards; and it is scarcely possible to believe that in the present day persons can be found who would practise shallow in preference to deep drainings. When the soil between the drains has been rendered perfectly permeable, so than rain water sinks to the full depth of the drains, and the subsoil water rises up to their level, the work may be deemed to be satisfactory, as showing that the drains have not been placed too far apart, having regard to the depth in the particular soil which is being treated.

SOILS.

In laying out drainage the principal difficulty in determining both the depth and width apart of drains, is found in dealing with the different kinds of soil that are met with. The first questions that naturally arise are—What is the geological formation of the locality? and what is the inclination or dip of the strata? From the answers to these questions we are able to infer the existence or absence of permanent springs. Thus, for example, beds of gravel, sand, or other free soil, surrounded or underlaid by beds of clay or other impervious strata, store up large bodies of water, which, by slow percolation, saturates the surface of the country. So that we can in such cases, by simple means and a small amount of work, free large areas of land from wetness. A knowledge of the soils may be gained by sinking trial holes, exceeding in depth the proposed drainage, or by boring to moderate depths. Soils may be classed in two grand divisions—clays and free soils, and it is these we have to deal with; but it must be remembered that each of them admits of several subdivisions, and in both cases rock may be mixed with them.

DEPTHS OF DRAINS.

Four feet minimum depth of pipe drainage has been fixed after mature deliberation; but it ought not to be imperatively insisted upon in every kind of soil or under all the varying conditions of land. One constantly meets with the objection

that water cannot get down through thick clay, and that it is useless to go so deep as four feet; but our experience teaches us that the soil, having become more loosened and opened by cracks, admits the permeation of water to that depth at least; the very worm-holes permit the rain to percolate; and after it has once found its way, by gravity, through the soil, by innumerable small passages, it never ceases, year after year, to continue the same course. Thus, in course of time, the whole depth, from the causes before cited—namely, the prevention of the capillary attraction upwards of ungenial water, the admission of air by the pipes, and the gradual filtering of rain from above—is totally changed in character from that of an obdurate and untractable soil to that of a more genial plant-producing one. The same effects are produced both in arable and pasture lands; but the system to be adopted in draining them is somewhat different. I have hitherto endeavoured to prove that there is a certain minimum depth at which pipe drainage is capable of producing the best results, more particularly when applied to stiff clay.

DISTANCES APART.

I think a general rule might be established to determine, in connection with the depths, the distances at which the drains should be placed apart from each other, and that is that the width should be a multiple of the depth, for instance, four feet drains may be 16, 20, 24, 28, 32, 36, or 40 feet apart, the depth being first found at which the level of the water bed stands beneath the surface. We must then judge, from the nature of the soil, whether it will allow of the water finding its way, for half of any of the above widths, to the pipes; always bearing in mind that water will find its way most quickly to a vacuum or the point of least resistance. Take again any soil in which it may be found that the water level stands at five feet deep, the multiple may be 40, 45, 50, 55, or 60 feet, and so with six feet drains the widths may be 60, 66, 72, 78, 84, or 90 feet. The drainer's judgment and experience will enable him to determine at which of these widths the particular soil which he finds will act best, remembering again that each line of pipes, *i.e.*, each drain, only influences half the distance between it and the next one on either side of it.

(To be continued.)

THE FLOWER GARDEN.

THE ROSE SECRET.

I have been making all sorts of guesses as to what Mr. Reynolds Holk's secret for the easy propagation of rose trees can be, and wonder if perchance it could possibly be the same method which I have several times used successfully, not only for rose bushes, but for divers other plants; whether it be the same or not, mine can be easily put to the test by anyone who takes an interest in the matter. This method is only a modification of the one long used in France (and in other countries, I dare say) for the propagation of some hard wooded plants, such as the Oleander, and which consists in placing the cutting in a bottle of water hung out in the open sun. I choose the rose cuttings rather stunted and not too luxuriant, and place them in a shaded part of a moderately heated greenhouse, in bottles, jars, or any sort of vessels filled with water, into which I put a piece or two of charcoal to ward off putrefaction. Making roots is a mere question of time, and sooner or later they are sure to appear. I have propagated all sorts of plants in this way, even such as would have been supposed too liable to rot, from being herbaceous or very pithy. I have rooted large branches of Aucuba with stems as big as my finger, notwithstanding the pith, which is considerable in that shrub, and have succeeded perfectly with Verbenas and such like, also with Vines, Heliotropes, Fuchsias, Candytuft, Diplacens, and in general most bedding plants. I have never done this on a large scale, and only for convenience sake, or from curiosity. I once made a border of perennial Candytuft, requiring two or three hundred cuttings, which I placed all in one jar, they rooted very quickly, and were at once placed in rows; another time I broke accidentally the stem of a large bushy Diplacens, in the month of February, and at once took off every branch with the heel on and placed them in a glass jar; they were rooted in fifteen days, and were nice potted plants long before the time for turning out. With respect to Roses, I may perhaps have rooted fifty or sixty cuttings at different times and of all sorts, and do not remember any failures. I generally placed them in water at pruning-time, say from 1st to 15th March, before the leaf-buds

broke; but have also rooted them at midsummer while in full leaf. I have no doubt the method may be systematised, and the evolution of roots hastened to any required degree by means of large pans with hot-water pipes passing through them. The great thing is to keep the water sweet and to obtain the evolution of roots before there are any symptoms of decay; judiciously applied bottom heat and leaving on as many leaves as the cuttings can bear, will, of course, tend to promote this.—FREDK. PALMER, Versailles.

— THE following is a method of striking rose cuttings especially adapted for increasing rapidly new and scarce varieties. In November procure from the nursery the kinds you desire to possess. I should have no objection to their being on the Manetti stock, if budded close to the ground. Plants on their own roots can scarcely be obtained strong enough to yield plenty of cuttings; in fact, new roses can hardly be obtained at all on their own roots. When received, shorten back their roots and pot them into six or eight inch pots according to their strength, completely burying the stock if possible. I must say, however, that with most of the plants on Manetti stocks that have come into my hands I have found a difficulty in doing so. When potted, give a good soaking of water, and place them in a cool house. About Christmas prune them, cutting away all weak shoots, and shorten well back all strong ones. In January fill a pit with leaves and stable dung, so as to produce a nice sweet steady bottom heat of 75°. Plunge the pots in the pit, and for the first three weeks give abundance of ventilation, as the object is to induce vigorous root action without unduly exciting top growth. When growth commences, use the syringe freely early in the afternoons of sunny days, shutting up the pit at the same time. Remove every flower bud that appears as soon as observed, and supply them freely with liquid manure. A very suitable liquid manure may be made for this purpose by dissolving 1lb. of guano in a barrel of soft water (thirty-six gallons). When the wood is sufficiently advanced, propagating may be commenced. Some judgment is necessary in selecting the wood of the requisite firmness, as soft growth will damp off; but anyone who has had experience in budding will understand what I mean. As soon as the shoots have reached the proper degree of solidity, commence taking off the cuttings; each joint with a leaf and bud attached will make a cutting. Leave the leaf on entire, and about an inch and a half of the wood below the bud. Remove with one stroke of the knife a thin strip of the outer bark, commencing on the opposite side of the bud and reaching down to the base of the cutting. The object of this is to facilitate the emission of roots. Insert the cuttings round the sides of six-inch pots, with the leaves pointing to the centre; do not use a peg, but take the cuttings between the finger and thumb and gently but firmly press them in. The base of the cuttings thus have a firm resting-place, which is a point of some importance. Plunge the cutting pots into a brisk bottom heat of 80° or 85°; shade on bright, sunny days and keep them close. Do not let the leaves flag, but guard against damp, and in a very short time they will be rooted. In preparing the pots for the cuttings, let them be well drained, placing a few rough pieces of turf over the drainage. Fill the pots to within half an inch of the top, and water them with a rosed pot; let them drain for half an hour, then apply about a quarter of an inch of dry, sharp silver sand. When inserting the cuttings, the dry sand will fill all cavities, and a gentle sprinkling with water will make all firm. Weak spindling cuttings seldom make strong plants; therefore it is important that the plants producing the cuttings should be well attended to, and that, as far as possible, every flower bud should be removed, in order to induce strong vigorous growth. In buying roses for this purpose, I should prefer them from the open ground rather than have plants in pots; because the plants from the open ground will generally be the strongest. Where the necessary convenience exists, it is not too late now to give this plan a trial. There is nothing new about it, for I have put in rose cuttings from single buds many years ago with scarcely five per cent. of failures. The great thing is to take the wood when it is beginning to get firm, which is generally about the first week of the blooming period; of course, all the shoots will not be ready at the same time, therefore, if a large stock is wanted, the work of propagation may go on for several weeks. Many hundreds of cuttings may be obtained in this way from only a few strong plants. A very good plan of striking roses when cuttings are plentiful is to put them in a prepared bed under a north wall or fence in October. Make the cuttings about eight inches long, and plant them thickly, in a slanting direction, leaving about two inches of the cutting out of the ground. This involves little trouble, and in a favourable season a large percentage will root. In severe winters a little hay scattered thinly over them will protect them.—E. HORDAY, Ramsey Abbey.

— So Mr. Holk has a "rose secret" which he dare not divulge. Why did he not, like another Church dignitary I have heard of, arrest

the secret in its shell with, "Stop, stop, I must first call in a few friends to help me to keep it"? Be that as it may, perhaps some of the following guesses may anticipate his solution of the enigma. Rose roots, I find, may be converted into plants in the same way, though not quite with equal certainty, as the roots of *Pelargoniums*. Cut them into handy lengths, plunge them into a bottom heat of from 70° to 80°, with a fair share of moisture, and white feet will run down, and a white head pop up, like a piece of blown glass; and presently, from these, venerable veritable crown-shoots, like delicate asparagus tops forced in the dark, will spring out, and grow up into roses. There is yet another and a surer method of manufacturing plants from the root stocks of roses. Behold a rose on its own roots down to within an inch or two of its root-crown. If you leave much stem the subsequent procedure will be useless, as the strength of the plant will rush stemwards, as water flows through an open channel. In this case we want to force the water, as it were, uphill; therefore little or no open channel or stem must be left. Plunge this root stock, with the chief roots barely covered, into any light stuff, in the same high temperature as that prescribed for the rough root cuttings. Continue this treatment until a great forest of suckers appear. Then cut the roots into fragments, with a rootlet or two and a single shoot attached to each; return to a genial temperature of 60° or 70° till the plants are established. What may prove a secret to some, is striking roses by means of buds. At first sight, one can but wonder that this has not been more generally done. Reasoning from analogy, it would seem as easy to root a bud in moist sand or earth as in the bark of another plant. But the living sap makes all the difference; and I have never succeeded in rooting a bud of a rose in the earth with only the bark attached, as in common budding. Something more than this is needed; that is found in a portion of the wood. Use rose buds as we mostly do vine buds, and scarcely one of them will root. Cut the shoot asunder lengthwise, removing from one half to three quarters of the shoot; make the base smooth; cut the ends clean and square, about half an inch on either side of the bud, and treat them properly afterwards, and many, perhaps all of them, may grow into plants. There is, however, an element of uncertainty about it, depending upon the state of the wood, the period of the season, the variety of rose, and the treatment given. I have found a bottom heat of from 70° to 75° best for this work. The rationale of the treatment is this:—First of all excite the bark to form a callusity either at the ends or the sides of the wood. When this takes place, the bud is safe; but, should the bud grow fast, as it will if placed in the same temperature as its base, it will have expended its store of growing force on its own elongation rather than in making roots. Consequently, as soon as the store of food treasured in the wood and bark are exhausted, the bud perishes; otherwise, it lives. This mode of increase may be adopted at any season when dormant buds are available. It is, however, most successful about the end of June with the first matured buds of the season. The best place for operating in summer is a pit or frame, in which the bottom heat can be regulated, and the surface temperature kept down by a north aspect, shading, sprinkling, &c. The China section is the easiest managed in this way, including, of course, Teas, then Noisettes, Bourbons, Perpetuals, in the order I have placed them. Provence and summer roses are the worst of all to root from buds, and can, of course, only be tried in winter. Records of experience in this matter, such as you have had in your pages, are extremely interesting, and may tend to cheapen roses, or, at least make them more plentiful.

D. T. FISHER.

The Veitch Memorial.—We understand that the trustees of this memorial have invested the balance of the fund, amounting to £870 in stock of the Great Indian Peninsula Railway; and that as soon as sufficient interest accrues to render the prizes to be offered worthy of the object in view, they will proceed to make arrangements to determine their relative value, and to submit them to public competition, in accordance with the powers conferred upon them by the subscribers.

Railways and Public Parks.—Everyone who knows Birmingham is acquainted with a public park or chase in its neighbourhood, like Bagshot or Windsor, of about 3,000 acres, including woods, lakes, and a small portion of cultivated ground. It is called Sutton Park, and forms one of the principal lungs of a district populated by a million of inhabitants. The thousands who have visited this park will learn with dismay that there is a proposal to run a railway across the best portion of it, destroying the picturesque character of the scenery, and cutting off communication between one side and the other. From a sanitary stand-point, the injury, destruction, or enclosure of large parks and open spaces is most lamentable, especially when these happen, like Sutton Park, to be in the neighbourhood of great centres of population.—*Tanet*.

OUR WEEKLY CALENDARS.

THE first attempt at garden literature was a calendar of garden operations, and a calendar must ever be an important and a useful feature in a gardening periodical. Hitherto calendars have been, as a rule, invariably written from current observation in one place, aided by compilation from already published records; but in consequence of the many important branches in which the art of gardening now presents itself, it is manifestly impossible that any one man or even half-a-dozen men can from actual observation write such a calendar as will meet the multifarious wants of the now vast gardening public. It has, therefore, occurred to us that we might make a useful innovation in the art of calendar-making, by giving weekly a faithful and comprehensive record of the work actually performed in every kind of garden, during the current week, around that greatest centre of gardening in the world—London. Ordinary weekly or monthly calendars all possess the disadvantage of having to recommend the performance of operations which a sudden change in the season may render impossible or unwise. But, as henceforward our weekly calendars will describe work actually performed, and being carried out, in private and public gardens, nurseries, and market gardens, by the best practitioners in these respective departments, the public will have, on the appearance of our paper, a reliable weekly guide as to the garden operations that require most pressing attention; while our monthly calendars, issued in the first number of each month, and written by some of the ablest gardeners in England, will indicate the general plan of the months' operations. The climate of Britain doubtless varies a good deal; still, a record of garden operations carried on around London, will, for all practical purposes, be a trustworthy guide for all other parts of the country. The short space of time that will elapse between the conclusion of our week's observations and the reception of them by the public, can make no practical difference to readers in the southern parts of England and Ireland, whilst for the large portion of our readers who live considerably north of our great metropolis, the directions will come in good time. We have only to add that daily observations in all the best private, public, and commercial gardens in and around London, will be made by competent reporters in the special interest of this department of THE GARDEN.

GARDENING AROUND LONDON.

PRIVATE GARDENS.

Conservatories, &c.—At present conservatories everywhere are gay with *Camellias*, *Heaths*, *Azaleas*, *Acacias*, *Cytisus*, *Daphnes*, *Epacris*, *Hyacinths*, and other bulbs; *Cyclamens*, *Primulas*, *Mignonette*, *Cinerarias*, *Violets*, *Callas*, *Bouvardias*, and many other things, the whole being intermixed with fine-foliaged plants, which serve to set those in flower off to good advantage. The temperature of these structures is now kept at about 45° or 50° at night, allowing a rise of 10° by sun heat. Plants started into growth receive more liberal supplies of water, and the atmosphere is kept moist by sprinklings from the syringe. Flowering plants from the forcing pit take the place of those done flowering. The beds, which have been top-dressed, are kept neat and trim. Air is given plentifully in the morning, shutting up early in the afternoon. Greenhouse plants have now been nearly all repotted. Such as intend to exhibit their plants, are now busy training, accelerating, or retarding them. To *Bougainvilleas*, *Clerodendrons*, *Stephanotus*, *Caladiums*, &c., they give a brisk heat and plenty of moisture. *Azaleas*, *Genetyllis*, *Dracophyllums*, *Chorozemias*, &c., are kept neatly trained, and *Pelargoniums* are placed on shelves close to the glass. *Cinerarias* and *Calceolarias* are shifted into their flowering pots.

Stoves.—The potting of stove plants is in general finished. Those such as are in active growth, water is freely given both at root and overhead, and the atmosphere is kept moist by frequent sprinkling on all available surfaces. A little shade, when necessary, prevent scorching. Air is given in the morning, and the house is shut up early. *Gesneras*, *Gloxinias*, *Achimenes*, *Caladiums*, are potted and placed in heat to succeed those previously started. *Orchids* are being repotted, and those most actively in growth receive a good supply of moisture at the root and in the atmosphere, but those starting are only sparingly supplied at the root; the atmosphere is, however, kept warm and moist by frequently sprinkling, with the syringe, the paths, stages, walls, &c. During bright sunshin a little shade is given. Most *Orchid*-growers place a piece of cotton wadding round the stems immediately below where the flower spikes appear, to prevent the ascent of woodlice, &c., which eat the points off the flower spikes. Ferns are kept growing steadily and have all been potted, except some of the hardy sorts that are

kept for conservatory decoration; these latter are now receiving a shift, and being placed in cold frames.

Pits and Frames.—Where there is no propagating-pit, hot beds are now devoted to that purpose. Cuttings of *Coleus*, *Alternantheras*, *Heliotropes*, *Ageratums*, *Geraniums*, *Lobelias*, *Mesembryanthemums*, *Tropaeolums*, *Calceolarias*, *Verbenas*, *Gazantias*, &c., for bedding purposes, are being constantly put in, and as soon as rooted are potted off singly, and their place supplied with another batch of cuttings of the same. *Wigandias*, *Solanums*, *Verbesinas*, *Polymnias*, and many other sub-tropical plants are placed in heat, when they yield abundance of cuttings, which are easily propagated in the ordinary way. *Chrysanthemum* cuttings, which are rooted and potted separately, are placed in cold frames, kept close for some time, and gradually inured to light and air. Annuals required for early flowering in conservatories are now being sown in pots in heat. *Polemoniums*, *Phloxes*, *Sempervivums*, and other hardy plants wintered in frames, are being taken out, and set in sheltered places, to make room for other things. *Echeverias* in boxes are kept under stages, or anywhere in a cool house where they can be kept dry. Lilies in pots, as they appear above ground, are kept near the glass. Stocks in pots are being repotted, and single ones, as soon as discerned, are cast away. Yellow *Pyrethrums*, *Calceolarias*, &c., in frames, have the sashes removed during fine days.

Flower Garden and Shrubbery.—Flower gardens, where not previously done, are now being filled with Pansies, Daisies, Forget-me-Nots, *Pyrethrums*, variegated grasses, *Sempervivums*, and many other useful spring flowers. Crocuses, Snowdrops, Aconites, Scillas (sibirica), Bulbocodiums, Dog's Tooth, and other violets, Arabis, &c., are now everywhere in full bloom. Flower beds are being neatly trimmed and edged; lawns are being swept, rolled, and mown, and walks gravelled. Grass and ivy verges are being made, and box edgings laid. Pruning of roses in many cases is finished, whilst in others it is only just began.

Indoor Fruit Department.—Pine apples swelling fruit are allowed an increase of temperature and a moist atmosphere. Succession plants receive plenty of water and heat, and are shifted on as they require more root room. Vine shoots are being stopped and regulated, and bunches too thick are being thinned. For Muscats in flower a high temperature and a dry atmosphere are maintained, but for Hamburgs less heat is needed. Vines breaking are furnished with a moist atmosphere. Early Peaches and Nectarines are thinned, and syringed morning and afternoon, and shut up early. In many cases a little air is left on all night. Strawberries are being introduced into forcing houses, keeping them near the glass; those in flower require a dry atmosphere. Melons and Cucumbers are being sown for a general crop. Those planted out are tied and thinned, and have their flowers picked off until they have strength enough to support fruit. A moist atmosphere is maintained, and water is given freely at the root, avoiding wetting near the neck of the plants. The syringe is frequently used amongst the foliage. Kidney beans are forced in succession, giving them plenty of water at the root and overhead. Tomatoes are being sown. Capsicums sown last month are being potted, and another sowing has been made. Celery is sown in heat, and pricked off as soon as fit to handle, still keeping it in heat. Potatoes in frames are allowed plenty of air; other frames are being filled with tubers, forwarded a little in pots, so as to come on in succession.

Hardy Fruit and Kitchen Department.—Pruning of fruit trees is for the most part finished, and nailing is being pushed forward rapidly. Mulchings of litter are applied to trees that have been lately planted. Grafting has been commenced. Apricots, Peaches, and Nectarines are being protected with nets, thin canvas, &c. Bush fruits have been pruned, and the ground about them dug. Fresh plantations of Strawberries still continue to be made. Artichokes are cleared of litter, and fresh plantations, if required, are being made. Small sowings of Broccoli, Cabbages, Savoy, and Cauliflowers, have been made. A full crop of autumn-sown Cabbages is being planted. Cauliflowers are planted out singly, and also in patches of three, six, or nine, under a hand-glass. A main crop of Onions is being sown, also of Parsnips, Carrots, and Borecole. Leeks are also being sown for transplanting. A small sowing has been made of early Turnips on a warm border. Main crops of Potatoes are being planted. A full crop of Beans, and succession ones of Peas, are being sown. A small sowing of Beetroot has been made, and the main sowing of Parsnips is being put in. Mint, Rue, Savory, Sage, Camomile, Balm, &c., have now their roots divided, or slips detached from the parent plants, and planted in lines. Spinach is being sown between lines of Peas; and of Mustard and Cress small sowings are made on a warm border.

NURSERIES.

Indoor Department.—The most pressing labours under this head are propagating, repotting, training, starting plants that have been at rest, &c. Young Heaths and Azaleas are grown in London nurseries by the thousand. They are now mostly, with the exception of those in flower and specimen plants, kept in cold frames. The potting of Heaths, in most cases, is finished. Camellia blooms are being, in some cases, cut for market; small plants also, with a few nice flowers on them, sell well. Those to be kept another season in the nursery are repotted, pruned into shape, and kept growing on in an intermediate temperature. Young specimens of greenhouse hardwooded plants in great variety are now being potted off. Those struck in the autumn are placed on the side shelves of the propagating house, there to remain until fit for potting off singly. Cuttings of many kinds are now being inserted in pots under bell-glasses, and set in gentle bottom heat. Azaleas, Camellias, Daphnes, Roses, Ivies, Citrons, &c., that have been grafted are still kept in close houses, and those that have freely united and are swelling should have their ligatures cut. Cytisus, Acacias, &c., are kept in cool pits or houses. Tropical Palms are mostly all potted, and kept growing in moist, warm houses; the hardier kinds, about to be potted, at present enjoy an intermediate temperature. Dracenas have been potted, and are now kept in brisk heat, with a good supply of water. Old and scraggy specimens have been, in some cases, cut down, the stems being used for propagating purposes. Dieffenbachias are also in some instances cut down, and the stems cut into short bits for propagating. Young and shapely plants of them are repotted, and kept in a brisk, moist heat. Gesneras, Gloxinias, Achimenes, and Caladiums, are now started in small pots in strong heat. Marantas have been repotted, and are likewise kept in strong heat. Almost all stove plants have been shifted, and are commencing to grow; they have abundance of water at the root and overhead, and enjoy a high temperature. Orchids are, for the most part, repotted and top-dressed. Aucubas are placed in heat, to induce them to flower freely, and be the more easily "set" by-and-bye. In some cases they have been already fertilised. Bedding plants, such as *Geraniums*, *Calceolarias*, *Alternantheras*, *Lobelias*, *Colenses*, *Verbenas*, *Tropaeolums*, *Mesembryanthemums*, *Heliotropes*, *Ageratums*, *Wigandias*, *Solanums*, and many others, are in heat, in order to cause them to yield cuttings more abundantly. Dahlias are started under stages and in any place where they can be conveniently stowed, and where they can enjoy a little heat. Cannas are started in the same way, but are propagated by dividing the roots, preserving a crown to each division, which is placed in a small pot, and kept in heat. Cuttings of Aucubas, Euonymuses, and various kinds of conifers, are now being inserted in silver sand under hand-glasses, and plunged in a gentle bottom heat. Those propagated in the autumn have still the benefit of hand-glasses. Early annuals for conservatory decoration are raised from seed sown now in heat, also bedding plants, such as *Lobelias*, *Centauras*, *Petunias*, *Pyrethrums*, *Amarantuses*, *Solanums*, &c. Alpine and herbaceous plants in small pots and wintered in frames, are now placed out on beds, on which a layer of coal ashes has been put, and over the more tender kinds hoops are placed, so that in case of frost a mat, or some other covering, may be thrown over them. The pits and frames they occupied are filled with bedding materials, Heaths, Azaleas, Epacris, &c.

Outdoor Department.—The lifting of deciduous trees is now over. The ground where they grew is levelled, dunged, and dug; and the remaining specimens that are scattered over the ground are taken up and re-planted in lines and in proper order. Evergreens continue to be lifted in great quantities for planting, which is now going on busily, although early in September is a better time for such work. Layering of Limes, Acers, Rhododendrons, Laurels, &c., is now being done. The layers are kept in their places by means of small pegs, the point of each shoot projecting twelve inches above ground with its point cut off. Those layered last year, where well rooted, are lifted and planted in lines about twelve inches apart. All open spaces between lines of young trees and shrubs are dug over, and the walks trimmed and gravelled. Climbers in pots are still kept plunged in sheltered places in cocoa-nut fibre, or some other material, and securely staked. Young conifers in pots are placed on wall borders and plunged. Various bulbs and other plants are turned out of their pots and planted in beds. Grafting has in some cases commenced, and in most instances it is to begin in earnest next week, stone fruits being the first to be operated on. The stock of young fruit remaining after the winter's sales are now being trained, some for walls, pyramids, espaliers, &c.

MARKET GARDENS.

The fine warm weather which we are now experiencing advances vegetation so rapidly that spring work in this department is coming on with a rush. Everybody is now busily employed with Asparagus

beds, which are being covered over with soil dug from the alleys between them, neatly rounding their surface. Lettuces in frames are fully exposed during fine weather, and young plants are being put out between lines of Gooseberry bushes, in open spaces, and on every available surface where deeper rooting and stronger growing things would not answer. Radishes from the earlier sowings are now fit for use, and others are coming on to take their place. Some are little more than above ground, while others are only just sown; therefore in that way a constant succession is secured. Ralish-beds are covered with litter until the young plants appear above ground, after which the litter is moved into the alleys, to be replaced on the beds in severe weather. A boy is kept to frighten off birds, which prove injurious to Radishes on their first appearance. Cauliflowers that have been wintered in frames are being planted out, nine under a handglass, which is removed after the plants have got established a little, and only used afterwards for protection from cold winds or frost. From this position they are lifted and planted out, as ground becomes ready for their reception, three being left under each light. Young plantations of Jerusalem Artichokes, where not finished, are now being made. Between lines of young transplanted Onions, Lettuces, Cabbages, and other crops, the surface is being carefully loosened with short hoes. Onions, Cauliflowers, Savoy, Brussel Sprouts, Carrots, Turnips, &c., are now being sown; but seeds for main crops of these will not be put in yet for another fortnight. Wherever ground has been cleared of crops, it is well manured and dug over for something else; in cases where the grounds are extensive, instead of digging the plough is introduced, after which the ground is harrowed, lined off, and planted. Potatoes are now being planted extensively. A good method of economising space is to plant Cabbages (Fulham) about fifteen inches apart in autumn, an 1 to dibble in now some early Potatoes between the lines of Cabbages, which are removed on the appearance above ground of the Potatoes. Successive sowings of Peas have been made, and as soon as they get about an inch above ground they are staked. Rhubarb plants that were forced early have their crowns now fully exposed in many cases, whilst others are still covered with litter, under which the leaves are coming up good, clean, and crisp; open air crops of Rhubarb are also pushing up. Asparagus is forced in frames by lifting the roots, and placing them on beds of fermenting material, covering with several inches of mould; litter is placed over the sashes, and removed for a short time about midday, when a little air is given. Seakale is likewise forced from lifted roots, packed closely in hotbeds, and also in the open ground, in the ordinary old-fashioned way. Young Carrots in frames get plenty of air throughout the day, and are kept growing on steadily. Pruning of bush and orchard fruits is in most cases finished, and the prunings are being collected into heaps and burned. Cleaning the ground is being proceeded with vigorously. From about the stems and roots of bushes and trees the weeds are removed into the open space between them, and there dug into the ground. Beds are in course of formation for the reception of Wallflower seed, this old favourite flower being grown to a vast extent in the market gardens round London.

SOCIETIES, EXHIBITIONS, &c.

ROYAL HORTICULTURAL SOCIETY.

THE third meeting of the season took place at South Kensington on Wednesday last, under very propitious circumstances as regards weather, but the display of plants was scarcely up to our expectations. Amongst Orchids, however, was a magnificently-bloomed plant of *Phalenopsis Schilleriana*, which was deservedly recommended to the council for a Lindley medal. It had two great branching flower spikes, on which were no fewer than 207 blossoms in the greatest possible perfection, notwithstanding their journey all the way from the north of Scotland. Other Orchids consisted of well-flowered plants of *Dendrobium Farmeri crassinoda*, and *cambridgeanum*. Some *Odontoglossums* were also shown, but not in such fine condition as at last meeting. Amongst them were some good plants of *O. Alexandre* and *triumphans*. A few *Lycastes* were likewise contributed, as well as *Oncidiums*, *Vandas*, and *Cypripediums*, together with a good plant of *Cymbidium eburneum*. Of *Camellias* no well-grown specimens were exhibited; but there were some prettily-flowered small plants. Roses, both in pots and in a cut state, were plentiful and good. Of *Lily of the Valley*, two baskets were exhibited in splendid condition. There were also good collections of *Cyclamens* and Chinese *Primulas*, as well as an interesting exhibition of hardy spring flowers, consisting, among others, of a double white variety of common *Primrose*, the charming *Iris reticulata*, Dog's Tooth Violets, and *Squills*. *Toxicophlæa Thunbergi*, a new plant from Natal, was exhibited; it has close heads of white flowers, which are sweet scented. It promises to be a good addition to our stock of winter-blooming stove or intermediate house plants. Among other things, we noticed the pretty little *Stenagastria coccinea*, and a variety of *Imantophyllum miniatum* called *Cooperi*, better coloured and larger in the truss than the ordinary

species. A few very nice Palms were shown, amongst which we noticed the handsome *Calamus verticillaris*.

First-class certificates were awarded to the following:—*Calamus verticillaris*, from Messrs. Rollison, Tooting; *Imantophyllum miniatum*, var., *Cooperi*, from Mr. Green, gardener to W. Wilson Saunders, Esq.; *Toxicophlæa Thunbergi*, from Mr. B. S. Williams, Holloway; and *Waltham White Chinese Primula*, from Mr. W. Paul, nurseryman, Waltham Cross.

Among fruit were some good late grapes, prominent among which were *Alicante*, *Lady Downe's Seedling*, *Barbarossa*, and *White Tokay*. Among other fruits were two good examples of smooth-leaved *Cayenne Pines*, weighing respectively six and a quarter and five pounds; a dish of very fine *Keens' Seedling Strawberries*; and a dish of *Cox's Orange Pippin Apples*, in excellent condition and good in flavour. There were also some creditable dishes of *Asparagus*, *Rhubarb*, and *Seakale*. Heads of *Snow's White Broccoli*, and *Myatt's Cape Broccoli*, were shown by Mr. Gilbert, Burchley Park.

L A W.

CARTER & CO. v. SUTTON & SONS.

On Thursday, before the Master of the Rolls, an injunction was sought by the plaintiffs, Messrs. Carter & Co., of High Holborn, to restrain the defendants, Messrs. Sutton & Sons, of Reading, from publishing certain trade marks, which the plaintiffs alleged were piracies.

It appeared that an advertisement had been inserted by Messrs. Sutton & Sons in January 1872 in one of the gardening periodicals, in which the medal granted by the Commissioners of the International Exhibition was used as a trade mark. Messrs. Carter, claiming this as their exclusive property, communicated with the defendants, and received from them a reply expressing regret that through inadvertence this should have appeared, and at the same time reminding them that in the year 1862 there were two international exhibitions held, viz., the "International Exhibition," and the "Royal Horticultural Society's International Exhibition," and that it was to the medal of the latter, and not the former, that the defendants had claim. The plaintiffs further stated that the same infringement was committed in a work entitled "Sutton's Amateurs' Guide and Spring Catalogue for 1872," and they therefore prayed the court to restrain defendants from issuing such publication, and also to compel them to recall such as had already been issued.

On behalf of the defendants it was contended that a sufficient explanation had been offered, and that in addition the defendants had caused a notice to be inserted in the different horticultural journals, to the effect that a mistake in the medals had occurred, and that the medal of the International Exhibition was not theirs (the defendants). The Master of the Rolls, in delivering judgment, said that the plaintiffs had utterly failed to make out their case; that the injunction must therefore be refused, and that costs would be costs in the cause.

ANSWERS TO CORRESPONDENTS.

W. ELLIOT (Many thanks. *Mandragora officinalis*).—S. R. (The dwarf yellow wallflower-like plant is *Erysimum ochro leucum*).—J. K. (The Pines you allude to are imported from the Azores: they are fine fruit and in good condition).—G. S. (Yes; we shall be glad to have an account of the way by which you get such fine *Petunias*. Will you at the same time kindly furnish us with your address, not for publication?)—W. DINSON (7s. Blackwood, we believe).—A SUBSCRIBER. (*Bignonia Cherere*, *Plumbago capensis*, and *Tacsonia van Volkemii* are the three best climbers for the conservatory in autumn).—L. SHAW, (*Clematis Jackmani* and *montana*.)

COVENT GARDEN MARKET.—March 9th.

Flowers.—Bouquets consist of white *Camellias* and *Tea Roses* in the centre, surrounded by other flowers and ferns. *Polyanthuses* and the pretty *Primula denticulata* are now making their appearance; among other things we noticed sprays of various *Orchids*, *Hyacinths*, and other Dutch bulbs, *Violets*, *Geraniums*, *Heaths*, *Mignonette*, *Hepaticas*, *Daises*, *Arabis*, *Aubrietias*, and other early out-door flowering plants.

Prices of Fruit.—Apples, Dessert, 2s. to 4s. per dozen.—Cobs, per 100lbs., 60s. to 65s.—Filberts, per lb., 8d. to 10d.—Grapes, per lb., 10s. to 18s.—Lemons, per 100, 7s. to 10s.—Oranges, per 100, 6s. to 10s.—Pears, per dozen, 3s. to 8s.—Pine-apples, per lb., 6s. to 10s.

Prices of Vegetables.—Artichokes, green, each, 6d. to 8d.—Asparagus, per 100, 8s. to 10s.—Beet, per dozen, 1s. to 2s.—Broccoli, purple, per bundle, 10d. to 1s. 3d.—Brussels Sprouts, per half sieve, 2s. 6d. to 3s. 6d.—Cabbages, per dozen, 10d. to 1s. 3d.—Carrots, per bunch, 5d. to 7d.—Cauliflowers, per dozen, 2s. to 6s.—Celery, per bundle, 1s. to 2s.—Chilies, per 100, 1s. 6d. to 2s.—Cucumbers, each, 1s. 6d. to 3s.—French Beans, new, per 100, 3s. to 4s.—Herbs, per bunch, 2d. to 4s.—Horse Radish, per bunch, 3s. to 5s.—Leeks, per bunch, 2d. to 4d.—Lettuces (French), Cabbage, per dozen, 1s. to 2s., Cos, per dozen, 3s. to 5s.—Mushrooms, per pottle, 1s. to 2s.—Onions, per bunch, 4d. to 6d.—Peas (green Continental), 2s. per packet, or 10s. per quart.—Parsley, per bunch, 2d. to 4d.—Radishes, per bunch, 1d. to 6d.—Rhubarb, per bundle, 6d. to 1s. 6d.—Salsafy, per bundle, 1s. to 1s. 6d.—Scorzonera, per bundle, 9d. to 1s. 3d.—Seakale, per punnet, 1s. to 2s.—Shallots, per lb., 8d.—Spinach, per bushel, 3s. to 4s.—Tomatoes, per small punnet, 3s.



"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE INDOOR GARDEN.

FLYING FLOWERS.

BY NOEL HUMPHREYS.

IF, as a supplement to the beautiful flowers which the protection of glass enables us to enjoy, we could command the presence of objects of equal beauty, endowed with the additional charm both of life and motion, it cannot be denied that the pleasure derivable from our greenhouses and conservatories would be greatly enhanced. A beautiful butterfly is but a winged flower: the essences of a plant have been extracted for its formation; the fibre of the leaves has probably gone to form the neurations of the broad, sail-like wings; and the rest of the leafy structure to weave the delicate and nature-painted tissue. When the store of delicate material has been collected by the greedy industry of the untiring caterpillar, and duly eliminated from the grosser matter, the continuous accumulation ceases, and the embryo bud of the flying flower is rapidly formed and protectively enclosed in its horny calyx, in which the development is completed; and when the final expansion takes place, the horny calyx is burst, and flung off, like that of a great scarlet poppy; four living petal-wings, like the closely folded petals of the poppy, spreading themselves rapidly out to their full size, essay their strength by a few trial flappings, like the first essays of a young bird, and the flying flower either darts fearlessly through the air in wild and joyous evolution or hovers lovingly above some poor wingless, but yet beautiful, flower that is destined, from the recesses of its luscious nectary, to furnish the delicate food of the newborn butterfly, who seeks it in the depth of its cell with his uncured, hair-like tongue.

The butterfly's resemblance to a flower is not confined to the beautiful petal-like wings, but the body seems to represent the pistil, and the elegant antennæ the filaments and anthers. The analogy seems, indeed, something more than a fanciful resemblance. Chrysalis of the Great Swallow-Tail, the largest of our native butterflies, might be laid on the soil, or on the large leaves of some of the conservatory plants, there to await the period of their expansion. Nothing can be more interesting than to watch the escape of the butterfly from its chrysaline prison, after the first cracking of the horny shell along the back, to the gradual breaking forth of the beautiful insect. When it first drags itself gradually out of its cell, the wings, which are soon destined to assume such large dimensions, in proportion to the size of the body, are little more than mere rudiments, scarcely half-an-inch long; but rapidly, either by the developing of invisible foldings, or by actual growth, they assume their natural size, the almost sudden expansion, or growth, being plainly observable in their rapid progress by the naked eye.

Very beautiful is the aspect of many of our native butterflies. The colouring of the Great Swallow-Tail (*Papilio Machaon*) is bright and striking in a high degree, the light gleaming yellow forming the ground colour being enriched with bold markings of velvet black, rendered gorgeous towards the edges of the hind-wings by splendid pencillings of violet and orange. The charming effect of half-a-dozen or a dozen of these beautiful insects flitting from plant to plant can be readily imagined. It is as though a race of winged flowers had sprung into existence, or as though the petals of certain of the ordinary flowers had suddenly been changed into wings, and gifted with the powers of flight.

In order to secure such a display, it is only necessary to proceed at once to the natural history depôt in Holborn, or the one in New Oxford Street, and purchase, at the small cost of fourpence each, a dozen chrysalids of *Papilio Machaon*, and place them in convenient places about the greenhouse or conservatory. This is the season at which these chrysalids are to be procured; and to those who have not tried the experiment, the result will undoubtedly prove highly interesting. The chrysalids of *P. Podalirius* can sometimes be procured at the same time, and, possibly, those also of *Parnassius Apollo*, that noble butterfly which may be seen by Swiss tourists on the lower slopes of the Alps. The semi-transparent wings of this beautiful insect are of a light cream colour, boldly marked with black chequers, and also with rich crimson rings, which never fail to attract the attention even of those who are the least susceptible of being aroused to the admiration of natural objects.

If a tank, especially one of natural form, with a sand or gravel bottom, be introduced into the conservatory, as is now frequently the case, the cultivation of a few water insects might add very considerably to the interest afforded by the water plants. A few of the curious larvæ of the dragon-fly tribe, for instance, might be collected from neighbouring brooks, and transferred to the conservatory tank; thus affording the opportunity of witnessing the spectacle of their marvellous transformation, from the black and somewhat hideous form of a kind of miniature water demon, crawling about the sand or gravel-bed of the brook or tank, to a creature, whose elegantly formed and gorgeously coloured body is wafted through the air by gossamer wings, whose lace-like neurations are of truly marvellous beauty. When the "creeping thing" at the bottom of the tank has attained to the limit of its existence in that form, it will ascend to the surface, and creeping up the stem of some aquatic plant, will secure itself to that support by means of a loop of silken web, and then sink into the trance (of some few weeks' duration) which precedes the metamorphosis it is about to undergo. The manner of its extrication from the indurated husk of its former shape is extremely curious, and, to those who have not seen it, would form an episode among the more ordinary events of the conservatory, as interesting as that of the first blooming of a newly introduced exotic plant.

In the tropical house there is no reason why the gorgeous butterflies of Brazil and of the Eastern Archipelago should not be introduced. Many of them are far more splendid than any flower, and adding, as they would, the charm of motion to the splendour of their dazzling metallic hues, they could not fail to form a new feature of a very attractive character. With the present facilities of international communication it would not be difficult to secure the collection of chrysalids by the natives, who possess extraordinary instincts for seeking and capturing the wild denizens of their swamps and forests—from beautiful and harmless insects up to the savage panther and dangerous python. They have, indeed, made a regular trade of it, and it is by their ingenuity, and their knowledge of the habits of the wild animals of their country, that our museums and zoological gardens, both private and public, are supplied. With the command of such a source of supply it ought not to be difficult to obtain chrysalids of the resplendent and dazzling *Morpho Adonis*, of several of the gorgeous *Theclæ*, and of many other lovely insects, to form the flying flowers of our hot-houses, and tropical palm houses.

CLIMBING SPECIES OF ASPARAGUS.

THE use of these for the ornamentation of rafters and trellises in cool conservatories is not by any means general. They are, nevertheless, plants of easy cultivation, possess elegant foliage, and are useful for bouquets, and when grown in small pots and trained on wire, they make graceful arches for table decoration. They are increased by division of the roots, an operation which should be performed when they are at rest. All the species of this genus are fond of strong soil; and, being natives of South Africa, they grow during winter, when they are most useful, though some are ever-green. Those best adapted for indoor decoration are,—

ASPARAGUS FALCATUS.—This grows from eight feet to ten feet in height; foliage, very fine, arranged in threes, giving the spray a

very elegant appearance when hanging from a rafter. The flowers are white, and very small. Plant, herbaceous.

A. SCANDENS.—A slender plant, with foliage resembling that of our common Asparagus; stem, flexible, from six feet to eight feet in length, giving the plant a graceful appearance, especially useful for table decoration. Herbaceous.

A. DECUMBENS.—A dwarf plant, also with foliage like that of the common Asparagus. It grows in winter, and may be used for hanging over the side of a vase, a purpose for which it is extremely useful.

A. RETROFRACTUS.—A very strong-growing species, with evergreen stems; foliage, falcate; stem, spinose, attaining a height of from twenty feet to thirty feet. Useful for the ornamentation of a high conservatory, where quick growth is required and large foliage is objectionable. It produces new stems every season, when the old ones, if not required, may be cut away, or, if required to furnish at the bottom at any particular point, they may be stopped back.

J. CROUCHER.

DAMPIER'S GLORY PEA.

(*CLIANTHUS DAMPIERI*).

Of the many brilliant greenhouse plants which we have from New Holland, this is one of the most striking. It was discovered in 1699 growing on the dry, sandy islands of Dampier's Archipelago. It is a somewhat difficult plant to cultivate, and sometimes fails even under skilful treatment; yet it may frequently be grown very satisfactorily in our greenhouses or conservatories. The secret of success lies in wintering it properly, as it is liable to damp off. Good plants of it may be obtained in one season, during the latter end of which they will produce flowers in sufficient abundance to amply repay any care that may have been bestowed on them. They should not be wintered in too high a temperature, or watered too freely, especially about the neck of the plants; and in repotting care must be taken not to injure the roots. The seed may be sown either in spring or autumn, but autumn is perhaps the best time. Prepare clean three-inch pots; half fill them with crocks; and fill up with a compost of one half good loam, to which is added another half consisting of fibry peat, leaf-mould, charcoal, and silver sand in equal proportions. Insert one seed in the centre of each pot, and place the pots on a dry, airy shelf of a greenhouse or pit. When the plants have grown about two inches, they should be shifted into pots two sizes larger than those they occupy; replace them on the shelves, and avoid keeping them too damp during the winter. In potting, keep the soil a little higher in the centre of the pots than at their sides, in order to preserve the necks of the plants from being kept so damp as they otherwise would be; and when water is applied it should be poured carefully into the pots, avoiding touching the surface in the centre. Towards the end of February, or as soon as they begin to grow, shift again into two-sizes larger pots, carefully preserving the ball complete, and also the drainage crocks, as their removal would cause the destruction of some of the rootlets, which would prove almost fatal to the plants. I know of no plant so impatient as regards mutilated roots as this. About the end of April they may be again shifted, observing the same precautions; or, instead of potting, they may be planted in a border of well-prepared soil in a pit or greenhouse, where they thrive much better, and there is a greater chance of their wintering successfully; besides they grow more freely, produce their splendid trusses of deep scarlet and purple-black flowers in greater abundance and of finer quality than by growing them in pots, as their roots have more room for free and undisturbed action. The compost used throughout may be the same as that used at first, but rougher.

R. Brunström, a Swedish gentleman, some months since informed me that he has seen the *Clanthus Dampieri*, when grafted on *C. puniceus*, do much better, and prove hardier than when grown upon its own roots; but, as I never remember seeing it thus treated, I should like some information on the subject from some of your correspondents.

In France and the warmer parts of the south of England this plant may be grown very satisfactorily, and made to flower freely in the open air in summer and autumn, by treating it as a greenhouse annual. For this purpose sow in a gentle heat in February, and keep regularly potted before the roots get interlaced with each other. Gradually harden them off,

and, for a short time previous to finally planting them out, they should be left without any protection further than from strong winds, frost, and heavy rains. In the first or second week of June plant them out in a sheltered, sunny, and isolated position in a peaty soil, observing that no stagnant water can lodge about their roots. When thus treated, they form very striking and beautiful objects.

A correspondent of the *Field* describes them, as "flowering vigorously on the sandy soil of New Jersey treated as an annual plant." Mr. Webster, of Gordon Castle, in the north of Scotland, also bears testimony to having grown them outside with good results (and this I know to be true, as I saw them there myself); he thus alludes to them:—"Sow the seed early in March, and nurse them in heat until the beginning of June, and then partially harden by a fortnight's exposure in a cold frame preparatory to turning them out in the open air about the middle of the month. To guard against failure, they are protected for at least a fortnight or three weeks afterwards, by placing over them an inverted flower-pot during cold nights and bright sunshine. The plants treated in the way here described, far surpassed in beauty those cultivated in pots and kept under glass. As an illustration of their hardiness, I may mention that we have some plants still in fine flower (November 10th), having withstood, unscathed, three degrees of frost, while dahlias, and many of the old sorts of annuals usually cultivated in our gardens, were completely destroyed." W. F.

PALMS FOR THE GARDEN.

(Continued from p. 313.)

DESMONCUS MAJOR (MEXICO).—Plant, erect; stem, one inch thick; fronds, pinnate, three feet long, growing in a distichous manner; leaflets, four inches by one and a half inches; leafstalk and stem clothed with long black spines. Not very ornamental as a general decorative plant; but, owing to its being narrow and flat, it may be of use to train up in a dark corner, where other plants will not grow. All the species of this genus get unsightly when old.

D. MINOR (WEST INDIES).—Fronds, eighteen inches; pinnæ, two inches, dark green; spines, small. A useful plant when young for side-table decoration.

D. MEXICANUS.—Fronds, five to six feet; pinnæ, diminishing in size until at the point they are merely recurved spines, which have a way of catching everything with which they come in contact. Not a good ornamental plant.

DICKENIA NOBILIS (SEYCHELLES).—Fronds, pinnate; pinnæ, two inches broad, regular, of a purple tint. A metallic-looking plant, with the habit of an *Areca*; rather heavy looking, and fond of heat and moisture.

EUTERPE EDULIS (SYN., *OREODONTA SANCHONA*; BRAZIL).—Stem, slender when young; fronds, two to four feet, recurved; pinnæ, regular, one foot long, channeled on the underside, bright green, unarmed. A graceful plant, bearing a head of elegant foliage, which is supported, when about four years old, upon a slender stem, from two to three feet high. Suitable for table, as well as for general purposes.

E. PISIFERA (BRAZIL).—Fronds, five feet long, recurved; pinnæ, dense, underside, white; base of leaf-stalk, fibrous. Very elegant, of slow growth, and having fronds peculiarly regular. One of the best of all palms for the centre of a warm conservatory.

E. SYLVESTRIS (BRAZIL).—For all purposes like *edulis*.

GAUSSIA PRINCEPS (SOUTH AMERICA).—Habit of an *Areca*; fronds, flat, and spreading smooth; petiole, round, bright green. Rather a stiff plant, and a bad grower.

GEONOMA.—A genus of dwarf palms, which inhabit the dense forests of tropical America, where they take the place of underwood, and form dense bushes. All of them are fond of heat and moisture, and they dislike bright sunshine, which is apt to scorch them. They require a moderate bottom heat, and in repotting, care must be taken not to disturb them at the roots.

G. ARUNDINACEA (BRAZIL).—Fronds, entire, one foot long, having a termination like the tail of a fish; stem, slender; height, from three to four feet. Shoots push up from the base, rendering it a tolerably nice plant for the front of a stove.

G. BINERVIS (BRAZIL).—Fronds, pinnate; pinnæ, near the point broadest; drooping stem, single. A lax plant, unsuitable for decorative purposes.

D. CONGESTA (BRAZIL).—Fronds, entire. Larger than the last, which it resembles in habit.

G. GHIESBREGHTIANA (CENTRAL AMERICA).—Plant, stemless; fronds, four to six feet, irregularly pinnate; pinnæ, one to six inches broad.

A fine plant for stove ornamentation, having noble spreading fronds, but too dense to be used for table decoration.

G. MACROSTACHYS (BANKS OF AMAZON).—Fronds, spreading; six to seven pinnae, three to four inches broad; stem, slender. A nice plant, but apt to get naked, and to push shoots from the base.

G. MARTIANA (BRAZIL).—Fronds, entire, eighteen inches long, ten inches broad; point, bifid, stemless. A grand plant for mixing with ferns and fine leaved plants, adding dignity to its associates.

G. PANICULIGERA (BRAZIL).—Fronds, from four to five feet, pinnate; lax and irregular.

G. PUMILA (NEW GRANADA).—Habit, like that of *Ghiesbreghtiana*; pinnae, small. A very good plant for the front of a hot bed.

G. SARAPIGUAYENSIS.—Fronds, entire, of a brown shade, slightly arched, eighteen inches long; bifid at point.

G. SCHOTTIANA (SYN., *REGALIS*, *IMPERIALIS*, and *VERSCHAFFELTHII*: BRAZIL).—Fronds, from two to four feet long, and in number from ten to twenty, drooping, slender; pinnae, alternate, one inch apart, same in width. A truly elegant palm for the decoration of either table or house—for both purposes, indeed, not to be surpassed. The petiole being slender gives the plant a light feathery appearance.

G. SEEMANNII.—A fine plant, very like *Martiana*.

GILIELMIA SPECIOSA (SYN., *BACTRIS*: BRAZIL. THE PEACH PALM).—Fronds, erect; pinnae, regular, with small spines on the veins, and sharp black spines on the stem and petiole. An elegant plant, but not one of the finest of growers; fond of heat and moisture.

HYPHOBIE AMARICULIS (SYN., *ZAMELLOIDES* AND *ARECA SPECIOSA*: MAURITIUS).—Fronds, dense, erect, top reflexed; pinnae, regular, two inches broad, flat; petiole, stout, base forming triangle; stem, very thick, giving it a swollen appearance. In general habit this resembles an *Areca*, but is denser; the whole plant has a copper-green tint. It is one of the noblest Palms in cultivation, and when about six feet in height very useful for a central position. It has strong roots, and on that account requires a large pot.

H. VERSCHAFFELTHII (MAURITIUS).—Habit similar to that last-named, but slighter in all respects, with yellowish stripe in centre of petiole. A very elegant Palm, either for table decoration or for general purposes.

J. CROUCHER.

(To be continued.)

ZONAL PELARGONIUMS INDOORS.

I NOTICED in a recent number of *THE GARDEN* that Mr. Pearson advocates the cultivation of Zonal Pelargoniums for winter blooming. Will he kindly name a few varieties suitable for that purpose? I have upwards of fifty sorts at present, and have been unable to obtain good blooms at Christmas from more than three or four of them. The following keep my greenhouse gay from spring until autumn, but I am short of a few good sorts on which I could depend for winter blooms. My summer sorts are:—

Douglas Pearson.—A splendid variety; habit good, truss very fine dark crimson.

Lawrence Heywood.—This variety attracts attention before any other, on account of its novel colour and free blooming. It is a free grower, good in habit; colour, pinky magenta.

Othello.—Fine truss of deep crimson, good habit, and vigorous.

Duke of Devonshire.—A fine variety, with trusses of a splendid crimson colour, five inches across.

Wm. Thomson.—Fine truss and habit; colour crimson.

Thomas Speed.—Plum colour, extra fine truss. I saw it at Chatsworth, where they think highly of it on account of its being such an excellent bedder. It is a fine variety, either for indoor culture or for bedding.

Milton is another splendid variety; colour dark red, fine truss and habit.

Mrs. Mellows.—Good truss of dark crimson colour, fine for cutting for large bouquets.

Bayard.—A first-class bedding variety, but no one will hesitate to grow it for the conservatory after once seeing what it is capable of doing under glass.

Rev. John Woolley, Alfred (Pearson's), and E. J. Lowe.—All first-class varieties; the first bright crimson, the others rose-coloured; fine trusses of bloom, with excellent individual flowers.

Arthur Pearson.—Has fine trusses of magenta, is a good bloomer, and has a fine habit. I have seen it at Chatsworth.

Wm. Hill.—A splendid scarlet, and most dazzling; the petals overlap finely, but before the truss is half expanded they begin to fall, and I have never yet had an expanded truss of this kind. None of the other varieties do this, the first flowers holding until the truss is fully expanded before beginning to fall. I do not, therefore, recommend Wm. Hill for this reason.

If Mr. Pearson would only send out a white or bluish variety, with a truss of bloom something like Lawrence Heywood or Duke of Devon, shire, as good in growth and habit, and blooming as freely, the foregoing collection (for blooming from spring to autumn) would be complete.

THOS. LEVER, *Deodar, near Manchester.*

SAND AN UNSUSPECTED PLANT-KILLER.

IF Mr. Fish has such difficulties in procuring good sand (see p. 311), I should advise him to adopt my plan, which is to use none. All plants that like loamy soil are certainly better without any addition to the sand the loam may naturally contain; and, generally speaking, the best loam contains the least amount of sand. Mr. Fish admits that sand is chiefly used for mechanical reasons. Why, then, impoverish the soil with it, when similar mechanical results could be obtained in so many ways less objectionable? For some years past I have never mixed sand with loamy soil, and my plants have never refused to grow on that account; on the contrary, they grow faster, and the soil is not so quickly exhausted. There are many ways of spoiling good soil, and not the least of these is by mixing with it unnecessary ingredients. A soil naturally suited to a plant will last twice as long as the best of composts, and if a compost must be used, the simpler it is the better. For plants that like loamy soil—and seven eighths of the plants we grow belong to this class—if the only loam obtainable is too heavy, a little charcoal or charred soil mixed with it is very often all that is needed; if it is too light, a little clay, dried and pounded, will make it heavy enough; if it is both light and close (from the absence of fibre), both clay and charcoal may be sometimes added with advantage. With these three ingredients, a soil may be prepared mechanically suited for growing any plant that likes loam. Of stimulants I will say nothing here, except that less stimulants would be required if such substances as sand, mortar, coal ashes, and similar applications were kept out of the way, and the soil not put together so loosely that a few waterings wash out all its better qualities. It is surprising what may be done with common garden soil if sweetened with a little charred rubbish. No addition of sand to the natural soil is even necessary for striking cuttings of ordinary bedding plants; while for Azaleas, Ferns, Camellias, and many, probably most, others, it may also be dispensed with.

WM. TAYLOR, *Longhat.*

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Potting Agaves.—When visiting Mr. Peacock's unique collection of these plants the other day we could not help expressing some concern for the person who had to pot them. They are so variously and terribly armed that one would think a collection of them might be useful for affording hints in a bayonet or sword factory. When some of the many-leaved species form rosettes close to the ground, it becomes a puzzle to get at the plant, as the leaves are not such as may be bent about without injury. Mr. Croucher, however, gets over the potting difficulty easily. Whenever a species requires potting, it is not disrooted in the ordinary way, but cut right off at the collar. It is then placed on the top of a pot of well-prepared soil; and so quickly does it root into this, that Mr. Croucher assured us he had seen the roots issuing through the bottom of the pot six weeks from the time of decapitation and potting. The plan is as simple as it is excellent.

A Deadly Plant.—A few years ago there was in the Royal Botanic Gardens at Kew a specimen of probably the most poisonous plant ever introduced into England. It was the *Jatropha urens*, the properties of which are so noxious, that its possession is positively dangerous. The ex-curator of the gardens was one day reaching over it, when its fine bristly stings touched his wrist. The first sensation which he felt was a numbness and swelling of the lips; the action of the poison was on the heart, circulation was stopped, and he soon fell unconscious, the last thing he remembered being cries of "run for the doctor." Either the doctor was skilful, or the dose of poison injected not quite, though nearly enough; but afterwards the young gardener, in whose house the plant was placed, got it thrust into a corner, and would not come within arm's length of it. He watered the offender with a pot having an extremely long spout. In a short time, however, the plant disappeared altogether, and another specimen of the genus *Jatropha*, which was afterwards introduced, vanished in the like mysterious manner. It was presumed that the attendants were secretly determined that such plants should not be retained in the houses, to cause the possibility of an accident such as that which happened to their curator.

Culture of Neapolitan Violets.—Early in April, or as soon as the plants are out of bloom, if they are in a frame, lift them; but if they are in pots, shake them out, and divide them into single crowns, removing all runners, and choosing only the most healthy plants. In a well-prepared piece of rich ground, with an east aspect, plant them out nine inches apart, and press the soil firmly about the roots. After they begin to grow, loosen the soil frequently with a hoe, and in hot, dry weather syringe the plants with clean water in the afternoon. All runners should be removed as they appear. In the first week of September they should be lifted, and potted in six-inch pots, placed in a cool airy greenhouse or pit, or a bed may be sunk two feet in the ground, filled up with dung, treading it well, to prevent too violent a heat, and placing over it a foot thick of good rich soil, mixed with leaf mould. Then lift the plants carefully, preserving a good ball of earth to each; plant them

in rows rather closely, but do not allow them to touch each other. The foliage should be within two or three inches of the glass. After planting, give them a good soaking of water, and in October allow them the benefit of warm showers, by withdrawing the sashes. Give them air as often as there is a chance, removing the sashes altogether on mild days, and tilting them up at night. They should not be allowed to get frozen, as that would retard their blooming season.—ALPHA.

Alocasia metallica.—I have grown this for some time; but cannot get its beautiful leaves in such good condition as I could wish to see them. When should my plants be re-potted?—ALPHA.—[*Alocasia metallica* should be potted as soon as it shows signs of active growth, using a compost of two parts fibrous brown peat, one part old dry cow-dung, and one part fibrous loam, mixing through the whole a little charcoal, and using the compost in a rough state. After potting, place the plants in a bottom heat of 80°, and an atmospheric one of 65° by night, 75° by sun heat; maintain a nice moist atmosphere, and shade from bright sun. Give air very cautiously.]

PALMS.

THE religious aspect of the Palm tree dates from a period long anterior to Christianity. Its economic importance among Eastern nations gained for it a proportionate degree of esteem and veneration. It is one of the earliest types of the mystical "Tree of Life"; and a representation of it as such occurs upon an Egyptian sepulchral tablet at Berlin, which is certainly older than 1400 B.C. A traditional form of it constantly appears in Assyrian sculpture. Another, but a much less general, belief points to the Palm as the Tree of the Forbidden Fruit; but, according to a Mohammedan tradition, Dates were among the three things which Adam was permitted to take with him when expelled from the Garden of Eden. Both Mohammedans and Jews employed the Palm as a sacred symbol; thus Mohammed ordered his followers to honour it as the sister of their father, and as having been created in Paradise from the same earth from which Adam was made. It was one of the Hebrew types of a good man; and, in a wider sense, of man generally, having but one head, which cannot be replaced, and, if removed, is fatal to the growth of the tree; and branches, which, if cut off, find none to fill the same position. Figures of Palm trees, covered with gold, were prominent among the ornaments of Solomon's Temple. Among the Jews, too, the Palm was an emblem of victory; and thus it was that its branches were strewed along the path of Jesus on His triumphal entry into Jerusalem. From this time it may be considered to have taken its place in Christian symbolism; and thus the victory of the Christian martyr is typified by the Palm branch, and its use in religious processions, as commemorating the brief triumph of our Lord, became general. An extended use of this symbolism is that given by an old writer, who, speaking of Palm Sunday, says it is so called "for because the Palme betokeneth vitory, wherefore all Crysten people sholde bere Palme in processyon, in tokenaynge that he [our Lord] hath foughten with the fende our enemye, and hath the vycory of hym."

It was, however, naturally impossible, especially in remote times, that in the northern parts of Europe branches of any Palm could be obtained in sufficient quantity for use in the ceremonies of Palm Sunday. The substitution, therefore, of other branches for them was at once recognized as a necessity, and to some of these the German lines refer which have been thus translated:—

"In Rome, upon Palm Sunday,
They bear true Palms;
The cardinals bow reverently,
And sing old psalms.
Elsewhere, those psalms are sung
Beneath the Olive branches;
The holly bough supplies their place
Amid the avalanches;
More northern climes must be content
With the sad Willow."

Curiously enough, the two trees which most frequently do duty for the Palm—the Yew and the Box—are not mentioned here; but before speaking further of them, an incident in connection with the use of the "true Palms" at Rome may be referred to. The village of Bordighera, near Nice, has the privilege of supplying them, and is indebted for the honour to a naval officer who was present at the ceremony of raising into the position which it now occupies in front of St. Peter's,

the Egyptian obelisk which formerly adorned Nero's Circus. The Pope (Sixtus the Fifth) forbade anyone to speak during the raising of the obelisk, lest the workmen should be distracted from their task. In the midst of the silence, the officer, observing the danger that the cords might take fire from the excessive friction, shouted out, "Wet the ropes." He was brought before the Pope, who showed his appreciation of his interference by asking him to choose his reward; and he desired that a monopoly of the Palms for the Vatican might be granted to him and his successors.

The Box is used very generally in France, where it is called "*le bois béni*." The demand for it is so great, that in Paris alone the sale in the four days preceding Palm Sunday realizes about a hundred thousand francs. The principal supplies are obtained from Brittany and Auvergne, but other districts also contribute their quota. It would appear that in England Box was similarly employed in former times, as there is an entry in "Domesday Boke" of a person holding land on payment of a bundle of Box twigs on Palm Sunday. Many virtues were traditionally attributed to the "palm," and in France the "blessed Box," which has been given by the priest, is kept in the house throughout the year. It is supposed to have the power of driving away evil spirits, and a sprig is placed at the head of the bed, and on the cradle of a new-born child. On the death of a member of the family, a "palm" is placed upon the body; and this is possibly the origin of the north of England custom of throwing sprigs of Box into the grave after a funeral. It seems to have been employed for temporal as well as spiritual benefit, and not always with the happiest result, if we are to believe the accounts given by Newton in his "Herball to the Bible." He says:—"I once knew a foolish cock-brained priest which ministered unto a certaine young man the Ashes of Boxe, being forsooth hallowed on Palme Sunday; . . . which woorthy, worshipfull medicine (as he persuaded the standers by) had vertue to drive away the ague, and to kill the wormes. Well, it so fell out that the ague indeed was driven away; but, God knoweth, with the death of the poore young man."

Nowadays, the Yew is most generally employed in England as "palm," and is distributed as such in the London Roman Catholic Churches. Its use dates back to the beginning of the sixteenth century, or earlier. It has been suggested that the Yew trees which we so commonly see in churchyards may have been planted for the convenience of the Palm-Sunday observances; but this is very doubtful, especially as many of them are probably of older date than the introduction of the ceremony into England. In the Jura, Beech twigs are employed; and in Provence, and other parts of the south of France, Myrtle, Bay, and Olive are used.

The use of the Willow, which is very old among ourselves, seems to be almost confined to Britain. To it, as to the Box, its sacred employment was supposed to give especial virtues. Thus Barnaby Googe speaks of those who—

"Willow branches hallow, that they palmes do use to call.
This done, they verily beleve the tempest nor the storme
Can neyther hurt themselves, nor yet their cattel, nor their corne."

Thus also in Germany "palms" laid crosswise insure safety from lightning and tempest. In the neighbourhood of London this is certainly the favoured representative of the Palm, and, on the proper day, many of the poorest people have a spray of Willow in their button-hole. It is also frequently placed in the porches of churches, and is exposed for sale in Covent Garden Market. So generally is it known as "palm," that even persons of average education believe it to have some affinity with the rightful owner of the name, and are surprised on being told that it is merely a Willow.

It would be impossible to enumerate all the customs and traditions attendant upon these various "palms," and still more so, to enter here upon an inquiry into the tree-worship of old and bygone days, which, in all probability, lies at the root of the matter. But, enough has been said to show that such traditions still linger among us, in spite of the prosaic times in which we live; and to show, too, the necessity of collecting and recording them ere they disappear before the advancing "march of intellect" and education.

March 12, 1872.

JAMES BRITTEN, F.L.S.

THE ARBORETUM.

THE WEEPING WILLOW.

MANY families of trees in which but few of the species exhibit any kind of attraction which would warrant their being planted as ornamental objects may yet, in the features of a single member of the tribe, assume a growth and habit so distinctive as to mark it out at a glance as a most valuable and beautiful addition to the trees which we usually employ for landscape effects, either in wild scenery or in the garden. This applies more particularly to the Willow family, one of the most extensive known, which yet only possesses a few species which at once arrest attention on account of their singularly graceful aspect and elegantly drooping growth.

The Weeping Willow appeals at once to the eye as a thing of beauty, and is, without hesitation, accepted as the unrivalled queen of weeping trees. It has received the specific name *babylonica* from its supposed habitat on the banks of the Euphrates, near the site of the ancient Babylon. Recent researches, however, seem to indicate that it is of Chinese origin. Many species of *Salix* form important trees in regard to size, but they cannot be compared with the Weeping Willow either for gracefulness or general beauty. Others scarcely exceed the dimensions of shrubs—and several kinds are of such miniature growth as scarcely to exceed that of herbaceous plants. The smaller forms are found among the last specimens of ligneous growth, at great heights in the alpine ranges of Europe, where their stems creep along under the surface

of the scant soil, in search of protection as well as nourishment, only an inch or two of the plant venturing into the keen, freezing air. The family is so widely distributed that a few of its members are found even in the Arctic regions, a dwarf creeping species being abundant in Melville Island.

By far the greater number of the *Salix* family are European. Koch estimates the species belonging to extra European countries at not more than seventeen, among which are the *Salix babylonica*, which is found, not only on the Euphrates, but on the shores of the Persian Gulf, in Asia Minor, in China, in Japan, and in the north of Africa. The period of its introduction into Europe is uncertain. Rauwenwolf, in the itinerary of his pilgrimage to the Holy Land, towards the close of the fifteenth century, is admitted to have been the first to give an unmistakable description of the tree; but probably, Tournefort was the first to bring plants of it to Europe,

having discovered it during his botanical researches in the Levant in the latter half of the seventeenth century. There are several conflicting accounts concerning its first introduction to the British Islands, some giving the credit to Mr. Vernon, an English merchant at Aleppo, who, as recently as 1730, sent it to his seat, Twickenham Park, where, it is on record, it was seen growing by Peter Colinson in 1748. In the "*Hortus Kewensis*," however, the date of its introduction is unhesitatingly stated as 1692. Another account gives Pope the credit of having planted the first Weeping Willow ever seen in England. It is well known that in the latter half of the last century, a noble Weeping Willow, of mature growth, existed in the garden of the house still called "Pope's Villa," at Twickenham, the retreat in which the poet passed the later years of his life. The subsequent owner of the villa, finding the visits of persons requesting to see Pope's favourite tree an

inconvenience, cut it down; and in the *St. James's Chronicle*, of 1801, the story of the destroyed tree is thus related:—"Being with Lady Suffolk at the time that she received a package of plants from Turkey, Pope noticed that one of the withes with which it was bound was still green. He planted it in his garden, where it struck root readily, and, as it developed its graceful growth, became his favourite tree."

Either the tree must have been known in Shakespeare's time, or else the common brookside Willow, whose lower branches are often wet and dripping, must have been generally accepted as an emblem of sorrow before the weeping species, with its more beautiful characteristics, displaced it as a symbol. If this were not so, we should not find Shakespeare speaking of the Willow in connection with the grief of Ophelia,

nor should we have had the exquisite passage in the "Midsummer Night's Dream,"—

"In such a night
Stood Dido, with a willow in her hand,
Upon the wild sea bank, and waved her love
To come again to Carthage."

The Weeping Willow of the Euphrates is also alluded to most unmistakably in the Psalms, as pointed out by Sir Thomas Dick Lauder, in the passage relating to the captivity of the Jews: "By the waters of Babylon we sat down and wept"; and it is further related that they hung their harps upon the *willow trees* that were there. It has often occurred to me that the drooping branches of the Babylonian Willow, falling towards earth or water in a shower of tender grass-green foliage, explain very naturally the meaning of the "hanging gardens of Babylon," mentioned by ancient writers.



The Weeping Willow (*Salix babylonica*).

Some have imagined the existence of garden terraces, suspended one above another, from the level of the river upwards, to be a sufficient explanation. Others have endeavoured to show that there were gardens, after their kind, on the flat roofs of the houses, as is not uncommon in the East, and that such gardens seen by the soft light of an eastern night, with human figures moving among the shrubs, may have seemed to an ardent Oriental imagination like gardens suspended in the air. But the supposition that the chief gardens of the great city followed the course of the river, and that the most conspicuous objects were most probably glorious Willows hanging down their streaming branchlets of green till they swept the "waters of Babylon"—those of the Euphrates—seems a more rational explanation of the vexed question as to the meaning of "hanging gardens."

The Chinese, it may well be supposed, were not uninfluenced by the peculiar beauty of the drooping Willow; and doubtless they have their legends concerning its origin, though we are unacquainted with them. At any rate, we know for certain that their artists perceived its beauty; for we have endless proofs, not only in our old blue and white "swallow pattern" plates and dishes, copied from a Chinese model, but in a multitude of their decorative designs of all kinds, in which it is continually introduced as a conspicuous feature. That they used it as a symbol of grief and weeping in their cemeteries is plainly shown by a drawing made by Newhof, at the village of Tonnau, while he was attached to the Dutch Embassy at Peking, in 1655; while other examples of its use in that character are shown in the views of the "Vale of Tombs," published in Dobell's "Travels in China." In the North of Africa it is also common as a symbol of sorrow in the native cemeteries near Algiers.

The climate of England appears admirably suited to the Weeping Willow. The noble examples of it which ornament the banks of the Thames, are as finely grown as any ever described in its native habitats; and they are also far more numerous than on the banks of the Euphrates, where they are becoming rare. Many of the specimens growing near the course of the Thames have attained from fifty to sixty feet in height, and it is said that some, in the broadest extension of the branches, measure fully eighty feet across. One of the largest Weeping Willows in England is that at Finborough Hall, Suffolk, now about a century old, which is near seventy feet in height, and still in full vigour. That the climate of Scotland is not too cold for it, is proved by the noble tree at Taymouth, in Perthshire, described by Loudon, which, when seen by him, was seventy feet high, though it had only then been planted thirty-six years.

With regard to the use of this Willow in plantations, or as a single ornamental tree, Loudon observes: "The Weeping Willow spoils a landscape when injudiciously planted"; that it is not adapted for sublime effect, but better suited to the character of a pretty sylvan glade, with water; or in a villa garden, drooping over a picturesque rustic bridge. He would not introduce it in close connection with majestic ruins; such offices, he remarks, must be resigned by it, in favour of "the oak, whose dignity can fitly support such contiguity." He is doubtless entirely right in the broad principle; a plantation of Weeping Willows, for instance, would entirely destroy the effects of the glorious ravine of the Tête Noire, and of any scene of that sublime and majestic character. But in the grounds of ordinary residences, at well selected points near our park lakes, and in a hundred other situations connected with home scenery and the general characteristics of landscape gardening, it forms an element of beauty such as no other tree could supply. Even in winter its delicately drooping branchlets form a charming contrast to the more sturdy ramifications of erect-growing trees, and when they are feathered with hoar frost, the effect is striking in the extreme, drooping as gracefully as the wings of a bird of Paradise.

H. N. H.

Stone Picking.—In Mexico the custom is, when a duel has been fought, to erect a cross on the spot, and everyone that passes by throws a stone at the cross. Some ingenious Yankees have taken advantage of this custom to clear stony land, by erecting crosses where no duel has been fought, and in that way have succeeded in getting stone picking done for nothing.

THE MONTEREY CYPRESS AS A HEDGE PLANT.

THE value of this evergreen Cypress (*C. macrocarpa*) for making hedgerows cannot be well known, or we should oftener see it brought into use for that purpose. For many years yew was the only tree used for dwarf hedges. Latterly the Siberian variety of *Arborvitæ* has been employed in many places for wind screens, and for divisions of plots in gardens. But for such purposes nothing that I have ever seen equals the Monterey Cypress. Plants two years old are usually from two to four feet high, and this is the best size to plant for a hedgerow. They should be planted two feet apart, and as they grow the tips of the laterals should be trimmed off periodically on each side of the intended hedge. If this is done regularly, the hedge will soon form thickly and evenly to any height that may be wished from four feet to fourteen feet high; but if this side pruning is not commenced early, the trees will not always feather to the ground, and will thus look bare and brown below. Fine specimens of hedgerows of this Cypress may be seen in Mr. Scott's nurseries, at Chichester. One row in particular is very handsome; it was planted about eight years ago (from seed sent from California in 1862), and is now fourteen feet high and nearly three feet thick. From the pruning having, however, been begun at too late a period, the hedge is thicker, and not so evenly furnished as it might have been; nevertheless it is an interesting example for reference, showing what to do and what to avoid. Trees from the same batch of seed (consequently ten years old), planted singly in the same grounds, are now twenty-four feet high, and feathered to the ground. Compared with yew hedgerows of the same age, those of the Monterey Cypress are more than twice the height, and of a lively cheerful green, instead of a dull, gloomy shade of that colour. As is well known, there are several varieties often produced from the same lot of seed, some seedlings showing a closer habit of growth than others, and these of course should be selected for hedge-making. I do not remember to have seen a plant of it in fruit before in the south-eastern counties, but there is one in Mr. Scott's grounds not more than twelve feet high, which has on it a quantity of fine fruits, one of which upon being cut open was found to be full of good seeds, though not yet ripe. This Cypress, I may add, is not liable to be injured by rabbits.

W. T.

THE MISTLETOE OF THE ANCIENTS.

It is a little singular, that in an age when botanical research has spread such rich and varied treasures before us, and when a longing for everything new and curious in the plant way has become the fashion, that so interesting a plant as the mistletoe of the ancients (*Loranthus europæus*) should still remain a stranger to our arboreta and pleasure grounds, especially when we consider the facility with which it could be transferred from the oak forests of Austria, Hungary, and Italy to those of Britain.

The *Loranthus europæus* is generally considered by writers to be the mistletoe of the ancients, on account of its being only found on the oak in a natural state; while our mistletoe (*Viscum album*) is rarely to be seen growing on that kind of tree. The mistletoe known to the Greeks and Romans appears always to have been found plentiful on the oak, and consequently must be the *Loranthus*; while our mistletoe (*Viscum album*) is scarce in Greece and Italy, and very rarely found growing on the oak in any part of Europe. Dr. Sibthorp says that the oaks on the Arcadian mountains in Greece presented him with abundance of the true ancient mistletoe (*Loranthus europæus*), whilst the mistletoe of England (*Viscum album*) was only seen growing on the silver fir, and there not plentiful. In Holstein and some other parts of Germany, even at the present day, the peasants call the *Loranthus* the "spectre's wand," from the supposition that holding a branch of it in the hand will not only enable a man to see ghosts, but force them to speak to him.

The *Loranthus europæus* of Linnæus is a hardy parasitical shrub, found plentifully in the oak forests of Austria, Hungary, Greece, Italy, and in parts of Germany, where it forms a glabrous, much-branched evergreen, two or three feet high, with a habit of growth very much resembling that of our common mistletoe. The leaves are spirally arranged in opposite pairs, leathery, and considerably longer and broader than those of the *Viscum album*; the flowers are produced in May in simple terminal racemes, and mostly in sixes, dioecious. The petals are linear, reflexed, in sixes, and yellowish green. The berries are oval, one-celled and one-seeded, pale yellow.

about the size of, or a little larger than those of *Viscum album*, and ripe in December.

The *Loranthus europæus*, like the mistletoe, possesses the remarkable quality of having the power of rooting on the wood of the plant at whose expense it lives. The roots of the *Loranthus*, however, in all cases, only penetrate the inner bark and soft wood, where the sap is in most abundance; and as the tree on which it grows advances in growth, the roots of the parasite become embedded in the solid wood, each fresh layer of wood covering up, as it were, the roots of the parasite, and at the same time fixing the plant firmer on its foster parent; hence has arisen the opinion entertained by some writers, that the *Loranthus* not only roots into the bark, but also into the solid wood of the tree upon which it grows. The habit of our common mistletoe gives a very good idea of how the *Loranthus europæus* grows and is propagated in a state of nature; for, like our mistletoe, it is increased by the berries being by some means or other made to adhere to the bark of a living branch; and the common agency by which this is effected is supposed to be birds. The seeds of the *Loranthus*, however, in a state of nature only require to be placed externally on the young smooth bark of an oak; but if artificially treated, they may be put into a cleft, or in a small hole bored in the bark, which seems to have been the system first adopted by Professor von Martius.

The *Loranthus* might easily be introduced into Britain by procuring a box of the fresh berries from any of the oak forests of Austria, Hungary, or Italy, any time from the middle of December to the beginning of March; afterwards treating them as we would those of common mistletoe—selecting of course a vigorous young oak for their foster-mother; for the principal thing requisite to ensure success is that the bark on which the seeds are placed be young, smooth, and not much indurated, otherwise the seeds will not root into it. Failure, however, will also arise from the seeds not being fecundated; but this may in a great measure be guarded against by collecting the berries from different plants in the Austrian forests.—George Gordon, A.L.S., in "Field."

SEASIDE PLANTING.

I AM a squatter on the cliff at Westgate-on-Sea, midway between Birchington and Margate, on the northern shore of Thanet. There, between the London, Chatham, and Dover Railway line and the sea, is an undulating plain, rising and falling at short distances, about half a mile in breadth and seven miles in length. There is a kind of crop that flourishes wonderfully on that small belt of land, I mean the blooming, bellowing scions of the human race; together with clover, cinquefoil, and weeds, especially the latter; but we have few shrubs and no trees. Now it occurs to me that the reason why we have no trees is that none have been planted; and if the vigour of the native population of weeds and "pusley" may be taken as a proof of the richness and capabilities of the soil, trees, if they had ever been planted, would have had no reason to complain. Trees can, without doubt, get a good root-hold; but the north-east and north-westerly winds are cruelly cold, and take no trouble to disguise the fact. Now, I have just been "planting," under the advice of a local descendant of Adam; and we have been lavish in the matter of *Eunonymus*, Laurels, Laurustinus, Hollies, Bays, Snow-berries, &c., not forgetting our old and tried friend the Tamarisk. Our ambition has also led us on to apples and pears, currants and gooseberries, elms, ashes, poplars, and thorns, lilacs, laburnums, Berberies, and Syringas; and some local experience has caused us to add larches and the Austrian Pine. The word that touches our hearts most responsively is "hardy." We are a hardy race, and if you send us your children we make them hardy, and that as a matter of course. What with oxygen and ozone, both of which we import direct from the North Pole and German Ocean, our appetites are prodigious, and we renovate and strengthen accordingly.

So much with regard to ourselves, and by way of introduction, but now we approach THE GARDEN as petitioners. Mr. George Gordon appears to be the man especially made for us; and may we ask of him the especial favour of a few lines bearing on our interests? I already see the *Halimolobos argenteum* stretching out its silvery fingers into our lovely sky, as if it would entangle the cheery larks that have learnt to sing a perpetual hymn for our enjoyment; while the dear bright *Eunonymus americanus* makes us already feel warm in its glowing fires, chastens our chilly winds, and defies our hyperborean blasts. The dwarf forms of the shrub would be the

most likely to suit us best. But will Mr. Gordon be so kind as to tell us where we can get them? Will he help us to raise a garden forest along our beautiful cliff, to prove that heaven and earth are superior in strength to the intermediate forces that try to thwart our well-meant intentions?

To make gardens where gardens grow spontaneously were no remarkable phenomenon; but to raise a garden where nature seems to say "no," whether coyly or truly I am anxious to prove, were indeed worthy of the nascent and permanent celebrity of THE GARDEN. MARSH BAY.

HARDY TREES AND SHRUBS.

THE LARGE-FLOWERED ROSE ACACIA (*ROBINIA MACROPHYLLA*.)

THIS is a magnificent deciduous, rambling, loose-growing shrub, which grows from six to ten feet high in any good garden soil, and flowers profusely in the beginning of June, but keeps on blooming more or less till October. It is a native of the Southern States of North America, where it grows on mountains, and is quite hardy. It was first introduced in 1812. It requires to be trained, either to open trellis-work, or to be securely supported by stakes, to which the principal branches should be annually fastened; otherwise its brittle boughs are liable to be broken and disfigured by wind, when clothed with foliage in the summer and autumn.

The leaves are comparatively large, alternate, pinnate, deep green, smooth and deciduous, with ovate-roundish leaflets, mostly in eight pairs and an odd or terminal one. Branchlets quite smooth, robust, tortuous, and of a purplish-brown colour. Flowers large, pea-shaped, deep rose, scentless, set several together on axillary nodding loose racemes. Fruit, a flattened pod, nearly stalkless, many seeded, and brown when ripe in September. This Acacia is increased by means of seeds, or by grafting it on the common Robinia. It deserves a place in every pleasure ground, however limited, and if the points of the principal shoots are pinched off when they are about half grown, say about the end of June, the plant will be less liable to be broken by wind; the operation also tends to induce a second crop of flowers in the autumn. Its synonyms are *Robinia grandiflora* and *rosea*. G. Gordon, A.L.S.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Trees and Shrubs on the Chalk.—Would you or any of your readers tell me what ornamental trees and shrubs I may venture to plant on the chalk?—SOUTH DOWS.—"Peverell," in *Field*, finds the following to succeed well:—

DECIDUOUS.		EVERGREENS.	
<i>Ailanthus glandulosa</i>		<i>Tilia europæa</i> , lime	
<i>Amelanchier botryapium</i> , Snowy		<i>Viburnum lantana</i> , wayfaring-tree	
" " " " " " "		" " " " " " "	
" " " " " " "		" " " " " " "	
<i>Racolaria halimifolia</i> , groundsel-tree		" " " " " " "	
<i>Betula alba</i> , common birch		" " " " " " "	
<i>Carpinus betulus</i> , hornbeam		" " " " " " "	
<i>Cornus mascula</i> , cornel tree		" " " " " " "	
<i>Corylus avellana</i> , common hazel		" " " " " " "	
" " " " " " "		" " " " " " "	
" " " " " " "		" " " " " " "	
<i>Crataegus oxyacantha</i> , hawthorn, and all its varieties		" " " " " " "	
<i>Cytisus laburnum</i> and alpinus, common and Scotch laburnum		" " " " " " "	
<i>Deutzia gracilis</i>		" " " " " " "	
<i>Eunonymus europæus</i> , common spindle tree		" " " " " " "	
<i>Fraxinus excelsior</i> , common ash		" " " " " " "	
<i>Hibiscus syriacus</i>		" " " " " " "	
<i>Juglans regia</i> , walnut		" " " " " " "	
<i>Larix europæa</i> , larch		" " " " " " "	
<i>Loxocera</i> , horsey suckles (all varieties)		" " " " " " "	
<i>Lavandula barbarum</i> , tea plant		" " " " " " "	
<i>Philadelphus coronatus</i> , Syringa		" " " " " " "	
<i>Populus alba</i> , alble tree		" " " " " " "	
" " " " " " "		" " " " " " "	
" " " " " " "		" " " " " " "	
" " " " " " "		" " " " " " "	
<i>Potentilla fruticulosa</i>		" " " " " " "	
<i>Pyrus Cochlearia</i> , quince		" " " " " " "	
" " " " " " "		" " " " " " "	
" " " " " " "		" " " " " " "	
" " " " " " "		" " " " " " "	
<i>Rhamnus cathartica</i> , buckthorn		" " " " " " "	
<i>Ribes sanguineum</i> , flowered currant		" " " " " " "	
<i>Sambucus racemosa</i> , elder		" " " " " " "	
<i>Spartium junceum</i> , Spanish Broom		" " " " " " "	
<i>Spiræa maritima</i>		" " " " " " "	
<i>Staphylea trifoliata</i> , bladder nut		" " " " " " "	
<i>Symphoricarpos racemosa</i> , snow-berry		" " " " " " "	
<i>Syringa vulgaris</i> , common lilac		" " " " " " "	
" " " " " " "		" " " " " " "	

Removal of Trees at End of Tenancy.—Does any law exist between landlord and tenant as to the removal of trees planted by a tenant where no agreement had been made between them previously to the tenant's leaving? or is it not usual for the landlord to pay the price of trees and shrubs at the time when planted?—Jesse Wood.—[The landlord, we believe, can claim them without paying for them, except where the tenant is a nurseryman, and the things planted are part of his stock-in-trade.]

Photinia serrulata.—This bold evergreen shrub is not so often planted as it deserves to be. Its rosy-chocolate young leaves, now four or five inches long, clustered together at the apex of every branch, form a pleasing contrast to the dark green foliage of the previous year, which hangs just below the newly-formed leaves. Planted amongst other evergreens, it shows out much more advantageously than when placed by itself, since, from its growth being terminal rather than lateral, its "bare legs" (having not even a fig-leaved to cover them) require to be hidden by dwarfer shrubs in front. It is, I find, increased by grafting on quince stocks. It is said to be one of the most valuable seaside shrubs we possess; and I am told that there is at Hayling Island, near Portsmouth, a fine bush of it, at least forty feet in diameter, in the form of a cone, growing within two hundred yards of the sea, the size and vigour of which prove that neither strong winds nor salt spray have the slightest prejudicial effect on it.

W. T.

THE LIBRARY.

FOREST LIFE IN ACADIE.*

It is not often one meets with a sportsman's book which shows the author to take much interest in anything but the immediate objects of his search. Very rare, indeed, is the photographic eye, with the requisite power of recording its impressions, possessed by the authors of such books as that before us. Of the possession of these by Captain Hardy we have excellent evidence in "Forest Life in Acadie." The author seems to us to have a better faculty of observation and power of description than many men widely known to fame as writers on natural history. Take the following account of that graceful and remarkable tree the Hemlock Spruce—too much neglected in these islands:—

"The Hemlock, or Hemlock Spruce (*Abies canadensis* of Michaux), is a common tree in the woodlands of Acadie, affecting moist mossy slopes in the neighbourhood of lakes, though generally mixing with other evergreens in all situations. It is found, however, of largest growth (eighty feet), and growing in large groves, principally in the former localities, where it vies with the white pine in its solid proportions. The deeply grained columnar trunk throws off its first branches some fifty feet above the ground, and the light feathery foliage clings round the summit of an old tree in dense masses, from which protrude the bare twisted limbs which abruptly terminate the column. Perched high up in its branches may be often seen in winter the sluggish porcupine, whose presence aloft is first detected by the keen eye of the Indian through the scratches made by its claws on the trunk in ascending its favourite tree to feed on the bark and leaves of the younger shoots.

"Large groves of hemlock growing on woodland slopes present a noble appearance; their tall columns never bend before the gale. There is a general absence of undergrowth, thus affording long vistas through the shady grove of giants; and the softened light invests the interior of these vast forest cathedrals with an air of solemn mystery, whilst the even spread of their mossy carpet affords appreciable relief to the footsore hunter. The human voice sounds as if confined within spacious and lofty halls.

"Hemlock bark, possessing highly astringent properties, is much used in America for tanning purposes, almost entirely superseding that of the oak. Its surface is very rough with deep grooves between the scales. Of a light pearly grey outside, it shows a madder brown tint when chipped. The sojourner in the woods seeks the dry and easily detached bark which clings to an old dead hemlock as a great auxiliary to his stock of fuel for the camp fire; it burns readily and long, emitting an intense heat, and so fond are the old Indians of sitting round a small conical pile of the ignited bark in their wigwags, that it bears in their language the sobriquet of 'the old Grannie.' The hemlock, as a shrub, is perhaps the most ornamental of all the North American evergreens. It has none of that tight, stiff, old-fashioned appearance so generally seen in other spruces: the

graceful foliage droops loosely and irregularly, hiding the stem, and, when each spray is tipped with the new season's shoot of the brightest sea-green imaginable, the appearance is very beautiful. The tree has a wide range in the coniferous woodlands of North America, extending from the Hudson's Bay territory to the mountains of Georgia."

More striking still—and as we can testify from personal experience, true as life itself—is the sketch of an American forest:—

"On entering the woods, the first feature which naturally strikes us is the continual occurrence of dense copses of young trees, where a partial clearing has afforded a chance to the profusely sown germs to spring up and perpetuate the ascendancy of vegetation, though of course in the struggle for existence, but few of these would live to assert themselves as forest trees. Unhealthy situations, such as cold swamps, are marked by the utmost confusion. Everywhere, and at every variety of angle, trees lean and creak against their comrades, drawing a few more years of existence through their support. The foot is being perpetually lifted to stride over dead stems, sometimes so intricately interwoven that the traveller becomes fairly pounded for the nonce. This tangled appearance, however, is an attribute of the spruce woods; there is a much more orderly arrangement under the hemlocks. These grand old trees seem to bury their dead decently, and long hillocks in the mossy carpet alone mark their ancestor's graves, which are generally further adorned by the evergreen tresses of the creeping partridge-berry, or the still more delicate festoons of the capillaire. The busy occupation of all available space in the American forest by a great variety of shrubs and herbaceous plants, constitutes one of its principal charms—the multitudes of blossoms and delicate verdure arising from the sea of moss to greet our eyes in spring, little maple or birch seedlings starting up from prostrate trunks or crannies of rock boulders, with wood violets, and a host of the spring flora. The latter, otherwise rough and shapeless objects, are thus invested with a most pleasing appearance—transformed into the natural flower vases of the woods. The abundance of the fern tribe, again, lends much grace to the woodland scenery. In the swamp the cinnamon fern, *Osmunda cinnamomea*, with *O. interrupta*, attain a luxuriant growth; and the forest brook is often almost concealed by rank bushes of royal fern (*O. regalis*). Rocks in woods are always topped with polypodium, whilst the delicate fronds of the oak fern hang from their sides."

We have rarely enjoyed a book more; and hope that circumstances may permit Captain Hardy to again use his pen to so gracefully sketch for us trees and forests new. Such a writer is worth a dozen of mere echoers of technicalities, who frequently seem divested of all feeling or high intelligence on the subjects on which they write.

The Chandos Classics. (London: Warne & Co.)—A shilling edition of our great writers, each volume well printed on good paper, and in clear readable type. Shakespeare or Byron for a shilling has hitherto been considered remarkable, even though presented in the smallest type, and on the worst paper, but each volume of the Chandos series is really worthy of binding. The "Chandos Classics" are, in fact, the best product of cheap publication we have yet seen, and specially merit the attention of gardeners and others whose means will not allow them to purchase costly editions of our greatest authors. The series comprises up to the present time the works of Moore, Byron, Burns, Longfellow, Scott, and "The Arabian Nights," each complete in one volume.

ENGLISH FOOTPATHS.

AND there are other simple footpaths, which I remember loitering through day after day, in the rural districts of England, with a sense of enjoyment that never belonged to saunterings in the alleys of Versailles. A man does not know England, or English landscape, or English country feeling, until he has broken away from railways, from cities, from towns, and clambered over stiles, and lost himself in the fields.

Talk of Chatsworth, and Blenheim, and Eaton Hall! Does a man know the pleasure of healthy digestion by eating whip-syllabub? Did Turner go to Belvoir Castle park for the landscapes which link us to God's earth? What a joy and a delight in those field footpaths of England! Not the paths of owners only; not cautiously gravelled walks; but all men's paths, where any wayfarer may go; worn smooth by poor feet and rich feet, idle feet and working feet; open across the fields from time immemorial; God's paths for his people which no man may shut; winding—coiling over stiles—leaping or stepping-stones through brooks—with curves more graceful than Hogarth's—hieroglyphics of the Great Master written on the land which, being interpreted, say—Love one another.—*Ik. Marvel.*

* "Forest Life in Acadie. Sketches of Sport and Natural History in the Lower Provinces of the Canadian Dominion." By Captain Campbell Hardy, R.A. London: Chapman & Hall.

THE FLOWER GARDEN.



HARDY CLEMATISES.

ALLOW me to say a few words in praise of these beautiful plants, which are so remarkably effective for decorative purposes in general. It is, however, more particularly of their adaptability for parterre embellishment, or association with plants of picturesque aspect, that I would now speak. When grown in masses they flower profusely for months, producing crimson and purple tints unequalled by any other class of bedding plant.

To grow Clematises successfully, so as to insure continuity of bloom, we must promote a vigorous growth, and the ground should be well drained, if at all wet; it should also be deeply wrought, and rendered friable; and rotten manure and leaf-mould should be freely added, raising the beds above the ground level, rounding them neatly off towards the centre, and planting about three feet apart. This is a good time to put out plants from pots, as they seldom receive any check if planted now. To insure a good effect the first season, it is important to procure thoroughly-established plants, as disappointment often accrues from planting weakly plants; and should it be necessary to plant between the Clematises other plants to cover the ground the first season, Verbenas are best for that purpose. Timely attention to training is necessary; if that is not attended to, Clematises soon become so tangled that it is difficult to separate them.

Propagation is readily effected by means of cuttings at any time during the spring months, when cuttings may be taken about three inches in length and struck in heat under a bell glass. Propagated in this manner, I find them to do equally well as grafted plants. GEO. WESTLAND, Willey Court.

EARLY HARDY FLOWERS.

THE following list of hardy plants that have flowered here during the month of February may perhaps interest some of your readers, and perhaps induce them to send you similar lists. —

<i>Jasminum nudiflorum</i>	<i>Cyclotia japonica</i>	<i>Cyclamen Coum</i>
<i>Forsythia suspensa</i>	<i>Lamium flexuosum</i>	<i>C. vernum</i>
<i>F. viridissima</i>	<i>Borago orientalis</i>	<i>Primula veris</i> , garden vars.
<i>Galanthus nivalis</i> , single and double	<i>Pulmonaria officinalis</i>	<i>P. marginata</i>
<i>G. plicatus</i>	<i>P. o. alba</i>	<i>P. holvetica</i>
<i>Rhododendron atrovirens</i>	<i>Erica herbacea</i>	<i>Arabis blepharophylla</i>
<i>Hepatica triloba</i> , white	<i>E. colandrea</i>	<i>Scilla sibirica</i>
<i>H. l.</i> single & double, blue	<i>V. minor</i> , blue and white	<i>S. bifolia</i>
<i>H. l.</i> ditto, red	<i>Ulex europaeus</i>	<i>S. nivalis</i>
<i>Crocus susianus</i>	<i>Garya elliptica</i>	<i>Orobanchis vernus</i>
<i>C. lageneiphorus</i>	<i>Cheranthus Cheiri</i>	<i>O. alpinus</i>
<i>C. imperati</i>	<i>C. double yellow</i>	<i>O. cyaneus</i>
<i>C. luteus</i>	<i>C. Boconii</i>	<i>Arabis lucida</i>
<i>C. l. stratus</i>	<i>Daphne pontica</i>	<i>A. alba</i>
<i>C. biflorus</i>	<i>D. Mezereum</i>	<i>Mandragora officinalis</i>
<i>C. b. Parkinsoni</i>	<i>D. indica rubra</i>	<i>Calycanthus praecox</i>
<i>C. Sieberi</i>	<i>Ficaria alba</i>	<i>Potentilla alba</i>
<i>C. vernus</i> , in var.	<i>Helleborus orientalis</i>	<i>Soldanella alpina</i>
<i>Mahonia japonica</i>	<i>Helleborus niger</i>	<i>Sternbergia lutea</i>
<i>M. Aquifolium</i>	<i>H. n. major</i>	<i>Anemone Hudsoniana</i>
<i>Aubrietia deltoidea</i>	<i>H. dumetorum</i>	<i>A. blanda</i>
<i>A. alpina</i>	<i>H. kamtschkatensis (?)</i>	<i>Sisyrinchium grandiflorum</i>
<i>A. gravea</i>	<i>H. antiporum</i>	<i>Saxifraga oppositifolia</i>
<i>A. aureo reticulata</i>	<i>H. orientalis</i>	<i>S. o. alba</i>
<i>Viola canina</i> , white & blue	<i>H. atrovirens</i>	<i>S. ciliata</i>
<i>V. Czar</i>	<i>H. fortis</i>	<i>S. orientalis</i>
<i>Erythronium Dens canis</i> , white and purple	<i>Eranthis hyemalis</i>	<i>Petasites alba</i>
<i>Diondia Epipactis</i>	<i>Narcissus pseudo-Narcissus</i>	<i>Onophodites verna</i>
<i>Scopolia carniolica</i>	<i>N. p.-N. pleno</i>	<i>Kerria japonica pleno</i>
<i>Tussilago fragrans</i>	<i>N. minor</i>	<i>Dentaria digitata</i>
<i>L. ucajuri verna</i>	<i>N. maximus</i>	<i>Draba tomentosa</i>
<i>L. pulchellum</i>	<i>N. white polyanthus</i>	<i>Corydalis cava alba</i>
<i>Lonicera fragrantissima</i>	<i>Iris reticulata</i>	<i>Schiverekia podolica</i>
<i>Viburnum Tinus</i>	<i>I. stylata</i>	<i>Carex japonica</i> , var.
		<i>Aprioc</i>

Bitton Rectory, Gloucestershire.

H. N. ELLACOMBE.

[We shall be greatly obliged if other readers will add to this most interesting list of very early hardy flowers.]

THE FERN SUMACH.

(RHUS GLABRA LACINIATA.)

THIS variety of the smooth or scarlet Sumach is a small shrub with compound leaves, growing from four to seven feet high, a native of North America, with finely-cut and elegant leaves. These leaves combine the beauty of those of the finest *Grevillea* with that of a fern frond, while the youngest and unfolding leaves remind one of the aspect of a graceful umbelliferous plant in spring. The variety observable in the shape, size; and aspect of the foliage makes the plant charming to look upon, while the midribs of the fully-grown leaves are red, and in autumn the whole glow off into bright colour after the fashion of American shrubs and trees. Its great merit is that, in addition to being so elegant in foliage, it has a very dwarf habit and is thoroughly hardy. When the flowers show after the plant is a few years old, they may be pinched off; but this need only be practised in the case of permanent groups or plantings of it. To produce the effect of a *Grevillea*, or a fern on a small scale, we should of course keep this graceful *Rhus* small and propagate it like a bedding-plant. Like most other shrubs, it has a tendency to branch; but to fully enjoy the beauty of the leaves it is best to cut down the plants yearly, as then the leaves given off from the simple erect stem are



Rhus Glabra laciniata.

much larger and more graceful. The figure, sketched early in August, represents a young plant little more than a foot high, which had been cut down to the ground during the spring of the past year. It may be most tastefully used in association with bedding-plants, or on banks in or near the rock-garden or hardy fernery, planting it in light sandy loam. The graceful mixtures and bouquet-like beds that might be made with the aid of such plants need not be suggested here, while of course an established plant, or group of three, might well form the centre of a bed. Planting a very small bed or group separately in the flower-garden, and many other uses which cannot be enumerated here, will at once occur to the reader. Some hardy plants of fine foliage are either so rampant or so top-heavy that they cannot be wisely associated with bedding-plants. This is, on the contrary, as neat a grower as the most fastidious could desire.

LONDON MARKET WALLFLOWERS.

THESE are just now abundant, and their fragrant flowers are eagerly sought after, especially the good old standard dark kinds, for none others will do for the London market. A yellow variety, or one approaching to that colour, is pulled up by the heels, and ruthlessly cast to the rubbish heap, so anxious are our growers to secure the orthodox dark strain pure and unblemished. The market wallflower is not so deep in colour as Young's Blood-red kind, but its

petals are flatter, have more substance, and the colour is brighter, and, consequently, gayer. The habit of growth of the former is also better, being usually dwarf, branching, and in some cases so compact as to make excellent beds. I have found no difficulty in selecting kinds that are now, after nine months' growth, not more than six inches in height, and so make capital companion plants to the Belvoir Yellow variety, which makes such capital spring beds. The great thing with London growers is to get them into flower early, and to secure this, they sow seed in March along with their broccoli. The seedling plants are transplanted into quarters as early as possible, and, if the ground be good, a perfect mass of strong, well-wooded plants will be ready to endure the vicissitudes of winter. These will be sure to flower early, and the first cuttings are worth double, and even treble, what the flowers will fetch after the crop has become general. I cut a good handful of flowers from yearling plants as early as February 23rd; but these had been left standing where sown last spring. Generally, however, sowing in March, and planting out as soon as large enough to handle, is the best way to secure very early flowers.

Our country cousins seldom grow such rich-coloured strains as we metropolitans are favoured with; but, then, here much care has been exercised in the selection of the best colours, and thus good quality is assured.

A. D.

AN OFFERING OF WILD FLOWERS TO "THE GARDEN."

HASTE to the woods this balmy day,
And mark what Nature has that's gay
To fringe her robe of green;
Peeping from forth dead leaves you'll see
The dark-eyed Wood Anemone,
Meek messenger of Spring.

The Snowdrop, firstling of the year,
While on the trees no leaves appear,
Now cheers the wintry gloom;
No rival whiteness now is spread,
It lifts its modest, drooping head,
And tells us snow is gone.

The Blue-bell, on its slender stalk,
You fear to crush it as you walk,
So thickly spread anew;
It bows its head to mother earth,
Sheds on the ground that gave it birth
A grateful drop of dew.

Primroses in profusion flank
On every side the hedgerow bank,
Sprinkled with Violets sweet;
In harmony their colours blend,
How fresh the fragrance that they lend!
How lovingly they meet!

Daisies open their starry eyes,
And mock the starlight in the skies,
So bright the ground appears;
But when the stars shine out at night,
Dazzled by the radiant light,
They close their eyes in tears.

Now tastefully a garland twine,
And bind it round with Eglantine,
Then seek Sylvanus' bowers;
Hang it upon his garden gate,
A rural wreath to antedate
The cultivated flowers.

—ELIZABETH H. COOKE, *Glen Andred*.

FERN COLLECTING IN DEVONSHIRE.

BEING desirous of possessing a collection of British ferns, the season before last I paid a visit to Ilfracombe, thinking, like half the world, that I had nothing to do but walk out and find plants of Maiden-hair fern (*Adiantum Capillus Veneris*) growing on every bank and hedgerow, but I found myself mistaken; for now it is very hard to get a plant of it. Indeed, it is only on the cliffs it is found, and men have to be lowered by ropes, to enable them to gather it; so I had to content myself with getting a plant of it at a dealer's fernery, where the Maiden-hair may also be obtained growing in pieces of the natural cliff, which looks very neat and effective. Here I provided myself with one of those wonderful-looking weapons, a fern digger. There are not, as I have said, many ferns to be found within a walking distance of Ilfracombe; the

Crystal Sea Pools, with their host of living creatures, being the attraction of other kinds of collectors at that place.

I next went on to Lynmouth, where my expectations in the way of finding ferns were more than realised. I shall name alphabetically those which I found, beginning with:—

SEA SPLEENWORT (*ASPLENIUM MARINUM*).—This is a fern rather difficult to find hereabouts; but I was fortunate enough to get one small plant on Countesbury Hill, which, you may be sure, I took good care of.

BLACK MAIDEN-HAIR SPLEENWORT (*ASPLENIUM NIGRUM*).—This may be found growing in nearly every rocky place, on old walls, amongst stones, &c., on the road to the Water's Meet. It was while getting this fern I found my digger so useful, as nothing else would have passed in amongst the stones and rocks as it did. I also found some small plants of this fern in the Valley of Rocks at Lynton.

COMMON MAIDEN-HAIR SPLEENWORT (*ASPLENIUM TRICHOMANES*).—Of this elegant little fern I found a good deal all along the roads to the Water's Meet and Countesbury Hill, also at a place near Lynton called Leddy Weild. It is nearly always found in some damp spot.

LADY FERN (*ATHYRIUM FILIX FEMINA*).—This is found growing on nearly every bank all through Devonshire, and plenty of it occurs all round about Lynmouth and Lynton.

BLECHNUM SPICANT.—Of this I found large clumps on the little island at the Water's Meet, which is rather a hard place to get at, as it is only when the river is very low one can cross over.

THE MALE FERN (*LASTREA FILIX MAS*).—This is to be found all along the banks and dells, sometimes growing to a very large size, according to the age of the plant, and also the soil.

BUCKLER FERN (*LASTREA MONTANA*).—This also is to be found plentifully on the hill that rises from the side of the river Lyn, on the right hand going from Lynmouth, and also here and there along the side of the river.

HAY-SCENTED FERN (*LASTREA EMULA*).—This is not common round Lynmouth; but I found two large plants near Countesbury, which I was told was a very rare occurrence, as where it is generally found is much further away.

COMMON POLYPODY (*POLYPODIUM VULGARE*).—This grows in great profusion on the top of the wall all along the hill up from Lynmouth to Lynton, and also on the trunks of trees growing on the island at the Water's Meet.

PRICKLY SHIELD FERN (*POLYSTICHUM ACULEATUM*).—This is also very common in Devonshire. I have found it growing in many parts, sometimes of great size.

COMMON BRAKE (*PTERIS AQUILINA*).—This, I need not say, grows plentifully everywhere; but near the Water's Meet—indeed, close to it, beside the water—I have seen it more than eight feet high.

HART'S TONGUE (*SCOLOPENDRIUM VULGARE*).—This is found on nearly every wall or ditch throughout this county. There is one wall about forty yards long, on the coach road between Ilfracombe and Lynton, which is literally one mass of this fern.

These include all the ferns I found, and let me hope that the indications of locality which I have given may serve as a guide to such of your readers as, like myself, go fern collecting in Devonshire.

A. H., *Upper Norwood*

THE DEVONIENSIS ROSE.

UNTIL Mr. Hole raised the question I was not aware that there was any doubt about the English parentage of this rose. In addition to the valuable testimony of Messrs. Curtis and Brown, that it is of English origin, other correspondents have written to me confirming that fact. Mr. Rendle says:—"It was raised by Mr. Foster, a gentleman who was one of the officials in the Government Dockyard at Devonport. He had a very nice garden (I am speaking now of more than twenty years ago), and he was fond of raising seedlings. He raised some excellent Dahlias, including the Glory of Plymouth, a famous flower in its time. He also sent out some first-rate Geraniums. He had about forty or fifty seedling Roses trained against a south wall, and Devonensis was one of them. He paid the expenses of his garden, I must tell you, from the proceeds of his seedlings, and he wanted £50 for Devonensis. I thought this was too much, and offered £20. However, Mr. Pince, of Exeter, saw it, and was so struck with it that he agreed to pay the £50. Mr. Pince soon set to work and raised a large number of plants, and I have heard that he made between £2,000 and £3,000 profit out of it. I remember the blooms were shown under glass shades, and made quite a sensation at the time."

D. T. F.

THE WILD GARDEN.

It is in scattered and unexpected places that I like my children to ferret out the wild flowers brought down from the woods—the frail Columbine in its own cleft of rock—the Wild-turnip, with its quaint green flower in some dark nook that is like its home in the forest—the Maiden-hair thriving in the moist shadow of rocks; and among these transplanted wild ones of the flower-fold I like to drop such modest citizens of the tame country as a tuft of Violets, or a green phalanx of the bristling Lilies of the Valley. Year by year, as we loiter among them, after the flowering season is over, we change their habitat, from a shade that has grown too dense, to some summer bay of the coppices; and with the next year of bloom, the little ones come in with marvellous reports of Lilies, where Lilies were never seen before—or of fragrant Violets, all in flower, upon the farthest skirt of the hillside. It is very absurd, of course; but I think I enjoy this more—and the rare intelligence which the little ones bring in with their flashing eager eyes—than if the most gentlemanly gardener from Thorburn's were to show a Dahlia with petals as regular as if they were notched by the file of a sawyer. Flowers and children are of near kin, and too much of restraint, or too much of forcing, or too much of display, ruins their chiefest charms. I love to associate them, and to win the children to a love of the flowers. Some day they tell me that a Violet or a tuft of Lilies is dead; but on a spring morning they come, radiant with the story that the very same Violet is blooming sweeter than ever, upon some far away cleft of the hillside. So you, my child, if the great Master lifts you from us, shall bloom—as God is good—on some richer, sunnier ground!—*Ik. Marvel.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Rose Manure.—I have heard that if cabbage-leaves are mixed with the compost prepared for rose trees, they heighten the colour of the blooms. Would Mr. Reynolds Hole say whether this is correct or not?—*M. L. W.*
—[Mr. Hole replies, that cabbage-leaves are very beneficial both in heightening the colour, and in increasing the size, of roses, if previously prepared by—the pig.]

Linnaea borealis in London.—We were pleased to see this very interesting and uncommon plant thriving in the open border in Mr. Peacock's garden, at Sudbury House, Hammaersmith, the other day. It is, of course, hardly enough to grow in any part of these islands, but we did not think it would grow in the smut of London unprotected. We have grown it freely in London under a clouded handlight, and also in a cold frame, but it is of course much more interesting seen thriving in the open air. A peat, or free moist soil suits it best.

Arundo conspicua.—I have some nice young plants of this, twelve months old from seed; can you inform me whether or not this plant will bear an average English winter in the open air? or does it require protection? May it be planted out in a clump like *Gynerium argenteum*.—*R. M. R.*—[*Arundo conspicua* will thrive in the open air in our southern counties, if on a well-drained sandy loam; but in all cold situations it ought to be protected. It forms a superb grass on good soils, but is more fastidious than Pampas grass.]

Dampier's Glory Pea.—Mr. Saul, of Washington, has informed us that he raises this Pea with perfect success in the open air. He waits until the ground is well warmed—perhaps the end of May—and then sows the seed in not over-rich soil, in the place where the plants are to stand. It will not bear transplanting. The plant must be guarded from red spider in dry weather.—*American Agriculturist.*

Hardy Palms.—I shall be glad to know if there is a variety of *Palm* tree which would survive all the year round in an open garden, and where it may be obtained. *J. T. T. Greenen.*—[Yes; *Chamaerops excelsa*, and in your climate probably several others.]

Hardy Ferneries.—Being anxious to possess a fernery for native ferns, I should be grateful to any of your readers who would kindly help me with a few hints as to its construction and arrangement. The locality is in South Carmarvonshire, where the temperature is exceedingly mild. The spot chosen, the corner of a wood, partially over-shadowed with trees. A bank about twelve feet high, extending for some distance into the wood, has at its foot a small winding brook, an old fence being on the other side of the brook, where common ferns now grow most luxuriantly. The steep bank I wish more particularly to make the groundwork of the fernery, by having it cut into and hollowed, &c. I have a quantity of cork bark, how can I make that available? Will ferns grow in it if placed as a facing to small terraces?—*M. L. W.*
[Our correspondent seems already to possess a very happy home for ferns without much further alteration. We should not use cork bark in such a position.]

Abnormal Heath.—Mr. Britten directs attention, in the *Journal of Botany*, to an anomalous variety of *Erica cinerea*, from Wiltshire, which has year after year brought forth similar blossoms. Their appearance is very remarkable, and due to the fact that both corolla and stamens were wanting. The specimens are interesting on account of their apparent permanence.

GREAT GARDENS OF EUROPE.

KEW.

In treating of this, the greatest of great gardens, we shall begin with its least praiseworthy feature—its design. Competent writers, conversant with the various types of vegetation so well represented at Kew, will speak of these in detail; to ourselves falls the unwelcome duty of showing that in point of design Kew is chiefly remarkable for indicating what to avoid. Let it not be supposed, however, that Kew has anything like a monopoly of bad design; there are many botanic gardens worse laid out than it, notably the Paris gardens; but in the case of Kew the fault is perhaps the more glaring, as the great size of the place has not made necessary that overcrowding which is unavoidable in the numerous small botanic gardens scattered over Europe. A notion prevails that good design is not easily secured in a botanic garden, and sometimes that it is not desirable. No idea can be more erroneous, or more fraught with danger for public gardens. Anyone who knows the private plant collections of the United Kingdom, is well aware that the finest and fullest collection is often also the most beautifully and effectively arranged. Take the case of alpine plants and filmy ferns, for example. Everybody knows that the finest collections of these are not only among the best arranged, but are disposed in an entirely novel and exquisitely beautiful manner; the fact is that when the true and natural mode of arrangement is applied, the nobler the collection the higher the æsthetic effects will prove, provided always there is space on which to display them. But no really good effects are possible in our botanic gardens so long as the system of ignoring the necessity of breadth, and of dotting about trees and shrubs prevails, as if the object was to prevent the free sweep of the poacher's net. The objects preserved in a botanic garden are in themselves so beautiful and interesting that, to numbers of persons, the necessity for a radical change in their arrangement does not present itself. And no language which we can employ can describe the enormous difference between a vast national botanical garden, so arranged that the various types of vegetation preserved therein would be seen to the greatest advantage, and one disposed in the ordinary manner.

Unfortunately, well designed large places of any kind are very rare. Not so small and medium sized ones, however; and if anyone will compare the difference between such gardens as those at Oak Lodge, or Berry Hill, with numbers of others badly laid out of the same size, he may form an estimate of the vast difference between the present aspect of our botanic gardens and that which they would present were a true system of garden design carried out in them.

It is, however, only fair to remind the reader of the vastly greater difficulties that the improver meets with in public gardens and gardens governed by a society or committee of any kind to what he does in a private one. The difference is like that between paralysis and healthy and vigorous power of movement. The best man of his time may, employed in a public garden, be so hampered by red tape, and so out-maneuvred by the silly or ignorant interference of officials, committees, &c., that his best efforts may be neutralised. As a case in point, we may mention what came under our own observation a few years ago in a public garden governed by a council and committee. The superintendent of the winter garden, appalled by the leggy grandeur of a gigantic and aged *Acacia* in a tub, made up his mind to cut it down. Had it been in a private place, it would have been beheaded years before. The unhappy foreman knew his men, and did not appeal till the plant manifested a disposition to wander through the panes in the roof into the free air of Britain. He did not get his pruning-knife to cut it down, but began with a smaller implement, and made a report. This was sagely pondered over at the next meeting by the committee, but notwithstanding the proverbial wisdom in the plurality of advisers, the momentous question could not be decided. One member, bolder than the rest, proposed that they should all proceed to the conservatory, there to finish the discussion; and, in the fulness of their wisdom, they went. One was a well-known racing lord, another a successful apothecary, another a retired merchant, another a clergyman, another a London police magistrate, and so on, all being utterly inno-



PLAN, SHOWING THE GENERAL DISPOSITION OF THE ROYAL GARDENS AT KEW.

cent of any knowledge of the cultivation of plants, and all, on a foolish mission, trying to determine a question which any gardener would settle in a few seconds. They returned to their meeting room once more, held a long consultation, and passed a resolution, that the specimen was too large to be cut down; and so it remained, as seedy-looking a grenadier as ever adorned a badly-managed conservatory. This may seem an extreme instance; but it is true, and may serve to show the lengths to which misdirected interference will go.

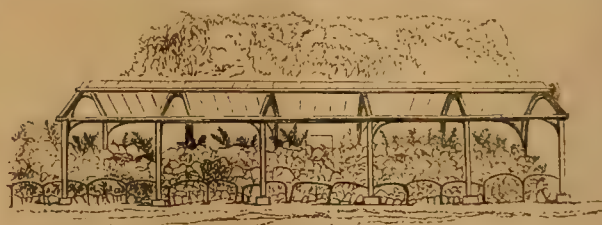
As we wrote a fortnight ago, we have good reason to believe that there is very unwise interference on the part of some officials in the management of Kew and some others of our most important gardens, not merely with their general management, but with details, for which the superintendent should be solely responsible. Be this the case or not, the influence of our great public gardens is so powerful, from their being visited by hundreds of thousands of gardeners and amateurs, who look to them as models, that bad or imperfect arrangement in them must have a pernicious influence throughout the length and breadth of the land; and we feel it our duty to point out their faults, so that they may be avoided. Our plan of Kew is necessarily drawn on so small a scale, that many of the details of the garden cannot be seen therein. But, as our object in the first instance is to speak of the general disposition of the gardens only, this does not matter.

Total want of breadth is the most glaring fault at Kew. The dotting system prevails everywhere. No improvement has been of late manifested in this direction. The place is gradually getting worse in this respect, and, in all our experiences, we have never seen so bad an example of injudicious dotting about of myriads of small trees and shrubs as Kew at present furnishes. Mr. Dawson, who drew our plan, tells us that in a few small plots in front of the winter garden he counted 1,500 small trees and shrubs, mostly ordinary kinds without character or manifest object. The immense importance of a little peaceful breadth may be seen by looking from the raised bed near the Palm House lake towards the group of tall Limes, a small bit of undotted foreground lending great charms to the view. The question of the management of the vista planting, recently discussed by our correspondents, is of no real importance compared with that of breadth. How the vistas are treated will make very little difference in the general impression produced on the visitor. A few acres of cool grass here and there would be worth a whole galaxy of canal-like vistas, managed even after the most approved fashion. In consequence of these vistas forming the chief feature, and of other reasons before given, it is out of the question to expect any radical alteration in the way of breadth. But we are entitled to expect that attempts should be made to secure it where possible, instead of destroying it whenever a change is made.

A needless kind of formality is also very apparent in many parts of the grounds. The kidney-shaped beds along the main walk are being multiplied without end. Now if the garden were wholly geometrical there would be some apparent excuse for this, but not a real one, for, as is well known, intelligent designers of geometrical gardens do not now hesitate to make one feature differ from another, although balancing each other. But these kidney-shaped beds abut right upon varied plantations. Such a long and heavy repetition of them was never in good taste, but to add to them, as has lately been done, is a real misfortune to the gardens. And those oft-repeated formal masses of Rhododendrons are likely to be quite surpassed in bad effect by a great number of formal masses of small Laurels bordering the walks in many directions. It is not easy to guess why these have been thought desirable, but no feature ever added to a public garden is likely to produce a worse effect from the point of view of design, or indeed from any other. To the north of the great conservatory another hideous kind of formality may be seen—beds, hundreds of feet long without a break. These are occupied by shrubs, and no doubt the arrangement is adopted to facilitate classification. But no worse or more awkward system could have been devised. Except one crosses the bed, a long detour has to be made to see any particular shrub that may attract the eye from a distance of twenty feet. Blanks appear much uglier than if the natural

system of grouping had been adopted; and the effect of the whole on the eye is detestable. No graceful arrangement of shrubs is possible in long, straight beds. In all cases of arranging trees and shrubs in a botanic garden, the system of irregular grouping of families on the turf is the true one. It permits of beautiful arrangement, of easy access to all the species; every kind of shrub or low tree may be fitted into a happy place in the group; and if deaths occur, as they frequently do in botanic gardens, they do not leave an ugly blank, as is the case where the subjects are arranged in formal lines or beds.

No garden should show anything in the way of rockwork which is not tastefully done, and is incapable of answering some useful end. This rule should particularly apply to botanic gardens. Better a thousand times content ourselves with the manifold good effects we can produce with trees and shrubs and flowers on the level ground than add to the hideous piles of rubbish that go by the name of "rockwork" all over the country. And where these excrescences do occur in public gardens, if the finances or other circumstances will not permit of a proper rock garden being made, the right thing to do is, convey the offensive pile to the rubbish yard some time when the ground is hard in winter, and labour plentiful. Few public gardens show worse examples of the traditional rockwork than Kew. Our sketch shows that on which the collection of



"Rockwork" at Kew.

alpine plants, &c., is shown in summer. It speaks for itself. What a check to progress in this direction are the "rockworks" here and in the Botanic Gardens in the Regent's Park! And yet there is no way in which our public gardens would do more good than by growing well, in the open air, and arranging in a tasteful manner, the numerous brilliant flowers of the mountains of our own and other cold and temperate regions.

(To be continued.)

NOTES ON PUBLIC GARDENS.

The Enlargement of Victoria Park.—The Victoria Park Preservation Society are renewing their efforts to obtain every available portion of the open spaces which remain around Victoria Park. At the instigation of the society, the Metropolitan Board of Works recently purchased about twenty-four acres of the Crown land for the park, including the land on the south side, and to the east of the Queen's Hotel. These portions were secured from the Government for £20,450. But, besides the portions of land which have been thus purchased on the north and north-west sides of the park, there are several plots of Crown land, amounting in the aggregate to about nine or ten acres. Some of these plots have passed into private hands, and their purchase having become a matter of some difficulty they were abandoned by the Metropolitan Board of Works. Last week a deputation waited on the Members for Hackney (Messrs. Reed and Holms), with a view of influencing them to induce the House of Commons to repurchase these plots. Mr. Holms, however, gave it as his decided opinion that the attempt to obtain the land would be useless, as both the Government and the country members would oppose the motion. The Victoria Park Preservation Society have therefore determined to urge the various local boards surrounding the park to combine for the purchase of the plots of land in question.

Driving in the Parks.—At present the parks are exclusively confined in respect to carriages to the use of the wealthy who have carriages of their own. This is not a condition of things which will bear discussion. I have given notice of a clause which will declare that persons who cannot afford the luxury of private carriages

shall not on that account be deprived of the use of places of recreation supported out of the public taxation. I can see no reason why sick or feeble persons who are unable to walk should not be permitted to take the air in the parks in a bansom at half a crown an hour, as much as those who possess a barouche. Nor can I see why the pleasure vans, which seem to me productive of more real enjoyment than all the fine carriages in the world, have not as good a right in Hyde Park as the Four-in-Hand Club. They give pleasure to a greater number of people, and are, on the whole, I fancy, less dangerous to human life. I observe that one of your weekly contemporaries defends this distinction on the ground that the greatest enjoyment in life is that of gaping with wondering delight at fine people and smart equipages. I don't dispute that the writer accurately expresses his personal sentiments; but I fancy that this idle admiration of fashion is rather the weakness of the literary than the operative Spectator.—*Mr. Vernon Harcourt, in "Times."*

TREES ON THE THAMES EMBANKMENT.

THE "rough" element of the lower stratum of our population still continues to exercise its propensity for the perpetration of wanton mischief. Twenty years ago, anything like decorative sculpture within reach of a formidable stick was certain to be mutilated in a short time after its exposure in a public situation; and this was all the more certain to be the case if it consisted of figures, the noses of which very soon disappeared, forming, as they did, most tempting targets to the rollicking savagery of our street Arabs, whenever a good opportunity occurred. The pretty little figures on the new gates of the Bluecoat School, in Newgate Street, soon lost their heads altogether, and the unicorn supporting one of the shields was docked of his twisted horn, and also of his tail, before he had been many months exposed to the rough favours of a certain class of our British youth, who are so energetically active in mischief while so sluggish in any kind of useful work. But our youthful gentry of the *parée* perceived at last that brutal depredations of the kind alluded to began to be visited with such heavy indignation by the better educated; that the untutored ruffians found the "fun" did not "pay," and reluctantly refrained. Or it may be that the influence of international exhibitions percolated even into the stony brains of raw ruffianism, and partially woke it up to a dim perception of the beauties of art. In whatever way the change may have been wrought, certain it is that it has been wrought. Nevertheless, the demon of mischief still holds to a certain extent his ancient sway; and although sculptured marble or artistic bronze is safer now than formerly, he sees no harm in breaking down or mutilating a young tree too trustingly placed within his reach. This fact has been disagreeably exemplified by the injuries inflicted for mere vicious amusement on the newly-planted trees of the Embankment, where this kind of depredation has been carried on to such an extent, and so daringly, that their official guardians, hopeless of affording them efficient protection by the police or by any other means, have, in a fit of natural vexation, threatened to take them away altogether. Such a course would be, in principle, like destroying any kind of property whatsoever if its protection happened to become irksome; and therefore the threat must only be regarded as a natural expression of angry disappointment—a mere *façon de parler*. H. N. H.

KEW GARDENS.

THE week before Christmas upwards of forty gardeners were dismissed from Kew, says a correspondent in a recent number of the *Standard*, not because there was not plenty to do, but because from some muddle in the estimates, the money which should have been arranged for their pay, was not forthcoming. In that inclement season these unfortunate victims of mismanagement were, at a week's notice, ejected from the Royal employment, although Parliament votes liberal and abundant sums for the support of the gardens. "From some similar miscarriage in the estimates," says the same authority, "no fuel was this winter forthcoming for the museum, which was consequently perfectly useless to visitors. The damp and cold were such that it was more like a vault than a museum. Such a state of things, at an institution for which is voted, I believe, £19,000 per annum, is utterly disgraceful, and yet, I suppose, we shall be told that no one is either responsible or blame-worthy for it."—In reference to this statement, the *Standard* of a later date, says: "We are assured upon good authority, 1. That not a single gardener has been dismissed from Kew during this winter. 2. That there has been no muddle or confusion of any description in the estimates of any of its departments in any month or week; the payments having been rightly calculated in advance for each month and week; nor has any weekly or other payments of wages been miscalculated, or payment postponed. 3. That the fires were extinguished in one (only) of the three museums

—that to which reference is made—because of the warmth of the weather, and because any extra heat is injurious to the magnificent collections of polished timbers it contains. The doors of this building are set open whenever possible to attract visitors, who are apt to suppose that the building is closed when the doors (which resemble windows) are shut. 4. That there has been no lack of fuel, nor of money to buy more if required. It is only fair to state that there never has been any attempt at floral display in the Royal Gardens in winter, except in one conservatory, and in the orchid houses, which certainly never had more variety or gaiety than this winter. With regard to the dismissal of the gardeners, we are informed that the dismissed men were not gardeners, but day labourers, hired in excess of the staff, for the especial purpose of trenching and planting, and were all distinctly informed when hired, that they might not be wanted for more than a week or two, whereas they were kept on for a much longer period."

REVIVAL OF HORTICULTURE IN THE PUBLIC GARDENS OF PARIS.

THE horticultural branch of Parisian industry is now summoned to renew its too long intermitted labours with vigour, and the next month or two will witness the reparation of much of the devastation caused by the late disastrous siege and subsequent civil war. The shrubberies of the Champs Elysées, which were nearly destroyed, are being entirely replanted where necessary, and the expanses destined for turf, which were so beautifully kept before the war, are being carefully dug and levelled, and sown with suitable grasses. In short, this spring will see that favourite promenade reassume nearly all its wonted beauty. The shrubs will, however, require some years before they can be expected to attain to that fulness and beauty of growth which distinguished the old plantations. Orders have also been issued for the immediate formation and plantation of a new square at the Tower of Jean Sans Peur, in the space which has been laid open by the prolongation of the Rue aux Ours and the opening of the Rue Turbigo. The open space is of considerable extent, and the plantation and accompanying decorations are intended to be in keeping with the importance of the site.

The remodelling of our London squares might be advantageously undertaken in emulation of the examples Paris will shortly afford us. In the midst of horticultural activity in Paris in many other directions, it is to be regretted that the carrying into execution of the plans for the fine "square" in the Place Dauphin is to be indefinitely delayed. However, much is being done; and the green spots in the bright gay Paris of old will soon look as they used to look, and several new features will be added during the present year.

PUNCH ON PARK MANAGEMENT.

To promote the study of natural science amongst the upper classes, once a week, during the months of May, June, and July, the Chief Commissioner will hold an afternoon Botanical Class in Hyde Park, and lecture on its trees, plants, and flowering shrubs, with the aid of the descriptive labels belonging to them. Ladies and gentlemen attending the class will have the option of taking notes, and passing an examination in the lectures at the end of the London Season, when prizes will be awarded to the most proficient students.

Within twelve months of the Bill receiving the Royal Assent, the group of Achilles at Hyde Park Corner, and the equestrian statue surmounting the Arch on Constitution Hill, will be removed to the middle of Hampstead Heath and Epping Forest respectively; unless, in the meantime, a requisition signed by the Presidents of the various incorporated Art Societies in the Metropolis, be presented to the Chief Commissioner, imploring him to retain these memorials of a nation's gratitude in their present positions.

The estimates for the financial year 1872-73 will include a sum for replanting Primrose Hill with Primroses, Crocuses, Snowdrops, and other spring flowers. To lessen the expense to the nation, contributions of plants and bulbs are solicited. They will be thankfully received and officially acknowledged.

The design for any drinking fountain proposed to be erected in a Royal Park or Garden, must be approved by a Committee of Taste, to consist of a Royal Academician, a Fellow of the Institute of British Architects, an official of the Science and Art Department, the Editor of the *Art Journal*, Lord Elcho, Mr. Beresford Hope, and a prominent Teetotaller.

Smoking will be permitted in the Parks and Gardens, and encouraged in the Conservatories; but samples of the tobacco and cigars must be sent, ten days beforehand, to the Office of Works, which will submit them to the Customs, which will confer with the Excise, which will report upon them to the Treasury, which will consult the Board of Trade, and a decision will be given before the Parliamentary Recess

No alteration will be made in the existing arrangements for the custody, preservation, and maintenance of the birds on the ornamental waters; but that the expense of keeping up the Parks may be reduced to the lowest point consistent with the national honour and dignity, as the present fowls die off, their places will not be filled up.

THE SIX OF SPADES.

CHAPTER VII.

UPON the occasion of our Curate's first appearance as a member of "The Six of Spades," I derived much gratification from contemplating the deportment of Joseph Grundy. No sooner did he see his Pastor, than he made an uncomfortable attempt to hide his pipe, which, being a Brosely of robust proportions, declined to be concealed at any price; while his features assumed, so far as their mirthful make permitted, a troubled and solemn aspect. Whether he thought it probable that he should be called upon to oblige the company with a hymn, or whether he was under the impression that clergymen were painfully affected by tobacco, after the manner of the green-fly, there was but brief time to speculate; for the Curate, noting his perplexity, forthwith proceeded to dispel it by filling and igniting an ample bowl of clay, and by taking his seat, next to Joseph, with a pleasant and friendly smile. "I met old Michael Willis yesterday," he said, "and as soon as he saw me, forgetting, I suppose, that he has not a monopoly of eyesight, he swiftly put his pipe in his pocket. So, after some little conversation, I suddenly expressed, to his great surprise, the anxious hope that he was insured. For if," I continued, "the old saying be true, that where there is smoke there is fire, your waistcoat-pocket, Michael Willis, may soon be ready for the tinder-box. And you would be rightly rewarded for doing that which you are ashamed of doing, and for attempting to deceive a true friend."

"I'm not ashamed of smoking," he answered; "but they do say as parsons hates it."

"Cruelly, despitefully, and with lying lips, Michael. With the exception of a very small company, not conspicuous for liberality or learning, the English clergy have never spoken against the moderate use of tobacco. The majority of them, smokers themselves, would be hypocrites to do so; and of the remainder, they who go much among the very poor, and know how few their comforts, how many their hardships, must be glad to see the enjoyment (not the abuse) of a cheap and innocuous pleasure. They who denounce it must give up all their luxuries, and nearly all their comforts, before they can do so consistently; and then, Michael, we will argue the matter on the principles of religion and common sense. We have smoked our pipes for three hundred years in England, beginning with a walnut for a bowl and a straw for a tube; and, though a king has blown his "Counter-blast against Tobacco," and yellow Puritans have groaned and snarled at it, it still brings pleasant solace, throughout the land and under it—to the miner toiling for the coal, and to him who sits by the coal-fire's blaze; and leaves men as brave and as good, Michael, as when Raleigh, or whoever first brought the plant among us, was as yet unborn. So I finished my little sermon; and my friend Joseph knows why I have ventured to repeat it here."

"There's another little sermon, sir," said Mr. Oldacre, "upon tobacco and the pipe, which rescues the memory of one Puritan at all events from silly prejudices on the subject. I mean that quaint, touching old ditty which George Wither sang, and which Frank here" (his son-in-law, Chiswick) "will sing for you if you wish."

Whereupon was rapping of the table, and a preliminary sipping of gin and water, and a re-arrangement of limbs into the most easy posture for listening; and then Mr. Chiswick, with a voice very pliable and mellow, sang to us the impressive words and appropriate music of the well-known ballad, "This Indian Weed," &c.

And now, my brothers, do I feel glad at heart that I am writing for those who love a garden. I picture to myself some young Mr. Gallio Noodle, sightless and noseless so far as flowers are concerned, yawning over "The Six of Spades," and saying, "Whart a delightful convocation of snorbs! Parson

smoking clay pipes with groom, and dram drinking with the rest of the company, while melodious gent, who has been digging all day, and has come in, I dare say, all over worms, is holloaing Bacchanalian songs." Let him sneer, as he tosses the volume down, and goes off with his cigar to the stables, for I am perfectly unconcerned and happy—happy in my earnest hope that they whose sympathies alone I crave, will recognize in our little assemblies that brotherly goodwill and amity, whereof themselves know from experience the excellent power and sweetness, and whereby the true lovers of a garden are united in a friendship as steadfast as it is pure, and as universal as Divine Beauty itself.

These lovers of the garden know well, that as "one touch of Nature makes the whole world kin," so one truthful instance of a floral taste, one hearty expression of horticultural loyalty, is acknowledged at once and echoed instantly by a thousand kindred souls. They know of signs and passwords more powerful than those of the Free-st Masons, the Oddest Fellows, the most Ancient Druids—a cosmopolitan clanship, accredited throughout the world.

"Rather flowery," I hear it suggested. Well, yes, I think so; and, therefore, let us put aside the figurative, and illustrate our theme by fact. One hit, straight and home, is worth half an hour of sparring.

Returning, not long ago, from a visit to some distant friends, I arrived at their nearest station four seconds after the departure of the train; and the engine-driver, to whom I bellowed piteously, not being of a floral mind, and coarsely refusing to come back, I was left, with another of the guests, to amuse ourselves for three hours as best we could. What was to be done? It was ten minutes' walk to the town, and to the town we went. Here was a fine old church, recently restored; but it was locked, of course, and both of us were afraid of Bedels. "Was there a billiard-table?" we inquired of the postman. "No, but there was a bagatelle-board at the 'Cock and Trumpet,'" an alternative which did not allure us. So to the chief hotel for luncheon, though we had scarcely breakfasted two hours ago; and here we imbibed some fearful sherry, the which, I verily believe, is lurking in my system now. A cigar; and we seemed entirely forlorn and prostrate; when suddenly my thoughts emerged from their gloominess, like railway-carriages from a tunnel into sunshine.

"Are there any nursery gardens in the neighbourhood?" I inquired of the waiter, just bringing us, with the best intention, a copy of the *Times*, which we had read two days ago.

"Oh yes, sir," he responded to my great refreshment; "Budd & Packe's, sir; late Twig, sir. Anybody will show you the way, sir."

Away I sped, my companion following reluctantly, for he was no horticulturist, and having referred to "anybody," in the person of an intelligent baker, we soon reached the gardens; and in five minutes I was perfectly at home and happy in the congenial society of Messrs. Budd & Packe. We sauntered through the houses; we peeped into the frames; we wandered among squares of ever-verdant trees, phalanxes of flowering shrubs, and regiments of the deciduous order. We admired, we denounced, we compared. "Had I seen so and so?" "Did they grow what d'ye call it?" "Did I know thingembob?" I seemed to have been there but ten minutes, when my fellow traveller, first attracting my attention with a groan, whispered the information that he "was slightly sick of those confounded sticks, and, if he could find a tank or pool, he thought he should go and drown himself." To which I murmured, "Au Reservoir;" and we parted. The hopeless Hottentot! "Those confounded sticks" were the cleanest, strongest, straightest lot of briars I ever saw in my life, tall standards, and breaking beautifully; and he groaned at them! Groaned at them, and when I returned to the station, with two large baskets of plants, pretended painful anxiety as to my mental state, and entreated me to have an interview with Doctor Conolly.

But never, since that day, have I been in want of pleasant occupation—never since have I suffered that most dismal loneliness, the solitude of a strange city, when circumstances have enforced a temporary sojourn in the neighbourhood of a nursery garden. With principals, or, in their absence, with foremen, I have fifty topics of mutual interest to discuss; in

every garden something new to see; from every gardener something new to learn; and so the hours pass swiftly, pleasantly, and I hope wisely, onward.

Wisely, I believe. For, after all, my brothers, it is the wisdom and goodness of gardening which make it such a deep and enduring happiness. It is thankfulness, reverence, and love, which make our gardens dear to us from childhood to old age, for,—

"Love is like the ocean, ever fresh and strong,
Which, the world surrounding, keeps it green and young."

Yes, it is because we cannot really love the beautiful flowers without loving Him "Whose breath perfumes them, and Whose pencil paints;" it is because there lies deep in the heart of a man a yearning to recover Paradise, and to rest once more upon the Mount of God; it is because when we cherish tenderly, and watch adoringly, the Creator's handiwork, that we are permitted to "walk with Him through the Garden of Creation;" it is because the life of a gardener is, or ought to be, a religious life,—

"Yea, holy is the gardener's life, for unto him is given
To be a fellow-worker with the sun and showers of heaven,
Gently to aid the labours of the teeming mother earth
And watch and cherish tenderly her children from their birth;"

it is because the wisest of men, such as were Bacon and Newton, were happiest in their gardens, and spake of gardening, from a glad experience, as "the purest of human pleasures;" it is because men, such as was Wordsworth, have bequeathed to us the certain confidence that "Nature never did betray the heart that loved her;" it is for these reasons, and many another as true and gracious, that the pleasures of gardening are so great and lasting, and that of the earnest faithful gardener it may be justly said,—

"Thy thoughts and feelings shall not die,
Nor leave thee when old age is nigh
A melancholy slave;
But an old age, serene and bright,
And lovely as a Lapland night,
Shall lead thee to thy grave."

Thoughts like these ensured a special welcome for the Reverend Francis Goodhart, our Curate, as he entered our room of assembly. We were glad to have our Pastor's sympathy, and to appoint a Chaplain to our little band. Moreover, we ever found in him a cheerful companion and an enthusiastic gardener. You may see ample evidence of the latter characteristic in and about his cottage home; in his delightful garden, which seems to contain everything in miniature—a diminutive greenhouse, a small bed of American plants, a little rockery, a wee fernery, a tiny fountain, an intricate geometrical design on the most reduced of scales. Pretty creepers twining about his porch stoop to welcome you on your arrival, and the Jasmine and the climbing Rose look at you lovingly through the windows as you take your seat within. Passing through the hall—lobby would be more truthful, perhaps—you see, generally, a large bowl of wild flowers, gathered and admirably grouped by the children of the village school. In the study and drawing-room are choicer bouquets, either culled from his own Lilliputian conservatory, or offerings from some brother Spade, and arranged, as only ladies can arrange them, by his beautiful sister, Rose Goodhart, who shares and gladdens the Curate's home. At early morn, in the sweet summer-tide, you may see him, with his scythe in his hand, sweeping down the dewy grass, until the church bells call him to his daily service ("the wust and incurablest form o' Popery," according to Mrs. Verjuice), and he goes through the quiet graveyard, carefully honoured now, and ornamented with flower and shrub, and through the chancel-door, by which the Rose "Felicité Perpetuelle" climbs heavenward in emblematic beauty, into the hallowed courts of our dear old church. These, too, sometimes are reverently decked by our Curate and his little band of acolytes, and "the king's daughter is all glorious within" upon her greater festivals with flower and branch, just as under the Older Testament, but now in substance and no more in type, the chapiters were covered with pomegranates, "and upon the top of the pillars was Lily work." I like to see the children (but don't tell Verjuice) bringing the long ropes, covered round with

evergreens, from their schoolroom, to festoon the arches, and encircle the pillars; and yet more do I delight to watch them hurrying home from wood, and bank, and brook, with their pretty posies in their hands. It pleases me most to see the fresh spring flowers at Easter, the bunches of Primroses and Violets smiling at intervals upon the dark green Yew; but those children tell me, and this of course, that the old church is most beautiful upon their own festival, the which, being held upon St. Luke's Day, brings Dahlias in clothes-baskets to our Curate, until the glowing glass in our painted windows begins to pale its ineffectial fire, and our frivolous damsels to complain on Sunday that their best bonnets have not fair play.

Our Curate is not only a lover of flowers himself but a zealous missionary florist. He was instrumental in establishing our Cottage-Gardening Society, which has reclaimed many a waste place from the weeds, many a sot from the beerhouse, and brought comfort to many a home. I remember Tom Cooper's garden, for instance, as the favoured residence of every known British weed, and as the favoured residence also of the ugliest and leanest pig in the parish. Mr. Cooper devoted his spare time, at that period, to swearing, thick ale, and skittles, and, lightly esteeming a vegetable diet, quite ignored the science of horticulture. Somehow the Curate got hold of Tom, by giving him work, I think ("just like them Jesseites," Mrs. V. remarked), when he was nearly starving, and as lean as the pig which he had been compelled to sell, and then talked him into his "sober senses." And now no labourer about the place has a cleaner, neater, bit of ground than Tom. Dock and Groundsel, Thistle and Twitch, which once grew as closely together as the bristles of his neglected beard, have been displaced for Lapstone Kidneys and Cottager's Kale, for Gooseberry trees and Currant trees, for the Pæony, the Sweet William, and the Rose. It does one good to see Tom, when the daylight lengthens, digging and hoeing, sowing and setting; while Tom, junior, proudly holding a brown-paper packet of seeds, scowls at small Jacky for running between father's legs; and mother, with her baby at the cottage door, looks on with a thankful heart. And you would have been pleased, I am sure, if, at our last horticultural exhibition, you had seen, as I saw, the Curate, with his hand on Tom's shoulder, congratulating him on the prizes he had won. S. R. H.

(To be continued.)

THE HOUSEHOLD.

SALADS.

EVERY household in which a thrifty housewife presides boasts of some mysterious preparation with which the mistress of the house compels reluctant housemaids to rub the furniture at stated periods. The object of this operation is to keep the polish bright, and I believe it answers the purpose very well. I could not give the recipe of this wonderful compound, for I do not know it, but I could not better describe it than by saying that, in appearance, smell, and peradventure taste also, it closely resembles that other mysterious compound which will be produced in a pyramidal and circumvolved bottle if you ask for salad dressing at an hotel or an eating-house. Of course, no one in his senses expects to get anything particularly good to eat or drink at such places; but in private houses, where sometimes a good dinner is to be had, the same oddly-shaped bottle is the only source whence the salad dressing is obtained. Now the great charm of a good salad is, that not only the greenmeat part of it shall be fresh and newly gathered, but that the dressing or sauce shall be also fresh and newly mixed. The art, however, of mixing a salad dressing is all but unknown in this country. The operation entails too much trouble, and requires too great a nicety in the apportionment of the condiments, for the broad mind of the British cook to be troubled about it. Ask her to mix a salad, she simply pours out a good allowance of the contents of the queer shaped bottle over a lot of lettuce, endive, and watercress chopped up more or less small, and there you are. And yet salads are appreciated by Britons.

Hear what an English wit and divine—Sydney Smith, I think—says of salads:—

"Oh, great and glorious and herbaceous treat!
'Twould tempt the dying anchorite to eat.
Back to the world he'd turn his weary soul,
And plunge his fingers in the salad bowl!"

But my object is neither to prove that salads are very good things, nor that English cooks do not know how to prepare them. Few will

venture to deny either of these propositions. My purpose is to expound the art and mystery of dressing salads, and I shall leave it to the intelligent reader who will put my precepts in practice to decide whether a salad is a good thing, if he has any doubt on the point.

MATERIALS.

The consideration of salads may be divided under three heads—the vegetable part, or foundation; the dressing, or sauce; and the accessories. One of the chief requisites of a good salad is that it should be newly gathered, and, if you can get it free from mould and gravel, it is better not to wash it at all; but, as is more often the case, if you must wash your salad, you cannot be too careful in draining all the water from it, for every drop of water left in a salad tends to spoil it, no matter what amount of talent has been bestowed upon the dressing of it. Great care is also necessary in picking the salad, so as to exclude every leaf that is the least tainted or discoloured. It is a great mistake to cut up lettuces and endives, *more Anglico*, into fine threads. This operation at once destroys the freshness, taste, and character of the dish. Of course, I do not mean that cos lettuces simply split in two should be made into a salad; but there is a happy medium, which is always best in most things. Besides, it is by no means the largest lettuces which make the best salads. The cos lettuce, which we call Roman lettuce, is all very well in its way, but the cabbage lettuce, the *laitue pommée*, when it is well *pommée*, is by far preferable. This should be cut into quarters like an orange, and no more.

Endives can better bear cutting up than lettuces, and may be treated accordingly; but it is a mistake to put endives and lettuces in the same salad bowl. What is called corn salad goes better with endives, although I think that it is wrong to put too many herbs into one salad as a salad; as a condiment it is a different matter. As such, watercress, tarragon, burnet, garden (not what is called mustard and cress), American, and Australian cress, chervil, parsley, basil, mint, balm, marjoram, &c., may be used, but they must be used with discretion. Likewise beetroot, cucumber, onions, celery, radishes, potatoes, chives, garlic, can be put into a salad with success, if you know how to use them.

That overgrown herb (mustard and cress) which is always associated with all salads by the British greengrocer, should never be used if it can be avoided. The American and Australian curled and perennial cress are much preferable in point of taste and appearance. These, as well as watercress, tarragon and burnet, must not be cut up too small, but the leaves only, especially in the case of watercress, must be used, and not the stalks as well. They must be well washed, and the water may be got rid of by pressing them in a cloth, without injury to the freshness of the salad. Other herbs must be minced quite fine, and a pinch or two will be about the proportion of them for an ordinary salad. Chives and onions must be minced small also; but in some special cases, hereafter to be referred to, onions in slices are used; otherwise spring onions are the thing. Garlic is only to be used with an endive salad, and according to the taste of the probable partakers the proportion of it must be regulated. It need not, however, appear in the salad at all; a crust of bread slightly rubbed with it will convey a sufficient amount of flavour if it is put into the bowl only while the operation of turning the salad is going on. By a similar contrivance, a slight flavour of onion may be given to a lettuce salad. Celery chopped up small may be used as a condiment, or it may of itself form the staple of the salad. Potatoes make a very good salad (boiled, of course) of themselves, or associated with celery, beetroot, and other things; but they are also used as part of the sauce sometimes. Slices of cucumber are never amiss in certain salads. Radishes, whole or sliced, and slices of beetroot, help the ornamentation, if not the taste, of a green salad.

Another sort of salad is what the French call *Barbe de Capucin*. It is a blanched chicory, but the common endives are preferable. Dandelion, especially if it be cultivated, makes very good salad, either alone or with lettuces. The leaves and flowers of mallow and nasturtium, as condiments as well as ornament, are often put into and upon a salad with advantage. In Italy and the south of France they have a way of making a salad with unripe tomatoes, gathered just as they begin to show the least red. I cannot call to mind at the moment any other greenment which is eaten as a salad, but I may say generally that any vegetable which is not positively unwholesome uncooked can form the foundation of a salad. I have eaten delicious salads in Italy composed entirely of dandelions and other wild herbs gathered by the road and the river side. There is no lack of dandelions in the rural lanes of this country, and I believe burnet grows wild; but I should be puzzled to find the dozen and more different herbs which composed my wild salads, and I have not sufficient confidence in my botanical knowledge to try the experiment. Potatoes and beetroot are by no means the only vegetables which can

be made into a salad when cooked. Dried or fresh haricot beans, French beans, asparagus, Jerusalem artichokes, cauliflowers, broccoli sprouts, turnip tops, &c., make very good salads. They should be plainly boiled in salt and water, well drained, and when quite cold make your salad. (To be continued.)

THE FAIRY-RING CHAMPIGNON.

In our account of this (see p. 333) the references to the woodcut were unfortunately omitted; we therefore reproduce our illustration for the purpose of supplying them, in order to make clear the difference between the true champignon and its ally:—



Fig. 1. *Marasmius oreades* (Fairy-ring Champignon). Pastures, roadsides, and downs, in the autumn; colour, pale buff; gills, broad and far apart; diameter, 1 to 2 inches.

Fig. 2. *Marasmius urens* (False Champignon). Woods and pastures in the autumn; colour, pale buff; gills, narrow and crowded together; diameter, $\frac{1}{2}$ inch to 1 $\frac{1}{2}$ inches. This is poisonous.

NOTES AND QUESTIONS ON THE HOUSEHOLD.

Why should Potatoes be Steamed in Preference to Boiling Them?—Because potatoes, being a mass of flour-particles, become watery from being covered with a weight of water, the particles not being able to expand and burst into flour. With steam they are not covered; but if steamed too long the flour-particles absorb the steam, and become water-logged, but, of course, they are not such a watery mass as when they are boiled. Baked or roasted potatoes, if cooked too much, absorb steam, and become unwholesome. When potatoes are boiled, they should be covered with boiling water and a little salt; when they have boiled for five minutes, the whole of the water should be strained away, then be covered with cold water, and this also strained away, then about three tablespoonfuls be put in the bottom of the saucepan, and the potatoes allowed to simmer slowly till they are done; then the cover of the saucepan taken off for the steam to escape. They are best if, the moment they are done, the saucepan is turned upside down with the cover on, and then the latter taken off when the saucepan is turned to its right place.

Sauerkraut.—To make sauerkraut, the cabbage is sliced by means of a knife fixed in a frame, and is something like an inverted plane. A clean barrel is lined with cabbage leaves on the bottom and a short distance up the sides. A layer of three inches of cut cabbage is put in and pressed down by the hand, and sprinkled with four tablespoonfuls of salt. Four layers are put in in this way, and then the whole is packed down hard with a wooden pounder. Four more layers follow, with another pounding, and so on until the barrel is full. Cover with cabbage leaves, and put on a board follower with a heavy weight, and set away to ferment. Remove the scum at the end of three weeks, and, if necessary, add water enough to keep the kraut covered.

Currant Tomato.—I have grown this as a pillar fruiting plant, and on trellises for ornament, and for the first time it has been used this autumn in many ways by our *chef de cuisine*. I have a notion that it could be used as a winter fruit preserved in sugar syrup, as is done with all other ripe fruits so cleverly by the French. It would form a very beautiful dish if the colour and the entire *grappe* could be preserved. The variety I allude to is the *Solanum racemigerum*, which must not be confounded with a variety sometimes called the currant, of the size of a cherry. This one is as small as a black currant, and with *grappes* a foot and more long. — H. K., in "Gardeners' Chronicle."

The Marsh Marigold as "Spring Greens."—Among our indigenous plants used as greens, none is so generally employed—at least in the Eastern States—as the marsh marigold (*Caltha palustris*), perhaps for the reason that in its localities it grows abundantly, and is readily gathered. In April and May, the wet meadows and the margins of brooks are made gay by the golden buds and flowers of this plant. The leaves are round-heart-shaped, and of rich green. The flowers look much like large buttercups; indeed, the plant belongs to the same family as the buttercup or crowfoot. The leaves and tender stems are gathered at or just before flowering time. The plant when fresh is considerably acid, but this quality is removed by cooking. In most localities the plant is known as "cowslips." It is unfortunate that the early settlers should have applied this name, as the plant has neither resemblance to, nor relationship with, the cowslip. It is a native of England also, and there it has for hundreds of years been called marsh marigold, although it is not a marigold.—*American Agriculturist*.

THE FRUIT GARDEN.

PEARS IN THE CHANNEL ISLANDS.

MR. BAINES says (p. 298) that the French and Channel Island pears are not superior in flavour to those grown in England. Pray pardon me if I say that I cannot allow our grand old Duchesses and Chaumontels to be so underrated. I have seen and grown these pears in different parts of England, and I must say that I have never found them equal, either in size or flavour, to those grown in France or in the Channel Islands. Let me speak first of the Chaumontels. Many years ago, when my father was gardener to the late Sir Robert Newman, Bart., Mamhead Park, near Exeter, he planted fourteen trees of the Chaumontel in the gardens there, twelve of which were grown and trained as low flat table trees about eighteen inches off the ground, much in the same way as our modern ground cordons are grown. The two other trees were grown and trained against brick walls; the one on an east, the other on a west, aspect. All these trees, both table trained and on walls, produced, during most seasons, plentiful crops of fruit; as much fruit, indeed, as I have ever seen produced by similar trees in Guernsey. In appearance those on walls were the finest; but as regards flavour they were worthless for dessert, being hard and gritty as a baking pear; and indeed this was the only use that was made of them. I may add, too, that few pears beat Chaumontels for baking or stewing. I knew a Chaumontel tree grown against a south wall near Taunton; also another very large tree on a south-east wall near Lyme Regis, in Dorset, and one at Fulham Palace, to all of which the same remarks apply. With these trees I was acquainted for years, and never once did I see a first-class fruit, either for size or flavour, in any way approaching the Chaumontels grown in the Channel Islands, where they are rich, sugary, melting, and as juicy as a peach. This I would attribute not so much to the heat of our summer, as to its length, compared with the summer in England. Having grown numerous varieties of pears under glass, both early and late sorts, I have come to the conclusion that late hanging and late keeping pears are much improved in flavour by being grown under glass. I was thus enabled to let them hang longer on the trees in autumn, and when they came to maturity, say in March, April, and May, the improvement in flavour was very striking compared with fruit that had ripened on walls or pyramids in the open air. I have observed, too, that these indoor fruits keep better; they do not shrivel so much, having been guarded from the inclemency of the weather. They are also kept safe from birds, which spoil much of our best fruits when left on trees late in autumn in the open air. I have not much to say in favour of cultivating early pears under glass, as they do not ripen much earlier than they would outside, unless a high temperature is maintained, when the flavour will be found worthless; but if kept cool, as they should be, with a constant current of air passing through the house at all times, then I say many of our early blooming pears, as well as many of our first-class shy-setting pears, may be grown under glass in the greatest perfection.

Apples under glass I have had but little experience with, only having cultivated a few small trees of Ribston Pippin; these I must say were fine both in flavour and appearance, but I keep the house very cool, with constant air in it.

Roberts Nursery, Guernsey.

JOHN RICHARD WILLIS.

A NEW ENGLANDER ON THE GOOSEBERRY.

FROM the time when I read of Mistress Doctor Primrose's gooseberry wine, which the Doctor celebrates in his charming autobiography, I have entertained a kindly regard for that fruit. But my efforts to grow it successfully have been sadly baffled. The English climate alone, I think, will bring it to perfection. I know not how many ventures I have made with Roaring Lion, Brown Bob, Conquerors,

and other stupendous varieties; but without infinite care, after the first crop, the mildew will catch and taint them. Our native varieties—such, for instance, as the Houghton Seedling, make a better show, and with ordinary care can be fruited well for a succession of seasons. But it is not, after all, the staunch old English berry, which pants for the fat English gardens, for the scent of hawthorn, and for the lowering fog banks of Lancashire. Garden associations (with those who entertain them) inevitably have English colouring. Is it strange—when so many old gardens are blooming through so many old books we know? No fruit is so thoroughly English in its associations; and I never see a plump Roaring Lion but I think of a burly John Bull, with waistcoat strained over him like the bursting skin of his gooseberry, and muttering defiance to all the world. There is, too, another point of resemblance; the fruit is liable to take the mildew when removed from British soil, just as John gets the blues, and wraps himself in a veil of his own foggy humours, whenever he goes abroad. My experience suggests that this capricious fruit be planted under the shadow of a north wall, in soil compact and deep; it should be thoroughly enriched, pruned severely, watered abundantly, and mulched (if possible), with kelp, fresh from the sea shore. These conditions and appliances may give a clean cheek even to the Conquering Hero. But it is not so much for any piquancy of flavour that I prize the fruit, as because its English bloat is pleasantly suggestive of little tartlets smothered in clotted cream eaten long ago under the lee of Dartmoor Hills—of Lancashire gardens, where prize berries reposed on little scaffoldings, or swam in porcelain saucers—and of bristling thickets in Cowper's "Wilderness," by Olney. Is it lonely in my garden of a summer's evening? Have the little pattering feet gone their ways—to bed? Then I people the gooseberry alley with old Doctor Primrose, and his daughters Sophia and Olivia; Squire Burchell comes, and sits upon the bench with me under the arbour, as I smoke my pipe. How shall we measure our indebtedness to such pleasant books, that people our solitude so many years after they are written! Oliver Goldsmith, I thank you! Crown Bob I thank you! Gooseberries, like the English, are rather indigestible.—*Ik. Marvel*.

THE SNOW APPLE OF CANADA.

WHAT a delightful little apple is the Pomme de Neige, and yet how very seldom do we see it! It is a very old acquaintance of mine. I knew it, and loved it for its intense beauty and excellent qualities, long before I learned its correct name. It is an apple that succeeds well in northern situations. I have seen it in admirable condition on Deeside, Aberdeen; and it is stated, in the *Transactions of the Horticultural Society*, by Sir George Steuart Mackenzie to succeed well in Ross-shire. The fruit is rather above medium size, ovate-conical, very regularly formed, the eye closed, the stalk nearly an inch long, the skin greenish-white on the shaded side, brilliant scarlet, forstreaked with brilliant scarlet on the sunny side; at all times exceedingly beautiful. The flesh is pure white—white as snow—peculiarly tender, juicy, melting, and pleasantly flavoured. In season from October to Christmas. This is in every respect a most interesting apple, and altogether distinct from the ordinary class. The brilliant scarlet skin, in contrast with the pure white flesh, renders it strikingly beautiful; and the texture of the flesh is of that peculiarly tender character which many of the American apples possess, such as we find in the Melon, Northern Spy, and partly in the French Calville Blanche—firm yet short, and melting in the month, like Scotch short bread. The Snow Apple was, I believe, introduced from Canada by Mr. Barclay, of Brompton, under the name of La Fameuse, which is given as a synonym in the *Fruit Catalogue of the Horticultural Society*. I have not been able to distinguish it from another apple named Pomme Lücken, in the collection of the Horticultural Society, but I cannot answer for the Pomme Lücken being correct. The name Pomme de Neige signifies the Snow Apple, being significant of the whiteness of its flesh; this is not, however, the source whence it was derived, but from the name of a village where it is much cultivated (see *Horticultural Society's Transactions*, vii. p. 334). I would strongly recommend the re-establishment of this truly beautiful, very interesting, and altogether excellent apple in our gardens.—*A. F. Barron, in "Florist and Pomologist."*

A WILD FRUIT GARDEN.

WITHIN this tangle-wood, I have set a few graftings upon a wild crab, and planted a peach or two—only to watch the struggle which these artificial people will make with their wild neighbours. And so various is the growth within this limited belt, that my children pick there, in their seasons, luscious dewberries, huckleberries, wild raspberries, bilberries, and choke-cherries; and in autumn gather bouquets of Golden-rod and Asters, set off with crimson tufts of

Sumach, and the scarlet of maple boughs. And when I see the brilliancy of these, and smack the delicate flavour of the wild fruit, it makes me doubt if our progress is, after all, as grand as it should be, or as we vainly believe it to be; and (to renew my parallel) it seems to me that the old-time and gone-by thinkers may possibly have given us as piquant, and marrowy suggestions upon whatever subject of human knowledge they touched, as the hothouse philosophers of to-day. I never open, of a Sunday afternoon, upon the yellowed pages of Jeremy Taylor, but his flavour and affluence, and homely wealth of allusions, suggest the tangled wild of the garden with its starry flowers, its piquant berries, its scorn of human rulings, its unkempt vigour, its boughs and tendrils stretching heavenward; and I never water a reluctant hill of yellowed cucumbers, and coax it with all manner of concentrated fertilizers into bearing, but I think of the elegant education of the dapper Dr. —, and of the sappy and flavourless results.—*My Farm of Edgewood.*

POT CULTURE OF THE TOMATO.

Those who wish to stand well with the cook, will find a weekly supply of a dozen or so of Tomatoes throughout April, May, and June, go far to secure that position. In autumn I have found the wires on which I have grown my melons useful to suspend my Tomatoes on to ripen. Any decayed ones which happen to drop I allow to remain on the hard melon soil. The seeds from these, owing to the genial warmth of the house (which is here appropriated after melons to stove plants during the winter), soon vegetate, and the soil being hard, the plants cannot root deeply in it; on the contrary, they spread on the surface, thereby inducing shorter-jointedness, and thus rendering the plants better suited for pot culture. When six inches in height they are potted three in a pint pot and plunged in the warmest part of the house, where they grow rapidly.

In the early spring I repot into ten-inch pots, using a compost of turfy loam, sand, and thoroughly decayed leaf-mould or old mushroom-bed dung, in equal parts, and place them where they may obtain all the sun and light possible, a point of much importance, as otherwise they become weak and useless; but a few days elapse before they show signs of renewed growth, and before allowing them to get too tall I put sticks to each plant nearly upright and almost close to the rim of the pot. As soon as they have fairly commenced growth, I water them freely with liquid manure, not too strong nor at all times, as sunlight is as yet too feeble to warrant too free a use of this stimulant. From this time the plants grow fast, and require attention in the way of tying and removing useless wood—not by entirely removing it, but by timely stopping it so as to induce greater vigour in the shoots from which the first and finest fruit is to be obtained. When the plants are in bloom it is well to gently draw the flowers through the hand daily, an operation which assists their chances of setting. I do not consider it judicious to administer stimulants to any fruit-bearing plants in bloom, believing them to be at that time rather injurious than beneficial. As soon as sufficient fruit is set I carefully remove about an inch of the surface soil and fill up with turfy loam and bones, which greatly aid the swelling fruit, and I recommence the use of liquid manure, which may be employed stronger than hitherto, the Tomato, like the Vine, being a gross feeder.

Under this treatment I have been generally able to obtain on an average from two to three dozen fruit from each plant, the side shoots which I stop producing an abundant crop in succession. B. O.

A CAROL OF SEED-TIME.

SUGGESTED BY ONE OF WALT WHITMAN'S.

A SONG of the glad seed-time;
A song of the soil and the flying March dust;
A song no more of winter's icy breath;
A song of the dry lea fields; [tassels;
A song of the smell of burnt weeds and of the larches' green
A song tasting of chives and watercresses.

For the balmy breath of spring and for Nature's gladness,
Now I return to see the daisies springing.
Reclining on thy breast, Oh! Mother Earth,
I feel the throb of thy sun-warmed pulse,
And tune a verse for thee.

Oh, earth that teems with richness when well till'd!
Oh, ploughs and harrows, and bright tickling hoes!
Oh, merry ploughmen turning up the sods!
Oh, lusty labourers sowing or drilling corn!
A verse to notice and to praise you all.

—WILLIAM TILLERY, *Welbeck Gardens.*

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Asparagus Culture of the Ancients.—Having read somewhere that the culture of asparagus by the ancients differed but little from our present practice, I should be glad if any of your readers would inform me what the published instructions for its culture really were.—R.

Horseradish.—If Mr. Watson (p. 340) grows his horseradish on a heavy yellow soil he will not obtain the length he wishes to get it. He is right in saying that horseradish does not increase in length in a downward direction after it is planted. As to planting in March, I have never done so in that month. The reason why I choose November for planting is, because I have found that my young plants have become established by the end of February. Horseradish is troublesome to keep within bounds. I grow mine at the end of one of the best quarters of the kitchen garden, where it is bound in by walks on three sides of the bed. Last November I put in plants twenty-four inches long.—THURSTON SOUTHWORTH, *Castle Head Grange, Lancashire.*

Big Vegetables.—It is a common mistake of inexperienced people to consider size as the most important of all qualities, alike in flowers, fruits, and vegetables. Within certain limits, size is undoubtedly of importance, but the instant we favour size at the expense of colour or flavour in vegetables or fruit we encourage retrogression. Good flavour, tenderness, and beauty of appearance are three most important qualities and should be sought in preference to size, although, as remarked above, when certain limitations are recognised, every advance in the size of any particular vegetable is an advantage. In any and every case quality should be sought for first, and, as a rule, of two sorts equal in quality, the largest must have the preference. This subject is to be considered in connection with cultivating as well as in the purchase of seeds. The ambition to grow large cucumbers causes many an amateur to cut for his table, or his friends, coarse fruits of great size that are simply tough, bitter, and unwholesome, instead of smaller fruits of tender texture and delicious flavour and perfect unwholesomeness. Nearly all the vegetable marrows in cultivation are too large. The largest beetroots are much more suitable for the pig trough than the salad bowl. We have frequently advised the cultivation of the smallest in preference to the largest sorts of cabbage, because of their delicacy of flavour. The largest onions are the worst keepers.

Native Guano Company.—A question of some public importance was discussed the other day at a meeting of the Metropolitan Board of Works. Twelve months ago the Native Guano Company, which proposed to employ sewage in the manufacture of manure by what is known as the A B C process, applied to the Board for permission to erect works near the southern outfall of the main drainage system at Crossness. On the representation that the company would use 500,000 gallons of sewage, or thereabouts, daily, permission was granted by the Board—the company undertaking to erect its works within three months. This has not been done, and it has been deemed desirable that steps should be taken to make the company carry out its experiment at once, for at present an impression is afloat which is entirely without foundation that the A B C process is somehow under the patronage of the Board. It is necessary therefore to state that, by allowing the company to erect works at Crossness, the Board merely intended to sanction an interesting experiment—the delay in the trial of which is to be deprecated—and had no intention whatever of expressing an opinion favourable or otherwise on the plan.

RUSTIC WORK.

In keeping with their effect, I caused gates to be constructed of the simplest material, from the cedar thickets; varying these in design, and yet making each so simple as to admit of easy imitation and to unite strength, solidity, and cheapness. If, indeed, these latter qualities could not be united, the work would not at all meet the end I had in view—which was not merely to produce a pretty effect, but to demonstrate the harmony of such decorative work with true farm economy. One often sees, indeed, rustic work of most cumbersome and portentous dimensions overlaid with extraordinary crooks and curves, and showing at a glance immense labour in selection and in arrangement. All this may be pleasing, and often exceedingly beautiful; but it is a mere affectation of rural simplicity; it wears none of that fit and simple character which would at once commend it to the eye of a practical man as an available and imitable feature. If I can give such arrangement to simple boughs, otherwise worthless, or to pine-pickets of simple cost—in the paling of a yard, or the tracery of a gate, as shall catch the eye by its grace of outline, and suggest imitation by its easy construction and entire feasibility, there is some hope of leading country tastes in that direction.—D. G. MITCHELL.

The man who has nothing to boast of but his illustrious ancestors, is like a potato—the only good belonging to him is underground.—*Sir J. Ooebury.*

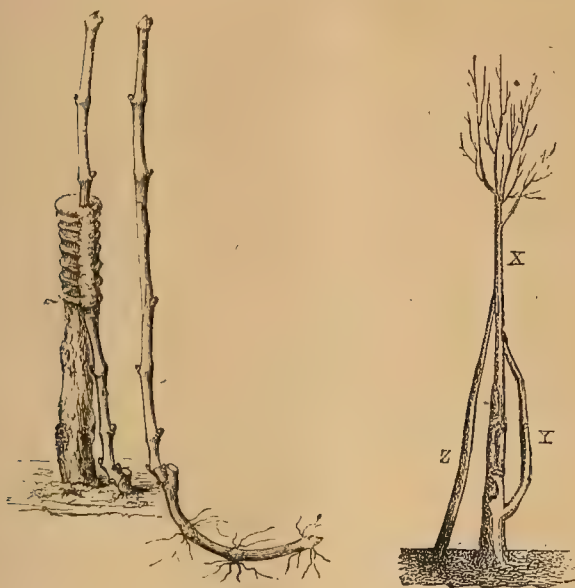
THE PROPAGATOR.

THE ART OF GRAFTING.

(Continued from page 336.)

GRAFTING BY APPROACH APPLIED TO THE RESTORING OF PLANTS. This is not the only method in use for the restoration of defective plants, but it is a valuable one when the object is to change the variety of the tree, to renew its stem, or to repair the want or loss of branches. Of each of these cases we give an example:—

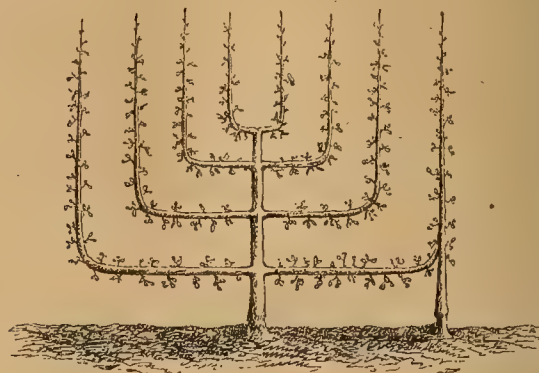
1.—CHANGING THE VARIETY.—The Vine is restored in this way. Alongside the stock which it is desired to change to another variety, is planted in winter a young vine well rooted and furnished with a thoroughly ripened shoot. When the time for grafting arrives, in April, the stock is cut down according to the height of the new plant, and as low as possible. With the curved gouge, a longitudinal groove is made in the top of the stock, into which is inlaid the shoot of the young plant, slightly pared on the sides. It is then cut down to two or three eyes above the graft, after it has been bandaged and covered with grafting-wax. Instead of shortening the stock at once, it might be left until the graft has been perfectly united and shortened in the following spring.



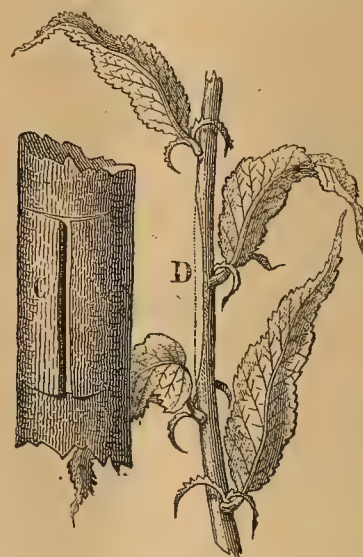
2.—RENEWING THE STEM.—The subject (X) whose stem is cankered and which has "gourmand" branches at the base can be repaired by means of these branches (Y) being inarched upon the stem above the diseased part. The flow of the sap, which has been interrupted by this, will thus be re-established. Should the diseased tree have no branches at the base, a stout stock is planted near it. After a year's good growth, the head of the stock (Z) is cut off and inarched into the stem of the other above the canker. Should a single tree not be sufficient for this restoration, a number are planted round and grafted into the old one in the same way, and when the graft is thoroughly established the cankered base may be cut away.

3.—RESTORATION OF MAIN BRANCHES.—In the training of fruit trees to any particular form there will sometimes be gaps or vacancies when certain parts have not been able to develop themselves, or have disappeared. If a branch cannot be obtained by close pruning, incision, branch or bud grafting, the neighbouring branches are made use of and trained in such a manner that the symmetry of the design may not be deranged. But as the branches do not always furnish shoots sufficiently vigorous for this purpose, a speedy method of repairing the partial loss of a branch is shown in

the annexed illustration. Here a deficiency on one side of a chandelier palmette is supplied by planting a young tree near it into which the defective branch is grafted. It should be of the same or a similar kind as the old tree in habit and vigour; and if the grafting is effected by inarching it should not be done for at least a year after the planting of the young tree.



4.—FURNISHING BARE BRANCHES.—On trees of a certain age it is difficult to obtain, either by means of incision or bud or branch grafting, fruiting branches on those parts which want them. It will be necessary then to employ the method of grafting by approach, that is if the vacant places are near suitable branches. The Peach tree, which is liable to lose its branches, usually bears shoots which can be easily grafted by approach on the bare spots, and the operation is performed in June and July with herbaceous shoots. A vacancy exists which it is desirable to supply with a branch. In the beginning of summer the herbaceous shoot is taken and applied to the branch, where it is grafted by approach. The shoot is cut opposite to an eye which is let into the incision in the branch, and the extremity will go on to develop itself. The result will be a good fruiting branch when the detachment takes place,



at least a year afterwards. Instead of making an incision in the main branch, it will be sufficient to raise the bark by a double T incision if the condition of the sap allows it. In this is placed the shoot, which has been slightly cut at D, opposite an eye. The development of this shoot will facilitate the fork pruning used with the fruit branches of the Peach. This method was recommended in 1829 by M.

Leroy, gardener at Auteuil. Inarching is useful for furnishing branches with shoots. An eye or a shoot may be grafted or budded into the bare part. Sometimes we make use in August of grafts which were inserted in the month of June preceding. If there is no anticipative branch, one is excited to develop itself by pinching the shoot three weeks before grafting. When the young branch is developed, the leaf which springs from its base is partially pinched, in order to force the fruit buds of the new branch to continue at the base. The pruning of the fruiting branch will be afterwards made easier by this operation. The Vine is easily furnished with shoots on vacant parts by approach grafting. It is best to employ herbaceous shoots in May or June. The bark only of the stock should be cut, without removing any of the wood, especially if it is old; in which case, or when the scion is woody and not herbaceous, the detachment is effected by degrees in two years. In 1868 we applied successfully to the Vine this method of inarching in order to fill up



vacant spaces on the stems. The shoot, headed and pared under an eye, was let into the stem by a \perp incision. A month afterwards the union was complete, and the bud (A) grew vigorously. This was the first time, we believe, in which this mode of grafting was used with the Vine.

- 5.—To PRESERVE THE FORM OF THE TREE.—When the advantages of approach grafting are better appreciated, it will be more frequently used for preserving symmetry of form and equilibrium of growth in trees trained in particular forms and shapes, and will also simplify the labour of pruning, pinching, and tying up. We saw in the Horticultural Society's Garden at Mulhouse, a fine wall of Peach trees in an oblique cordon, joined at the top by approach grafting. The heat of the sun and the gum had injured some of them so much that M. Menet (professor of gardening to the society) had been obliged to cut away the damaged stems to the height of three and a quarter feet and burn them. The upper parts were left, and these continued to live and bear fruit, being fed by the sap of the neighbouring trees, on which the shoots had been grafted by approach. Horizontal cordons of Apple trees present the same result when the stems of any trees which have been grafted into the adjacent ones are cut away.—*C. Ballet's "L'Art de Greffer."*

(To be continued.)

OBITUARY.

MR. THOMAS INGRAM.

We have to record, with great regret, the death of Mr. Thomas Ingram, late of the Royal Gardens, Frogmore, who died at Upton Lodge, Slough, on the 9th instant, at the age of seventy-six. It is only a few years since Mr. Ingram left the scene of his more active duties at Frogmore, and retired to enjoy a well earned but not coveted rest, at a quiet house at Slough, within sight of the Royal towers of Windsor. Losing the stimulus which the obligation of work to be done always gives, parting with his long-watched and cherished trees, his seedling fruits and flowers, and the many treasured things that haunt a home—the bright spot signalised by the labours and successes of a long life—he drooped and faded, and quietly and resignedly breathed his life away.

Mr. Ingram was the son of a nurseryman, and was trained with Mackintosh and other eminent men in that great school of gardening of fifty years ago, the nurseries of Messrs. Lee, of Hammersmith. He was engaged by her Majesty Queen Charlotte to superintend the Royal Gardens at Frogmore in 1816, and remained at Frogmore until

1833, when King William IV. gave him the direction of the whole of the Royal Gardens at Windsor. Early in the reign of our present Queen the ancient and widely scattered gardens were given up, and one grand central forcing and kitchen garden was formed on the Royal estate, on a spot immediately contiguous to the Frogmore pleasure-grounds; this garden, thirty-two acres in extent, was formed, planted, and brought to that high state of perfection that has so long distinguished it by Mr. Ingram.

After the passing of the Windsor Improvement Act in 1849, the arrangements for laying out and constructing the new walks and drives in and about the Home Park, the Castle Grounds, and Frogmore were entrusted to Mr. Ingram, and the narrow and shady walks of the slopes were replaced by bold open roads, whose free sweeps and curves, stretching away towards Frogmore, are well seen from the terrace of the Castle. One of the last labours of Mr. Ingram was the re-arrangement of the pleasure-grounds at Frogmore, rendered necessary by the erection of the Mausoleum within the gardens, the last resting-place of the illustrious Prince Consort, with whom Mr. Ingram was associated in many works of improvement about the Royal estates.

During his long life Mr. Ingram devoted himself assiduously and with unflagging interest to the task of originating new and improved varieties of fruits, flowers, and vegetables, and by careful selection and hybridization he was successful in adding some useful examples to our list of fruits and beautiful flowers. Among fruits the Frogmore Scarlet-fleshed Melon is still highly esteemed. The British Queen, Frogmore Swan's Egg, and Golden Russet Pears are valuable contributions to our list of English fruits. The Frogmore Orleans, Bonne Bouche, and large late Greengage plums have merits which will make them generally appreciated. The Frogmore Bigarreau, F. Early Black, and F. Morello cherries are each improvements on sorts of recognized value. No fewer than nine new strawberry varieties rewarded Mr. Ingram's attention to that excellent fruit, among which, the Frogmore Late Pine, Prince of Wales, Mr. Radcliffe, may be taken as examples. Three apricots, each having special recommendations for precocity, size, and late-keeping properties, prove that this fruit was not neglected. The Frogmore Golden and Premier peaches were also raised at the Royal Gardens.

The old scarlet Pelargonium known as the Frogmore Scarlet was obtained in 1817; and one of the very first double Dahlias about the same time. Two hybrid Begonias, an Epacris, Lonicera, and Escallonia attest Mr. Ingram's attention to our valued garden flowers; while an excellent broccoli, the Frogmore Protecting, and a hardy cucumber, show that vegetables were not forgotten.

Mr. Ingram was fortunate enough in the course of his long connection with the Royal establishment to secure the approbation of the Sovereigns he served so faithfully; and a just appreciation of his services to horticulture was exhibited by a large number of friends joining in a subscription to a handsome testimonial, which was presented to him a few years before he left the Royal Gardens.

He was much respected by all the members of the Royal Family, and has been frequently visited by her Majesty since his retirement from active life; even as late as Friday week, the day before his death, the Queen is said to have paid him a visit. Kind and genial in disposition he was esteemed by all who knew him, a man indeed for whom everybody had a good word; he therefore leaves a wide circle to lament his loss.

MR. WILLIAM OSBORN.

ONLY a week or two ago it was our sad duty to record the death of Mr. Thomas Osborn, and now we have to announce that of his elder brother and co-partner, Mr. William Osborn, which took place suddenly on the 7th instant. The firm of Osborn & Son is one of the oldest in the neighbourhood of London, and has been for many years worthily represented by these two brothers, who were greatly respected by all who knew them, or had business dealings with them. In Messrs. Osborn gardeners ever found friends able and willing to help them when assistance was most required; their demeanour towards all was kind and gentlemanly; and to the horticultural world generally their too early deaths is a sad loss.

OUR WEEKLY CALENDAR.

PRIVATE GARDENS.

Conservatories, Greenhouses, &c.—These are now everywhere brilliant with gay flowers, which the bright weather which we are now experiencing brings forward with so much rapidity. Phajus grandifolius and Wallichii, together with Odontoglossums, Dendrobiums, Lycastes, and other orchids at present form rather prominent objects in the way of plants for conservatory decoration. Specimens of all kinds now receive strict attention with regard to staking, tying, and training, and they are allowed plenty of head room by

elevating them above the ordinary level of their associates on inverted pots. Azaleas and Camellias in flower are shaded a little from bright sunshine. Such as have done flowering are placed in an intermediate temperature and encouraged to make growth. Greenhouse hard-wooded plants are being potted, as are also palms that will succeed in a greenhouse temperature. In most cases stove plants have now been potted, and with the assistance of an increased temperature, and plenty of moisture at the root, overhead, and in the atmosphere, they have commenced their summer campaign under favourable circumstances. Give a little air in the mornings during fine weather, but shut up early. Syringe freely such plants as Palms, Dracænas, Marantas, Anthuriums, &c. Early Gloxinias are now in flower, and others are ready to succeed them. Orchids are receiving a gradual increase of heat and moisture.

Indoor Fruit Department.—Pines are now being cut in good condition, others are swelling, flowering, and coming on in succession. Those ripening receive little water, whilst those in a less advanced state are more liberally supplied with it. To suckers a temperature of 65° at night is given, those farther advanced are allowed 70°, with a rise of 10° by means of sun heat. The bottom heat is kept at about from 75° to 80°. Some give weak manure water at the root, and also sprinkle the plunging material and paths with it; others only use water. Late Vines are allowed abundance of air, so as to keep their buds back. Vines just started are kept close and freely syringed; thinning both bunches and shoots also receives attention. Where borders are artificially heated, care is taken that they do not become too dry. Figs: these now receive plenty of water overhead, as well as at the root. The farthest advanced have a night temperature of 60°. The second house has now the same temperature as the first; the third one is kept at 55° at night, allowing a rise of 10° by sun heat. Peaches, Nectarines, Apricots, and other fruits are well syringed, except when in flower, and due attention is paid to thinning of fruit.

Hardy Fruit and Kitchen Garden Departments.—The grafting of fruit trees has now commenced, more especially in the case of stone fruits. Fruit trees on walls are being protected. Pruning generally is finished, and the ground between lines of trees and bushes manured and dug. Potatoes are still being planted. Carrots, Parsnips, Beetroot, &c., are being sown in some places, whilst in others main crops will not be sown for a few weeks yet. Turnips are being sown. Autumn-sown Onions are being transplanted. Lettuces are being sown for succession, and others planted out when the weather is damp, or failing that in the afternoons. Sowings of Radishes are made according to demand. Sowings of Broccoli, Savoys, Brussels Sprouts, Kale, and Cabbages are made for early use. Cabbages are being planted out.

NURSERIES.

Indoor Department.—The general repotting of stove and greenhouse plants in most cases is now all but finished, but there are always extra things that require shifting regularly according to their respective wants. Anthuriums, Marantas, tropical Palms, and many other stove plants now enjoy a brisk moist temperature. Nephenthes have been repotted in loose material, such as sphagnum and very fibrous peat. Dracænas and Dieffenbachias are being propagated from pieces of the roots and stems, inserted in cocoa-nut fibre, or similar material, in a brisk heat. Seedling Palms are being potted off singly. Plants of *Bonapartea juncea* raised from seed are also now being potted off singly in small pots. Aralias that have been struck from pieces of the root, and that are now pushing a few leaves, are being taken out of their propagating pans and potted separately. Gloxinias raised from seed are being pricked off into pans, or potted singly into thumb-pots. Various kinds of bedding and sub-tropical plants are kept in strong heat in order that they may furnish cuttings. Seed of some sorts is also being sown.

Outdoor Department.—Though a bad season for transplanting evergreens, numbers of them still continue to be lifted, to supply orders. Deciduous plants are being re-arranged in lines. Grafting of stone fruits, more especially Cherries, is being proceeded with. Cherry trees that were budded last year are now headed back to within three or four inches of the buds. Cuttings of Privet are being inserted thickly in lines about a foot apart. Gooseberry cuttings continue to be put in, as do also suckers from stone fruits, the roots of which are trimmed, and the points of the shoots cut off; they are planted for stocks. Layering of Rhododendrons, Limes, Magnolias, Aucubus, continues to be done, and those well rooted from last year's work are separated from the stocks, and planted in lines in borders. Herbaceous plants are being divided, and replanted. Ives are still propagated by cuttings. Clematises and other hardy plants in pots are placed on coal ashes on sheltered borders.

MARKET GARDENS.

BOTH fruit and vegetable crops appear to be more forward than usual. Rhubarb is now obtained in large quantities from the open ground. Some growers, however, still cover their Rhubarb with litter, which, they say, keeps the stalks cleaner and of better quality than when exposed. Asparagus beds continue to be earthed up; young Asparagus, in many cases, has pushed a few inches through the ground; supplies are still cut daily from the forcing beds. Forced Seakale is plentiful. Potatoes are being planted extensively; in some cases, they are put in as digging progresses—in others they are dibbled in, and in some instances they are ploughed in. Lettuces continue to be planted out, and Cos and others are sown for succession. Lime is thrown over these plantations, to prevent the attacks of slugs and snails. Cauliflowers are planted in shallow drills, drawn between every two lines of autumn-planted Cabbage, which are about to be removed. Autumn-sown red and other Cabbages are being planted out on well-manured ground. Spent seed-beds, where these have been growing, are heavily manured and prepared for other kinds of produce. Early sowings of Cabbages and other greens are now being made, and White Globe Turnips are being sown extensively. Spinach is sown largely broadcast, and between lines of bushes, &c.

SOCIETIES, EXHIBITIONS, &c.

ROYAL BOTANIC SOCIETY, REGENT'S PARK.

THE first spring show of the season held by this Society took place on Wednesday last. The weather was delightful, and the display of early flowering plants very satisfactory. One of the principal features was the Hyacinths, which were truly grand. Messrs. Veitch & Sons, Chelsea, staged superb collections of these charming flowers, which deservedly carried off the first prize. Mr. Wm. Paul also showed a good collection; nor did groups from amateurs stand far behind them in point of quality. From Mr. Douglas, gardener to F. Whitbourne, Esq., Loxford Hall, Ilford, came a collection of Tulips, pleasingly varied in regard to colour, and altogether excellent. Messrs. Veitch & Sons also furnished a beautiful exhibition of the same showy flower. Mr. Weir took a first prize in the amateurs' class, which was also well supported by Messrs. Rowe and Stephenson. Chinese Primulas were in good condition, Mr. Wm. Paul producing some fine plants of Waltham White.

Cyclamens were also exhibited in lovely condition. Mr. Wiggins, of Isleworth, had a collection in which we noticed a charming pure white flambriated variety of Persicum, of good habit and faultless form. What would Cyclamen-growers forty years ago have given to have been able to produce such plants as those which Mr. Wiggins showed on Wednesday last? There is, however, this to be said in their favour: they had no such glass accommodation for their growth as we have now. There were, likewise, some very fine pots of Lily of the Valley from Messrs. Rollisson. Mr. Ward, gardener to F. G. Wilkins, Esq., showed a few interesting Orchids, amongst which we noticed well-flowered specimens of *Odontoglossum triumphans* and others, a capitally-bloomed plant of *Phajus grandifolius*, and two beautiful varieties of *Lycaste Skinneri*. Mr. Ward also took a first prize for Heaths—finely flowered plants; but not large. There were likewise some pretty little Azaleas, and a very creditable collection of Rhododendrons in pots from Messrs. Lane & Son, of Berkhamstead. Roses, both in pots and in the shape of cut blooms, were present in excellent condition, the three great Rose-growers, Mr. W. Paul, Messrs. Paul & Son, and Messrs. Lane, each contributing excellent collections. Camellias in pots were, for the most part, small.

Mr. S. Ware, of Tottenham, contributed a good collection of small succulents and hardy spring-flowering plants. Amongst the latter were the exquisite *Primula nivalis*, Dog's-tooth, and other Violets, *Orobis vernus*, the Siberian Squill, *Adonis vernalis*, Heartsease, hardy Heaths, Hepaticas, and others, together with prettily variegated *Funkias*, *Hemerocallis*, and a pan of Lily of the Valley with variegated foliage.

Hardy Orchids in pots, gems with which everybody is fascinated, were shown by Mr. Needle, gardener to the Comte de Paris, at Twickenham. Among them were *Ophrys apifera*, *O. mucifera*, *O. tenthredinifera*, *O. tricolor*, *O. bombyliflora*, *O. araneola*, *O. apiculata*, *O. fusca*, and *O. lutea*, and *Orchis longiorius*. Hitherto these most interesting plants have always been considered to belong to the province of the botanic garden, in which, however, we have never seen them successfully grown. Mr. Needle has, however, shown that they can be as successfully cultivated as any common greenhouse plant or hardy bulb.

Among the new plants from Messrs. Veitch, Rollisson, and Williams, the following received certificates—viz., *Veitchia canterburyana*, *Kentia australis*, *K. Forsteriana*, from Messrs. Veitch and Williams; also *Agave Seemannii*, *Toxicophlæa Thunbergii*, *Tillandsia Lindeni*, and *Davallia Tyermanii*, from the latter exhibitor. Mr. Ley had also a certificate for the last-mentioned plant under the name of *Humata Tyermanii*. *Martinezia erosa* and *Calamus verticillaris* from Messrs. Rollisson also received certificates. To Mr. William Paul, floral certificates were given for Hyacinth Lord Mayo, violet plum with a white throat, very distinct and pretty; and Ornament des Roses, with large pale blush bells, faintly streaked with rose down the centre of each petal. Reine de Naples, bright rose striped with carmine, was pleasing in colour. A certificate was likewise awarded to Mr. Reed, Twickenham Ait, for *Polyanthus Princess of Wales*.



"This is an art

Which does mend nature : change it rather ; but
THE ART ITSELF IS NATURE."—Shakespeare.

THE FLOWER GARDEN.



SPRING TREATMENT OF BEDDING PLANTS.

THE time will soon be at hand when people begin to turn their half-hardy plants out of doors, to make room for others still tenderer and younger. Many grow a large stock for summer work in pots, and it is when these are exposed to drying spring winds that the stock suffers. For this reason, roughly-knocked-together boxes are more useful than pots, as their mass of soil prevents the roots from being alternately roasted and chilled, like those in little pots; the boxes are also much easier watered, and retain moisture longer than pots. The consequence is, the plants in boxes do not acquire that stunted and miserable aspect which some people take for "hardening off," and are in a much better condition to fill the beds when planting-out time has arrived, the healthy roots striking out at once into the soil. Again, long confinement in small pots causes masses of roots to form on the outside of each ball, which must either be ruthlessly broken off at planting time, to the injury of the plant for the time being, or it will take the roots much longer to find food in the new soil. It is evident, then, that those who grow in boxes have little to fear in this respect. They may, however, run a risk in exposing the plants to cold cutting winds at a too early date, and thus injure them, or they may not give them that gradual hardening off and exposure which insure that the plants once placed in the beds will not suffer from any ordinary check.

In the case of those cultivating largely in pots there is, moreover, a better practice than that of leaving the established stock in small pots all through the spring months; it is to turn them out into temporary pits or frames, in very light, easily worked soil, breaking the balls slightly in the case of those that are pot-bound. If a lot of those excellent and economical turf pits be placed near the flower garden, this system will prove a great advantage. The plants will root in such as if in the open air, and, transferred carefully to the flower garden on some moist day, when all danger is gone, will not suffer the least check, while they will present that fully feathered and dwarf growth which things treated on the starving system only assume after being several weeks in the open air. Some recommend shading them during the middle of the day in such positions; but, except for a day or two after planting, we should certainly inure them to the full sun from earliest spring, always taking care to keep them moist and in a congenial root medium, and thus, while securing them a warmth for which they are always grateful, prevent any check from strong sun at planting-out time. In many cases, instead of potting singly strong, well-rooted cuttings, it would be much better to plant them out at once in such pits in spring.

Another advantage gained in thus planting out in pits and frames is that numbers of pots may thus be emptied and used for other purposes. Usually in spring there are more of these wanted than can be obtained. And the same objections do not apply to the pots filled in spring as to those filled in autumn, as the feeding roots have not time to exhaust the soil in the former, and then compress themselves into a dense

mat around the sides, the very position in which they are most liable to meet with hurtful vicissitudes. In the case of things potted late in spring, the young roots are just coming to the sides of the pot when planting-out time arrives, and are therefore just in a condition to root straight into the soil in which they are placed. There are some few things, too, to which life in a single pot is agreeable—succulents for example; but generally the box and planting-out system should be adopted.

Nothing is so good as low turf pits, nothing so easily made in a country place; and even where rough turf cannot be had, they may be built of stiff earth. We need not repeat that if these pits could be arranged near the flower garden or scene of final planting out it would be a great advantage, inasmuch as all subjects planted out in pits should be carefully taken up with a trowel and transferred immediately to the beds assigned them, no lying about being permitted, as is the case with plants in pots. As for the rough boxes, they may be brought alongside the beds and their contents planted at pleasure. In small places the difficulty of carriage from pits to beds is not noticeable, but in large ones, with the glass houses a long way from the flower garden or pleasure ground, it may become a serious matter. If the turned-out plants have to be carried a long way to the beds, the balls should be packed closely together, so as to prevent rapid evaporation, and covered with a shade of some kind while in transit.

As for protection in the pits in spring, it should vary according to the plant; in the case of pretty hardy things like the verberna and calceolaria, much may be done by the use of tarpaulin stretched on light frames, and only used at night, except in severe weather; glass, on the other hand, will be required for the geranium race until the late spring arrives. Strong calico, stretched at a foot or so over the plants, does very well for some things, and may be left on all day, admitting light enough. Countless things will do with mere night protection by means of any light covering rolled over them, and not a few of the hardy breed, now beginning to be so much used, need no protection whatever once spring has fairly set in—the new bedding violets for example. Care must, of course, be taken not to bring a hardy plant, struck and raised in a warm temperature, into the cold at once. Raise a dock or a nettle in a warm propagating house, or hotbed, place it for a night in the open air, and it will perish in a few hours. It will suffer as much from cold as a native of some warm latitude. Should circumstances not permit of the plants in small pots being planted out in cheap pits and frames, as we suggest, every means should be taken to preserve them from being injured from lack of water, exposure to dry cold winds, or checks of any kind. T.

THE VINE AS A HARDY ORNAMENTAL PLANT.

JESVICE has rarely been done to the Vine as a mere object of beauty. We have grown it for its fruit, and while looking intently for that have well nigh overlooked its high claims as a decorative plant. Even in this age of fine foliage plants, when we are in some danger of hiding up our flowers in a thick forest of leaves, the leaves of the Vine are comparatively neglected, or, if sought after at all, they are more used as a garniture for desserts than for any other purpose. And yet, for covering vacant spaces on walls, for wreathing round trees, festooning pillars inside of houses, or covering vacant roof spaces with verdure, or clothing bald places outside with beauty, few plants can equal, perhaps none excel, the Grape Vine.

The form of its leaves from first to last is exquisitely beautiful, the colours most lovely. Who shall describe the soft, woolly tenderness of the young Vine leaf bursting from its infant bed in the nut-brown bud? During its progress it is painted by turns with almost every tint of green, and then, when the change comes over it in the autumn, how varied and how beautiful are its changing hues! As the young bud at its base gives the old leaf notice to quit in the form of incessant knockings and pokings, the leaves of many Vines only become the more beautiful. Feeling the tenure of their existence to be short, they resolve to weave for themselves a shroud of glory ere they depart to be no more seen.

Some Vine leaves, it is true, put on a dull russet drab colour before they die; but others, such as the Barbarossa, the West's St. Peter's, and, last and best of all, the Claret, clothe themselves in the most gorgeous robes as the sun of their life begins to set in darkness. Like the sun himself, who paints the clouds with his richest tints

before he sinks beneath the horizon, so those Vines clothe themselves in all the glories of the rainbow before they fall. Talk about fine foliage, what foliage can equal a West's St. Peter's Vine, with its inimitable mixture of crimson, green, and sometimes gold? And the Claret Vine, with the sun playing hide-and-seek among its fluttering leaves, is a sight that can scarcely be equalled among plants. It will match the finest Virginian Creeper that was ever seen; and more can hardly be said in the praise of any ornamental plant.

The Vine is worthy of being planted in all vacant spaces for its leaves alone. Their colour and form are most beautiful. The latter varies more than many would suppose. From the wide expanse of a White Nice, measuring a foot and a half across, big enough almost for a baby's parasol, we come down to the exquisitely-cut and delicate Parsley-leaved Vine, and the tiny variegated one of our gardens. The word garden reminds me that the Vine would furnish a better green than many other plants employed to train round our flower beds. It would make green frames for glowing colours, such as would cool the eyes of our friend "S. R. H." without the help of the famous Parsley; and no plant could be better suited for scrambling over sunny rocks, clothing uncouth blocks, and climbing loosely over rustic poles, than the Grape Vine. Its freedom of growth, the curious beauty and strong grasping power of its tendrils, its inherent grace, its subtropical associations, are all points of the greatest merit in an ornamental point of view.

For these purposes it will likewise be found perfectly hardy throughout the greater part of Great Britain and Ireland. Even if killed down to the ground, it will, under good management, spring up and make a rod of twenty or thirty feet in one season. With a plant endowed with such an amount of growing energy all things are possible. And then should the clusters of fruit show and swell and ripen, who can, who has, thoroughly described their beauty? The thing is impossible. Neither is it needful that the Vine should climb like a giant to become a source of interest and beauty in gardens. If treated almost as annuals, strong stools would furnish a forest of shoots, excelling many of our highly-prized subtropical plants. Few plants are more interesting than such a variety as Miller's Burgundy, with its stout shoots and leaves, powdered with white dust, like our great-grandfathers' periwigs. This forms a grand contrast to the Claret and Strawberry-leaved Vines. I hear, too, that some of the American varieties are much more gorgeous in colouring and varied in form than our cultivated sorts, and I trust our growers will see to providing a stock of them. The Vine has another rare merit as an ornamental plant: no plant—not even the violet, sweetbriar, lime—can rival the sweetness of its blossom. It would add a fresh fragrance to our gardens and pleasure-grounds. It can hardly be needful to add more. In most large places thousands of vine buds are sacrificed annually. All these are plants in embryo that might clothe or sweeten much in need of both.

As seen in vineries, our formal modes of training rob the Vine of most of its grace and elegance. But fancy rows of pillars, or series of arches, or fronts of houses and walls, or masses of rocks, or even beds of flowers, wreathed round, interlaced or encircled with Grape leaves, such as the Claret, in all their autumnal glory, and the glossy black clusters of Grapes looking out invitingly among them! and many other plants will hide their heads in modest shame as they hasten to crown the Grape Vine king over the ornamental plants in our gardens.

If the Grape be generally planted as an ornamental plant, doubtless many will not only be astonished at its beauty, but more still will be gratified to find that it will yield fruit well worth the eating in the most unexpected localities.

D. T.

OSMUNDA REGALIS AND FERN COLLECTORS.

THIS, the handsomest of our British Ferns, once grew abundantly in many parts of Sussex and Hampshire, but under the ruthless hand of the Fern collector, it is fast disappearing. From one situation alone, near the Portsmouth Road, where ten years back it grew in large tracts, it is now entirely gone, having been torn up and carried off by cartloads to Covent Garden Market. Indeed, so destructive is this Fern-collecting-rage becoming to our native plants that many, such as the Green Spleenwort (*Asplenium viride*) and others of the delicate Ferns of Derbyshire are rarely met with where once they were so plentiful, and local botanists wisely conceal in their publications their precise habitats, as, if once known, their occupants would be immediately extirpated. The *Osmunda* is a favourite Fern in our gardens, but it is generally placed, with the Ferns of calcareous or stony soils, in dry or rocky situations, whereas it is essentially a water plant, loving wet, boggy places. We never saw it flowering finer than in a garden in Hertfordshire, at the edge of a *Rhododendron* clump, close to a pond, with its roots quite in the water. With its tall spikes of "bloom" and its fine tuft of leaves, it well deserves its regal name.

F. P.

THE ROSE SECRET.

I CAN, perhaps, put your correspondents in a way of striking roses as readily as verbenas, if not as freely as willows. There are generally some pot roses forced in most gardens, and immediately after flowering every eye will make a plant. In this country the cuttings are put in from February until the middle of April. After that it is too hot for them, and frequently after March they are uncertain, unless put in a north propagating house and kept as cool as possible. The system adopted is to thin out all the shoots required, and to shorten in any straggling growth, or to cut all the shoots off to the old wood, if plants are not valued; break off the prickles, for convenience of handling, and cut the shoots into single eyes, prick them out thickly into a cutting bed, on a bottom heat of 70°. Nearly every cutting will be rooted in three weeks. They are potted into two-inch pots; placed in a warm house for a short time, then into a cool one, and hardened off like other plants, and planted out in rich ground; they make nice plants, either for planting in beds or potting by the autumn. Another plan is, to take all the straggling shoots from roses in November, cut them into lengths with three or four eyes, and dibble them thickly under lights or hand-glasses under a north wall. A large proportion will root in the spring; one light will contain several thousand cuttings. Roses on their own roots are far the best, especially in this climate, where the briar will not succeed. In England eyes of unripened wood will root in a partially exhausted hotbed all through the summer, but will require keeping in a frame until the next spring. I have propagated hundreds in this way.

South Amboy, New Jersey, U.S.

JAMES TAPLIN.

SALVIA PATENS.

FIFTY strong plants of this beautiful blue sage put out in a line made a grand display here all the latter part of last summer, and if they had been fronted along with a row of scarlet and rose-coloured Pentstemons, the effect would have been heightened. This charming *Salvia* is not half as much grown as it deserves to be; but the fault does not so much rest with the plants as with those who coddle and otherwise maltreat them. After the blooming season is over, the tuberous roots should be lifted, and carefully stored for the winter in a dry place; but when, for purposes of propagation, renewed growth is demanded, ten chances to one the roots will be found dead. I grew my stock last year to secure seed, and from one thousand to twelve hundred seeds was no great crop from fifty plants, certainly; but I hope to have five hundred plants this year. Without a particle of bottom heat, I can on this, the 28th of February, take up one hundred cuttings for a start, and could continue to do the same weekly until my wants are satisfied. When shifting my *Salvia* roots at the end of October last, I at once planted them out thickly together in a soil bed in a greenhouse, just keeping the mould moderately moist through the winter.

Before Christmas the roots had begun to throw up young growth; but this I found, as soon as it reached the surface, was so injured, as to prevent further growth. Although not certain, still I believe this was caused by woodlice, and, to make matters secure, I gave the roots a top dressing of half-an-inch of sawdust. Through this the young growth is coming like a thicket of green, and I do not find one root unequal to its duty. Since the sawdust dressing not a shoot has been touched, and, if I had plenty of bottom heat, I believe I could convert my fifty plants into five thousand by May with comparative ease.

A. D.

NOBLE ORNAMENT.

ALL ornament is base which takes for its subject human work: it is utterly base—painful to every rightly-toned mind, without perhaps immediate sense of the reason, but for a reason palpable enough when we do think of it. For to carve our own work, and set it up for admiration, is a miserable self-complacency, a contentment in our own wretched doings, when we might have been looking at God's doings. And all noble ornament is the exact reverse of this. It is the expression of man's delight in God's work. For observe, the function of ornament is to make you happy. Now in what are you rightly happy? Not in thinking of what you have done yourself; not in your own pride; not your own birth; not in your own being, or your own will, but in looking at God; watching what He does; what He is; and obeying His law, and yielding yourself to His will. You are to be made happy by ornaments; therefore they must be the expression of all this. Not copies of your own handiwork; not boastings of your own grandeur; not heraldries; not king's arms, nor any creature's arms, but God's arm, seen in His work. Not manifestation of your delight in your own laws, or your own liberties, or your own

inventions; but in divine laws—constant, daily, common laws;—not Composite laws, nor Doric laws, nor laws of the five orders, but of the Ten Commandments. Then the proper material of ornament will be whatever God has created; and its proper treatment that which seems in accordance with or symbolical of His laws. And, for materials, we shall therefore have, first, the abstract lines which are most frequent in nature; and then, from lower to higher, the whole range of systematised inorganic and organic forms.—*Ruskin.*

ARUNDO DONAX IN THE PLEASURE GROUND.

THIS great reed of the south of Europe is a very noble plant on good soils. In the south of England it forms canes ten feet high, and has a very distinct and striking aspect; it will grow higher than that if put in a rich deep soil in a favoured locality; and those who so plant clumps of it on the turf in their pleasure grounds will not be disappointed at the result. Nothing can be finer than the aspect of this plant when allowed to spread out into a mass on the turf of the flower garden or pleasure ground, as many may have seen it at Sion. It seems much to prefer deep sandy soils to heavy ones; indeed we have known it refuse to grow on heavy clay soil and flourish most luxuriantly on a deep sandy loam in the same district. Like all large-leaved plants, it loves shelter. No garden or pleasure ground in the southern parts of England and Ireland should be without a tuft of it in a sheltered spot. But, fine as it is for effect and distinctness, its variegated variety is of more value for the flower garden proper.

The variegated variety of *A. Donax* (*A. D. versicolor*) will be found perfectly hardy in the southern counties, and considerably north of London, may be saved by a little mound of cocoanut-fibre, sifted coal-ashes, or any like material that may be at hand. In consequence of its effective variegation, it never assumes a large development, like the green or normal form of the species, but keeps dwarf, and yet thoroughly graceful. It is of course best suited for warm, free, and good soils, and abhors clay, though it is quite possible to grow it, even on that with a little attention to the preparation of the ground. But it is in all cases better to avoid things that will not grow freely and gracefully on whatever soil we may have to deal with: and it is to those having gardens on good sandy soils, and in the warmer parts of England, that we would specially recommend this grand variegated subject. For a centre to a circular bed nothing can surpass it in the summer and autumn flower garden, while numerous other charming effects may be afforded by it. Not the least happy of these would be to plant a tuft of it on the green turf, in a warm spot, near a group of choice shrubs, to help, with many other things named, to fill the gap that is now nearly everywhere observed between ordinary fleeting flowers and the taller tree and shrub vegetation. It is better to leave the plant in the ground, in a permanent position, than to take it up annually. Protect the roots in the winter, whether it be planted in the middle of a flower-bed or by itself in a little circle on the grass. It is easily increased by placing a shoot or stem in a tank of water, when little plants with roots will soon start from every joint; they should be cut off, potted, and placed in frames, where they will soon become healthy young plants.



The Great Reed (*Arundo Donax*), associated with Conifers, &c., in the Pleasure Ground.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Lost Crocuses.—Since the death of Dean Herbert, whose useful work on Bulbous plants should be in everybody's hands, this beautiful genus has been sadly neglected and overlooked, many most lovely and easily-cultivated species have been lost, and others have become so rare, that it is next to impossible to get hold of them. There is no more lovely *Crocus* than that little gem *C. lacteus*, with its creamy white flowers, or its still more beautiful variety *penicillatus*, which has delicate veins of blue; but where are they to be had? Then, again, there is the pale sulphur-flowered *C. ochroleucus*, a denizen, I believe, of Lebanon, and the netted-rooted *C. reticulatus*, with its variety, *albicans*, the true "Cloth of Silver." Who will help me to reintroduce these belles of spring into our gardens?—*H. HARPER CREWE, The Rectory, Drayton Beauchamp, Trinj.*

Large Norfolk Carices.—Mr. Gorrie, forester to the Earl of Leicester at Holkham Hall, sent some time ago some very large plants of *Carex paniculata* to the Edinburgh Botanic Gardens. The plants measured from the base of the roots to the extreme points of the leaves eight feet six inches. When so large, these Carices bear some resemblance to the dwarf grass trees of Australia. Three men were required to lift each plant; they grew in rich moist and very deep peat, and are supposed to be a century old. Mr. Gorrie says:—"We have some taller and heavier plants than any of those sent. I observe they grow strongest when the roots get into the water. I am told, where foxes abound, they are very fond of lying on the top of the *Carex* tussocks and basking in the sun. This gigantic *Carex* is very common on sodden peaty soil in Norfolk."

Myosotis dissitiflora.—This charming spring flower has been in blossom since the 15th of February; indeed I noticed some sprays of it showing colour in the last week of January. As to hardiness I can only say that out of over two thousand bedded out there is not one dead or even sickly; they are all from seed of 1871, sown when gathered. I mention this as I have noticed division recommended in preference to seed. Of course this has been a mild winter; but we lie cold and damp on a strong clay, and damp has been considered the worst of the foes that assail this tiny gem.—*R. C., Herts.*

Calceolarias.—My stock of these is somewhat deficient. Can they be struck now with any chance of success? and what am I to do with some I have in boxes? What is a good substitute for the *Calceolaria*?—*LADIA.*—[These may be struck now on a gentle hot-bed. Your autumn-struck plants, if growing freely, will furnish cuttings. Those wintered in boxes should have a cool frame prepared for them, in which they should be planted out about six inches apart. They require a deep, rich, loamy soil. The best substitute for the yellow *Calceolaria* is *Tagetes signata* *pumila*.]

Intermediate Stocks.—A hint or two as to the proper treatment of these will much oblige.—*Z.*—[A few of these, if required for early flowering, may now be sown in heat, and, as soon as fit to handle, pricked out into boxes or frames; they must be hardened off gradually, and may then be planted out in the end of April in well-prepared rich soil. For late summer and autumn flowering sow thinly under hand-glasses on a south border, and allow them to remain there until planted out in May, when they are to bloom; before planting out, the hand-glasses should be removed on all favourable occasions, so as to keep the plants dwarf and stocky.]

Daffodils.—The *Narcissus* of which I send you some blooms was found growing in a field near the Usk. It appears to be different from the common Daffodil, which is abundant in the neighbourhood, both as to the flower not being sessile in the sheath, the more regularly six-lobed crown, and also the greater length of the latter. Will you kindly say if it is more than a mere variety?—*G. B.*—Your *Narcissus* is evidently a small variety of *Narcissus major*. It is identical in the color of the petals and the trumpet, and totally different in this from any of the varieties of the common Daffodil. We shall be glad of a root or two. Please also to send your address: we have a communication for you.]

THE ARBORETUM.

GAME COVERTS AND ORNAMENTAL PLANTING.

THE ordinary system of planting shrubs out in woods, to render shelter and protection to game, and to give ornamental effect, is frequently productive of unsatisfactory results. This has been attributed to various causes; but I venture to say that in nine cases out of ten the failure may be traced to a total neglect in the preparation of the ground, to carelessness in planting, and a want of proper protection and attention to the shrubs for a few years after planting out. The most judicious system of planting evergreen shrubs to effect the twofold object of game shelter and ornament is to plant each variety in groups or clumps of from ten to fifty plants in each, so as to vary the sizes of the groups, and from two feet to six feet apart from plant to plant. No definite rule can be laid down as to the particular distribution of these groups. They should, however, be placed at irregular distances apart, a few yards from the wood rides, round the margins of woods near public roads. A few large clumps should also be placed in any open space in the centre of the wood. Care should be taken as much as possible to avoid planting immediately under the spread of trees, as the encroachments from the roots of standing timber are very injurious to the healthy growth of shrubs, and light and air also are most necessary to their health. The planting of evergreens in groups or clumps is a great source of shelter and protection to game, especially during winter, when deciduous shrubs have shed their leaves, and when ferns and rank weeds are laid flat on the ground. Game of all kinds delight in small patches of evergreen shrubs, with plenty of open space round, and they detest a continuous mass of under-covert. The life and ornamental effect imparted to a wood by evergreens planted here and there in judiciously placed groups, fully compensate for the trouble and expense incurred, apart from the benefit to the preservation of game.

After the selection of the ground for the various groups, the first point to be attended to is to see that the ground is dry. If there is any stagnant water or superfluous moisture, open cuts or trenches should be made to drain it off; but the thorough preparation of the ground for the reception of the shrubs by turning the soil to a depth of from twelve to eighteen inches deep is the great secret of success, and the shrubs will start into growth and thrive all the better if a few barrow-loads of leaf mould, fibry turf well smashed up, or road drift be added and well incorporated with the original soil. Pits should be made for the reception of each plant large enough to admit the roots without the least bending or cramming, and the roots should be carefully spread evenly round the pit, then the finest soil should be added till the pit is about two-thirds full; the plant should be kept straight and upright in its position, and the soil should be gently and evenly trodden round, and then more soil should be added round the plant till level with the rest of the ground, care being taken not to bury any of the lower branches.

The shrubs must next be protected from Master Bunny's depredations, for the only shrubs that will entirely resist the nibbling and barking propensities of hares and rabbits are *Rhododendron ponticum* and *Daphne ponticum* and *Laureola*. Many shrubs are puffed up as distasteful to rabbits, but, with the exception of those mentioned, I have failed to find any that are proof against their attacks, as all extensive planters must know that when shrubs are newly planted out hares and rabbits quickly detect and punish severely any new introduction into the covert; therefore, if ground game abound, wire netting should be fixed round every group; it should not be more than 1½-inch mesh, and not less than 4 feet 6 inches high, and be inserted in the ground 6 inches to prevent rabbits from working underneath. Many planters use wire netting from 2½ feet to 3 feet high; but I consider this too low, for hares can hop over it with the greatest ease, and I have seen a rabbit run up wire netting 3 feet high and get over, almost with the agility of a squirrel. All shrubs for the first two or three years after planting out should have the hoe kept going amongst them, to keep down rank weeds and grass; this will encourage the shrubs to start into growth quicker and thrive much better than they can if the ground is impoverished and light and air excluded by a crop of weeds growing about them.

I will now endeavour to give a list of the best evergreen shrubs adapted for covert purposes, with a few remarks on each which experience and close observation have prompted.

Common laurel stands pre-eminent as a covert shrub, being a rapid grower, of spreading habit; will bear any amount of cutting, is easily propagated by cuttings, and moderately cheap. This shrub is one of the best for extensive planting.

Portugal laurel, a beautiful shrub, affords a striking contrast to the former variety, for its foliage is a bright dark green, and its habit more compact; it is well worth planting out, affording as

it does variety and contrast, but it should not be exposed to cutting winds, as it is not nearly so hardy as the former.

Mahonia Aquifolium is a low, spreading, hardy, ornamental shrub, and bears an abundance of fruit which pheasants are very fond of. This shrub cannot be too highly recommended for planting out in coverts; it is easily propagated like hollies or thorns by sowing the fruit, and is consequently becoming cheap. Special care should be taken to keep the ground round this plant when newly planted out free from weeds and grass.

Privet, one of the most easily cultivated shrubs grown, and one of the fastest growers; it is cheap, very easy to shift, and not at all fastidious as to soil. There are, however, several varieties, and care should be taken in getting the true evergreen sort. It is unequalled as a quick growing covert shrub.

Rhododendron ponticum, a bold, vigorous growing, ornamental shrub, especially adapted for peaty ground, but will thrive in a great variety of soils. This shrub may be classed as excellent in an ornamental point of view. In regard to its qualities as a game shelter shrub, I do not believe it should be considered one of the best. When it gets fairly established and spreads, its lower branches grow too much in a tangled mass, and form anything but a comfortable bottom covert for pheasants, and I have observed that game do not run under rhododendrons so freely as under laurels, privet, yew, &c. Its greatest recommendation is that it may be planted out where hares and rabbits abound, and never suffers at all from their attacks.

Common yew, one of the best shrubs grown, either for ornament or game shelter, is unsurpassed for planting in exposed situations; it is, however, a rather slow grower, and somewhat expensive; will thrive in any ordinary woodland soil.

Common holly, like the preceding, cannot be too extensively planted; it is unrivalled for beauty and hardness, and will thrive well under the drip of trees. It is rather a difficult shrub to transplant; the latter end of April or beginning of May is the best time to shift it.

St. John's Wort, a low-spreading shrub, unsurpassed as a dwarf covert plant, thrives best in a light, sandy, peaty soil. When planted out in small patches, its creeping stems will in a short time spread over a large space of ground. This shrub is seldom planted out for covert purposes; nevertheless it is one of the most useful grown.

Gaultheria Shallon, another of those useful dwarf shrubs of creeping habit seldom planted out to any extent in woods, notwithstanding its good qualities. This is one of the few shrubs found to thrive in fir and pine plantations; thrives best in a sandy, peaty soil; it bears fruit eagerly devoured by pheasants.

Berberis Darwinii, *Wallichii*, and *japonica*, *Box*, *Aucuba japonica*, *Laurustinus*, *Photinia serrulata*, *Phillyrea*, *Arbutus*, *Eunymus japonicus*, *Rhamnus Alaternus*, *Ruscus aculeatus*, *Juniper* (of sorts), *Cotoneaster* (of sorts), *Kalmia latifolia*, *Privet* (of sorts), and *Garrya elliptica* are all beautiful shrubs, and well adapted for giving shelter to game; should be planted out in groups near wood rides to give variety. In conclusion, with regard to the proper season for transplanting shrubs, I do not think so much depends on the time of year in which this is performed as on the state of the plants, the condition of the ground and the weather. As a rule the best time is autumn; but the planting of evergreens may go on till late in spring. Dull, cloudy days should be chosen; dry, windy, frosty weather should be avoided.—George Berry, Longleat, in "Field."

HARDY TREES AND SHRUBS.

THE SILVER BELL, OR SNOWDROP TREE (*HALESIA TETRAPTERA*.)

THIS is one of the most ornamental of all the American deciduous small trees which we possess, and richly deserves a place in every collection, on account of the profusion of Snow-drop-like blossoms which it produces in April and May. In this country it attains a height of from twenty to thirty feet, grows freely in any good garden soil, and in the climate of London, not only flowers freely, but ripens seed in abundance. It is a native of North Carolina, where it grows on the banks of rivers, and was first introduced in 1756; is easily increased by cutting the roots, or by means of seeds, which, however, often remain more than a year in the ground before they vegetate. The leaves are alternate, ovate-lanceolate, sharply serrated, and with the middle depressed and the footstalks glandular. The flowers are pure white, nine or ten together, in lateral fascicles, drooping, and in shape and size resemble those of the common Snowdrop. The corolla is monopetalous, ventricosely campanulate, with a deep four-lobed border. The

drupe or fruit is dry, corticate, and oblong, with four winged angles and cells one-seeded. For limited places or suburban gardens this is a very suitable little tree. G. GORDON, A.L.S.

NEW ORNAMENTAL PEACH. (PERSICA DAVIDIANA.)

This is a new species of Peach of no value as a fruit tree, but likely to take a high place in the list of ornamental shrubs. It has been named after Père David, who sent some stones of it to the Museum about the year 1865, and is thus described in the *Revue Horticole*:—A vigorous shrub, with wide-spreading (sometimes weeping) branches; leaves glandular, on deep red stalks, regularly attenuated towards the base, with very fine short teeth not closely set; glands globular, small, few (wanting in most of the leaves), almost always solitary, and placed on the stalk or at the base of the leaf. Flowers of a delicate rose colour (in one variety white); numerous (of medium size, about three quarters of an inch in diameter), appearing before those of the Almond tree. Fruit small, a little over an inch in diameter, almost spherical, usually a little larger on one side, with a velvety skin, of a greyish colour, changing



New Ornamental Peach (*Persica Davidiana*).

to yellow when ripe, which occurs about the middle of August. It is perfectly tasteless, and has hardly even the odour of a Peach. M. Carrière describes this as an exceedingly handsome shrub, and differing so remarkably in habit from all Peaches hitherto known, that the most skilful Peach-grower would never take it for one of the family, particularly if he beheld it when deprived of its leaves.

MISTLETOE-BEARING OAKS.

THE following instances of the mistletoe on the oak are given by Mr. James Britton, of the British Museum, in the *Field*. The first seven are given by Dr. Bull in his very interesting paper upon the subject published in 1864. The remainder have been still more recently noted:—

1. The oak at Eastnor, mentioned by Mr. Gordon.
2. The oak at Tedstone Delamere, Herefordshire, discovered in 1851. Mr. Lees states that there are two Mistletoe Oaks in this locality.
3. Oak at Badham's Court, Sudbury Park, near Chepstow.
4. Oak at Burningfold Farm, Dunsfold, Surrey.
5. Oak in Hackwood Park, near Basingstoke.
6. Oak not far from Plymouth, by the side of the South Devon Railway.

7. Oak at Frampton Severn, Gloucestershire.

8. Oak at Haven, in the ancient forest of Deerfold, Herefordshire, figured in the Transactions of the Woolhope Club for 1869.

9. Oak overhanging a double cromlech at Plás Newydd, Anglesey.

10. Oak at the Hendre, Llangattock Lingod, Monmouthshire, discovered in the winter of 1870, and figured in the Woolhope Transactions for 1870-71.

11. Oak at Bredwardine, Herefordshire, discovered early in 1871; the parasite grows upon it in fifteen different places. A beautiful photograph of the tree is given in the volume of Transactions above referred to.

12. Oak near Knightwick Church, Worcestershire, discovered in 1871.

I have from time to time published, in *Notes and Queries* and the *Journal of Botany*, extracts from the older writers in which Mistletoe Oaks are mentioned; and there is in the Kew Herbarium a specimen labelled "from the Oak near Winchester."

With reference to the parasitism of the Mistletoe, the Rev. R. Blight publishes in the Woolhope Transactions a very valuable paper, illustrated by diagrams, which should be carefully consulted by anyone engaged in investigating the subject. The specimens from which the drawings were made have been presented by Mr. Blight to the botanical department of the British Museum, and are there exposed to view in the public room.

ORNAMENTAL PLANTING.

It is after all more in the disposition of the shrubbery, than in the varieties, that a rational pleasure will be found. It is not a great burden of bloom from any particular shrub that I aim at. I do not want to prove what it may do at its best, and singly; that is the office of the nurseryman, who has his sales to make. But I want to marry together great ranks of individual beauties, so that May flowers shall hardly be upon the wane when the blossoms of Juno shall flame over their heads; and June in its turn have hardly lost its miracles of colour when July shall commence its intermittent fires, and light up its trail of splendour around all the skirts of the shrubbery. I want to see the delicate white of the Clematis (virginiana) hanging its graceful festoons of August, here and there in the thickets that have lost their summer flowers; and after this I welcome the black berries of the Privet, or the bræzen ones of the twining Bitter-sweet. Or, it is some larger group with which we deal—half up the hill-side, screening some ragged nursery of rocks—and a tall Lombardy Poplar lifts from its centre, while shining, yellowish Beeches group around it—crowding it, forcing all its leafy vigour (just where we wish it) into the topmost shoots; and amid the Beeches are dark spots of young Hemlocks—as if the shadow of a cloud lay just there, and the sun shone on all the rest; and among the Hemlocks, and reaching in jagged bays above and below them, are Sumachs (so beautiful, and yet so scorned), lifting out from all the tossing sea of leaves their solid flame-jets of fiery crimson berries. Skirting these, and shining under the dip of a Willow, are the glossy Kalmias, which at midsummer were a sheet of blossom; and the hem of the group is stitched in at last with purple Phloxes and gorgeous Golden-rods. I know no limit indeed to the combinations which a man may not effect who has an eye for colour and a heart for the light labour of the culture. There is, unfortunately, a certain stereotyped way of limiting these shrubberies to a few graceful exotics, and of rating the value of foliage by its cost in the nursery. It is but a narrow and ungrateful way of dealing with the bounties of Providence.—*My Farm of Edgewood.*

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Pruning Conifers.—I have a Picea Nordmanniana in which the leader has not grown six inches during these last two years. Will you inform me how the pruning of the side branches, as recommended by Mr. McNab, should be done? Should the wood be cut back? and if so, how far? or would it be sufficient to rub off the buds at the extremities of the branches? Lastly, should all the branches be pruned?—A SUBSCRIBER. [Mr. McNab, to whom your query has been submitted, says you will have to wait till August, when all the side branches of your plant may be freely cut, so as to give it a pyramidal shape. As you have not given the height nor the diameter of your tree, it is impossible to say exactly how much ought to be cut off. If the plant is small, you should cut the branches by putting the knife below them, and cutting upwards and outwards; and if large, the upper branches, or those above the eye line, should be cut by putting the knife above, and cutting downwards and outwards; the intermediate ones being straight. After the points have been taken off the main branches, whether it be one, two, or three feet, the side branches should also be shortened. After being cut, cover the surface of the ground below the branches with some good soil. The plant will be disfigured for a year or so, but it will soon recover, and the leader rapidly increase.]

Shrubs and Flowers which Thrive under the Drip of Trees.—As many of our readers are likely to take an interest in these, we enumerate a few, and shall be much obliged to anybody who will add to them:—

Laurustinus
Philadelphus
Hollies
Cornus alba
C. sanguinea
Corylus avellana
Daphne Mezereum
Euonymus japonicus
Lonicera tatarica
Xyloteum
Mespilus germanica
Rosa arvensis
R. rubiginosa
Rubus odoratus
Sambucus nigra
S. racemosa
Spirea sorbifolia
S. thalictroides
Symphoricarpos racem-
inosus
Aucuba japonica

Buxus sempervirens
Daphne Laureola
Ruscus racemosus
R. aculeatus
R. Hypoglossum
Ivies
Privet, in var.
Japanese Privet
Common Laurels
Portugal Laurels
Rhododendron ponticum
Azalea pontica
Taxus baccata
Cotoneaster baxifolia
C. microphylla
C. Hookeri
Pernettya mucronata, for
peat soils
Phillyrea, of sorts
Rhamnus Alaternus
Broom

Leycesteria formosa
Box, of sorts
Juniperus communis
J. sabina
Potentilla fruticosa
Buddleia globosa
Viburnum Lantana
V. Opulus
Gaultheria Shallon
Ribes, of sorts
Weigela rosea
Euonymus europæus
Berberis aquifolium
B. dulcis
B. Darwinii
B. vulgaris
Hippophae rhamnoides
H. angustifolia
Arbutus Uuedo
Garrya elliptica
Symphoria racemosa

In planting shrubs with a view to produce shelter, or game coverts, I would advise that they should never be scattered promiscuously over the ground as single specimens at wide distances apart, but should be planted in groups, say each plant three to four feet apart, and a mixture of a few kinds in a mass, taking care to keep the low-growing and less rambling sorts next to the wood rides. Of rough-growing herbaceous plants suited for covering the ground in summer, the following are good:—

Periwinkles, in vars.
Saponaria officinalis
Spirea Aruncus
Vicia sylvatica, and its
varieties
V. major, and its varieties
V. minor, and its varieties
Pampas Grass
Saul Lyme Grass

Ribbon Grass (3 varieties)
Carex pendula
Willow Herb
Perennial Sunflowers,
double and single
Phytolacca decandra
Siberian Cow Parsnip
Acanthus mollis
Asclepias Cornuti

Asperula odorata
Digitalis purpurea
Lobelia syphilitica,

Strong coarse ferns, like—
Lastrea Filix mas
and
Common shade-loving
Ferns.

G. B.

THE INDOOR GARDEN.

LILIUM AURATUM.

This being the season for starting this charming Lily into growth, perhaps a few hints on its culture may not be uninteresting. It is a plant which no one fond of flowers should be without, whether they have a greenhouse or not.

The season before last I bought forty fine bulbs of this Lily, which gave me the utmost satisfaction. I planted them as soon as they arrived, in pots, in a mixture of peat loam, a little manure, and sharp sand. I put them first into small pots, and then, as these became full of roots, shifted them into larger ones, and so on, till they got into the large pots, in which they were to bloom for the season. Being rather pressed in the houses for room, I determined to try how some of them would do in the open border. Accordingly, I planted some of them out along with some lance-leaved Lilies, and they did splendidly; I, however, took the precaution to take them up as soon as they were well out of flower.

I had heard some people say that this Lily should be dried off; while others, on the contrary, said, "No; keep them in pots, and let them grow on;" so I tried half one way and half the other: I dried twenty, and kept the other twenty in pots.

Last season I started them into growth, but I only kept a dozen back for the conservatory, and, in place of plunging them in the pots, I turned them out. When they came into bloom, I found that those which I had kept growing on in the pots were twice as strong, and the flowers much larger than those I had dried off; I, therefore, made up my mind that for the future I should always leave them in the pots. Last season three or four were rather late in blooming, and, as I was afraid to leave them out of doors any longer on account of the frost, I thought I would try and lift them with a good ball, pot them, and see if they would bloom in the house later in the year. I was afraid that the lifting would give them a sad check; but it did not, and I had them in full flower on Christmas Day.

When my plants are growing I give them plenty of water; and when they are out of bloom, I do not dry them off suddenly, but keep giving less and less, till the stems are brown and decayed, when I stop watering altogether, and place the pots under a stage in one of the houses out of the way till I want to start them into growth next season.

Anyone who will treat the bulbs of this Lily in the manner just described will find no difficulty in inducing them to bloom satisfactorily, even if they have no greenhouse; for they can be kept very well in the winter in a cold frame.

Upper Norwood.

A. H.

MONSTERA DELICIOSA.

FOR striking effect in warm conservatories arranged in the natural style this is a plant well worth attention on account of the size and singular appearance of its leaves, which, as our illustration shows, are cut and slashed full of holes in a peculiar manner, as well as divided into broad straps at the edges. Its habit is a good deal like that of a Philodendron. If grown for its fruit, it requires a brisk moist stove heat. The fruit is as peculiar in appearance as the leaves. It is about a foot long, and curved a little towards one side. Like that of the pine-apple, it consists of numerous "pips," which are arranged in a spiral manner round a central column, from which they separate readily when ripe. They are full of juice, the flavour and aroma of which is something like that of a pine-apple, luscious and pleasant to the taste, but soon satisfying; and being furnished with harsh papillæ, they leave a disagreeable prickly sensation in the mouth, which is disliked by many. Nevertheless, some day or other this fruit may—nay, probably will—be introduced to our dessert as one of its choicest luxuries.

It is, however, with the uses of this plant in an ornamental point of view with which we have now to deal. Placed in conspicuous situations, where its great deep green, holed leaves could be seen to advantage, this singular Mexican Arad could not fail to excite curiosity and admiration. It should not be planted out, but kept in pots, which could be lifted from the



Monstera deliciosa.

positions in which they have been plunged and returned to the stove during winter. When grown luxuriantly it acquires a somewhat scrambling mode of growth, especially adapting it for creeping over or about massive rockwork, or rustic work, or over the back wall of a warm house. Trailing round a tropical pool where its ample foliage would be reflected by the water, its effect could not fail to be most satisfactory.

THEOPHRASTAS.

THEOPHRASTAS rank amongst the grandest of plants that are grown under glass for the beauty of their foliage. T. imperialis is unrivalled in its way, so much so indeed, as to make it a fit companion for medium-sized Palms, with which its ample, massive leaves contrast admirably. It also possesses the excellent property of being easy to cultivate, and by no means liable to the attacks of insects. Nor is it particular as to temperature. I have had it growing in the stove during the summer under a day temperature of 80°, and the same plant has been wintered in a house the night temperature of which has rarely been above 45°, without suffering in the least. It has one fault, and that is the difficulty—I might, indeed, say impossibility—of increasing it by any means except from seed. I have had cuttings, apparently in the best possible condition, taken off with a heel, that have lived for a couple of years, but have never made a single root.

Those commencing its culture should procure a plant at once, selecting such as has not been too long confined in a

small pot, for when that is the case this *Theophrasta* never makes a handsome plant; as it loses its bottom leaves sooner than it otherwise would do. Supposing the plant to be in a six or eight inch pot, full of healthy roots, remove it at once into a twelve or fourteen inch pot, well drained; using good turfy loam, with about one-seventh sand to insure good drainage, as it is a water-loving subject. It will succeed in a cool greenhouse, but its foliage is never so fine as when grown in the stove, with a night temperature of 70°, with a rise of 10° by day during the growing season. By next summer it will have filled the pot with roots, when it may be moved into an eighteen or twenty inch pot, using similar soil to that recommended at the first potting. During the growing season, syringe once a day and shade from bright sun. In the autumn it may be removed to a lower temperature, and it is not necessary to give it a larger pot, as the second season's growth can be assisted with manure water once or twice a week. By the end of the second summer, if all has gone well, the plant ought to be six feet high by six feet through. It will retain its bottom leaves about three years, when a few will begin to decay. As this goes on, if a portion of bare



Theophrasta.

stem is objectionable, the plant may be headed down, cutting the head off about three feet from the top; then, with a sharp knife cut out all the eyes down to within four inches of the base, which will induce it to break at the bottom, throwing out several shoots; remove these, all but one. When this has grown ten inches or a foot, the upper portion of the stump may be cut off just above where the young shoot has sprung. The reason for not heading the plant down to the base in the first instance is this: in all vegetable life there exists a perfect sympathy between the roots, the trunk, the branches, and the leaves; one cannot be mutilated or injured in the least degree without affecting the others; consequently, when the head of a plant is reduced, or altogether cut away, the roots die proportionately with the amount of head removed. Therefore, by retaining a considerable portion of the stem, we preserve a greater portion of roots, which, in their turn, are better able to assist nature in re-establishing the balance destroyed by removing the head of the plant.

When the young growth is a little further advanced, the plant may be taken out of the pot, the greater portion of the old soil removed, all the dead portion of roots cut away, and then placed in a smaller-sized pot, and subsequently treated as has just been directed. Brown scale is the only insect I have found troublesome, and this can be removed by sponging.

Southgate.

T. BAINES.

PALMS FOR THE GARDEN.

(Continued from page 369.)

HYPHENE THERAICA (DOUM PALM: EGYPT).—Fronds, palmate, glaucous, with small spines on margin, also on petiole. A coarse-growing plant, quite unfit for pot cultivation.

H. NATALENSIS.—Similar to the last, but smaller.

TRIARIEA GIGANTEA (PERU).—Fronds, six to eight feet long, bipinnate; pinnae, triangular, six inches long, four inches broad, spreading. A noble Palm, resembling a gigantic *Adiantum*; roots strong, often cropping up above the ground, three-quarters of an inch thick. Well adapted for a large house, where it contrasts well with other plants; fond of heat.

JUBEA SPECTABILIS (SYN., *COCOS CHILENSIS*: NEW GRENADA).—Fronds, pinnate, spreading, channeled on upper side, eight to ten feet long, shining green. This plant has the habit of a *Phoenix*, and being nearly hardy is useful either for cool conservatory or outdoor decoration. It is reported to stand our winters; but it does best when slightly protected.

KENTIA CANTERBURYANA (NORTH QUEENSLAND).—Fronds, spreading, pinnate; pinnae, flat, regular, acuminate; leaf-stalk, round; habit, that of the *Areca*, but stiffer. We have three species of this genus from the same district, differing in habit and width of pinnae. All of them are of noble port, and should withstand greenhouse treatment. As they grow old, the fronds form a beautiful plume-like circle of foliage, borne upon a stem about one and a half inches in thickness.

K. MOOREANA.—Smaller than the last; fronds recurved.

K. WENDLANDII.—The dwarfiest of the three; habit, denser; pinnae, broad.

KORTHALSIA DEBILIS (BORNEO).—Fronds, erect, pinnate; pinnae, flat, two to three inches broad, dark green. When young this has the habit of *Areca catechu*, but is slighter. A good vase plant for table decoration.

LATANIA COMMERSONII (SYN., *RUBRA*: MAURITIUS).—Fronds, palmate, three to four feet broad, points acute, cut about six inches, margin red; petiole, glaucous, with small spines on margin; underside round, upper, flat. A good table plant when young, at which period it is of a red tint; with age the colour goes off, when it becomes a truly noble object for a large house, throwing magnificent foliage. Where there is room this is the palm of palms.

L. GLAUCOPHYLLA (SYN., *LODDIGESII*: MAURITIUS).—Habit, exactly that of the former; differing in the absence of the red margin and the whole plant being glaucous. A noble plant.

L. VERSCHAFFELTII (SYN., *AUREA*: MAURITIUS).—Plant laxer than the above; petiole, unarmed, slightly recurved, with a yellow tint which pervades the whole plant; leaf, cut nearly half way. A good plant to mix with other foliage plants for contrast. When small, a very good table plant, though not fond of cold.

LEOPOLDINIA PULCHRA (BRAZIL).—Fronds, pinnate; pinnae, recurved, purplish in tint; unarmed. A good Palm, on account of its purple shade for mixing with fine-foliaged plants, though not so good as its name would denote.

LICUALA ACUTIFIDA (MOLUCCA).—Fronds, forming a circle, cut into segments about half way; points, acute, drooping; stiff spines on margin of petiole. The whole of this genus are round-leaved plants, of more compact habit than *Latania*s, therefore more useful for small houses and table decoration. This is the best species; all are fond of heat and water.

L. ELEGANS (SUMATRA).—Leaf, cut into eight or ten segments; point, abrupt; a good plant; when young it has eight to ten fronds, and spreads from three to four feet.

L. HORRIDA (JAVA).—A stiff-looking plant, with dark-green foliage; strong, dark spines on margin of petiole. Not very desirable.

L. PELTATA (INDIA).—Leaf, very round and flat; end cut abruptly; petiole, spinose. This is a very elegant plant, gaining beauty with age.

L. SPINOSA (JAVA).—A stiff, short-leaved plant. Not decorative.

LIVISTONA ALTISSIMA (SYN., *SUBGLOBOSA*: JAVA).—Fronds, fan-shaped, nearly round; points, pendent; petiole, long, erect; spines on margin. A slighter plant than *L. chinensis*, but not so hardy. A very useful palm.

L. CHINENSIS (SYN., *BORBNICA*: ISLE OF BOURBON).—Fronds, spreading, dense; points, pendent; spines on petiole recurved. This plant is a general favourite, though not the best of the genus. A good plant for subtropical purposes and a large house; but for a small one it is too dense.

L. HOGGENDORFII (JAVA).—Petiole, set with strong black spines; fronds, larger and more erect than *L. chinensis*. Fond of heat.

L. HUMILIS (N. HOLLAND).—Erect and spreading spines on petiole, half way from base; leaf forming three-quarters of a circle, dark green. Good for conservatory, though rather dense.

L. INERMIS (N. HOLLAND).—This resembles, in general appearance the above; but the leaves form a circle, and are denser.

L. JENKINSII (ASSAM).—Fronds, forming three-quarters of a circle; ends, pendent; spines on petiole, distant. A light-looking plant, which when young is very elegant, spreading from three to four feet. One of the best for stove purposes.

L. OLIVIFORMIS (JAVA).—Very like *L. chinensis*, but not so hardy.

L. ROTUNDIFOLIA (SYN., *SARIBUS*: JAVA).—A compact plant, with short, round leaves, bright green; spines on petiole, black. When young, it forms a good-shaped plant, at the height of two feet, and one foot wide; in fact it is the gem of the genus. Though rather dense for table purposes, it is good for mixing with ferns in a small house.

L. MAURITIANA.—There is a plant in cultivation under this name, but I have not been able to distinguish it from *L. chinensis*, either by seed or plant.

J. CROUCHER.

(To be continued).

DARLINGTONIA CALIFORNICA.

THIS, in some respects, extraordinary plant has probably not yet become common in England. When first introduced, I remember it was considered a difficult plant to manage; it frequently refuses to grow, and, in some cases, dies outright, probably from over kind treatment. Some account, therefore, of the way in which we manage it in America may not be without interest, showing, as it does, that we experience no difficulty in the least in making it grow satisfactorily. The first lot of plants which I received was during the hottest part of the summer, and although taken up when in full growth, sent five hundred miles to San Francisco, and afterwards 3,300 miles by rail to this place, they came to hand in capital condition. I potted them at once in rough peat and live sphagnum, and placed them outside in a small stream of water, shading well for a few days, and then left them exposed until quite a sharp frost occurred at the end of October, when they were removed to a cold house, or rather, to the cold end of a very cool house, with such associates as *Sarracenia purpurea*, the variegated New Zealand Flax (*Phormium tenax variegatum*), young *Thujaopsis*, &c. Here they were plunged in sphagnum, kept wet, and sprinkled overhead every day. Thus treated, they succeeded to my entire satisfaction; but I expect even better results from plants taken up in the autumn; for a large batch which I received last autumn made a greater number of fresh roots in less time than did those received in summer.

I would strongly recommend plantations of this plant and of *Sarracenia purpurea* to be made round ornamental waters. The *Sarracenia* will withstand a temperature 10° below zero, and probably one even more severe; but I can vouch for its enduring that amount of frost, and I have no doubt that the *Darlingtonia* will, at least, withstand the vicissitudes of an English winter. It would only be necessary to make for it a bed of rough peat, and to allow the roots to reach the water.

South Amboy, New Jersey, U.S.

JAMES TAPLIN.

ROSES ON ORANGE TREES.

IN the month of March I procure orange trees about one to two feet high, and two to three inches in diameter, take them out of their boxes or pots and shake the soil entirely off their roots; then I wrap the stem in a thick woollen cloth and screw it into a vice, cut off its tap-root, get an augur a little longer than the stem of the tree, and begin to bore from the place where the tap-root was cut off through the pith of the stem, exactly through the very centre of the tree, until the point of the augur appears through the crown. The cavity, after I have withdrawn the instrument, I clean out with a small brush fixed to a stick, so that no loose wood remains. I then melt a little beeswax and turpentine together, and with this mixture I paint the interior of the tree. After this I get a dog-briar with good roots, and nearly as thick as the cavity in the orange tree, but about two or three inches longer than the tree itself, remove all thorns from it, and pass it through the tree from the root upwards, so that the roots of the tree and the briar mingle together. Around the top and the bottom of the rose tree I place a little grafting-wax to prevent the air and soil getting into the cavity. Then I pot the tree again, and prune it closely, and place it into bottom heat. In four or five weeks I bud the top of the briar, and very often the same year I have had orange blossoms and rose-flowers together. The orange tree does not take the operation amiss, but goes on flowering and fruiting as if nothing had happened. Last year I saw some of these orange

trees I had united to rose trees fifteen years ago on the Continent full of flowers—roses and orange blossoms, mingled together. In a year afterwards it is impossible to detect how the operation was performed, and the tree looks exactly as if a rose had been grafted upon it.

G. S., Cheltenham.

MAMMILLARIA ELEPHANTIDENS.

THIS is one of the most distinct of the elegant section of Cacti to which it belongs. In July, August, and September, it produces a quantity of purple and violet-shaded flowers, two inches in diameter. It is beset with strong spines, which are reflexed; they are, therefore, not so formidable-looking as those of some of the species. The plant itself is bright green in colour, and very free growing. It may be used as a rock-plant in summer in an exposed situation. It will even stand a temperature as low as 35° in winter, and may be kept out of the soil in a perfectly dry state until next season. It increases very fast by means of offsets from the points of the mammæ. Many others among dwarf Cacti



Mammillaria Elephantidens.

would show to advantage if they were used for bedding purposes, or on rockwork, as, for instance, *Echinopsis Eyresii*, which may be increased to any extent, and would be an improvement on *E. sempervirens*.

J. CROUCHER.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Palms for Table Decoration.—Kindly name a few for this purpose.—A. D.—[The following are very ornamental in a young state, viz.:—

<i>Areca lutescens</i>	<i>Latania borbonica</i>	<i>Calamus ciliaris</i>
<i>A. rubra</i>	<i>Livistona rotundifolia</i>	<i>C. viminalis</i>
<i>Chamaedorea Hartwegii</i>	<i>Rhapis flabelliformis</i>	<i>C. Lewisianus</i>
<i>C. Sartorii</i>	<i>Senforthia Bancroftii</i>	<i>C. leptospadix</i>
<i>C. elegans</i>	<i>Thrinax, in var.</i>	<i>Caryota urens</i>
<i>Dæmonorops fissus</i>	<i>Wallichia caryotoides</i>	<i>Euterpe sylvestris</i>
<i>D. perianantha</i>	<i>Veitchia Johannis</i>	<i>E. edulis</i>
<i>Elæcis guineensis</i>	<i>V. australis</i>	<i>Hyophorbe Verschaffeltii</i>
<i>Geonoma pumila</i>	<i>Kentia canterburyana</i>	<i>Licuala elegans.</i>
<i>G. Verschaffeltii</i>	<i>Cocos Weddelliana</i>	

Plantains and Bananas.—What is the difference between Plantains and Bananas? Kindly say, and oblige.—MUSA.—[The fruit of the plantain is about an inch in diameter, from five inches to eight inches in length, and bent a little on one side. The fruit of the banana is much shorter and rounder in form, and more agreeable in flavour, though not so luscious as that of the plantain. The trees of both species grow from fifteen to twenty feet high, and are readily distinguished from each other, as the stem of the plantain is entirely green, while that of the banana is spotted with purple. The one generally grown and often fruited in our stoves is the Duke of Devonshire's Musa, M. Cavendishii, or chinensis; it may be called the dwarf banana, as it is more stocky in habit than either the true plantain or banana. It is indeed so compact in habit that it may be easily fruited in a common stove or cucumber-house.]

Dracænas and Caladiums.—Which are the best Dracænas and Caladiums for a cool greenhouse or a room window?—J. V. R.—[Caladiums dislike draughts or a too dry or cool atmosphere. Dracænas will do. Try the following:—*Dracæna australis*, *Draco*, *indivisa*, *braziliensis*, *nutans*, *Rumphii*, *erythrorachis*, *cannæfolia*, *lineata*, *excelsa*, *robusta*, *ferrea*, *nigricans*.]

Hybridising Pelargoniums.—Will any of your readers acquainted with hybridising Pelargoniums be so obliging as to state how the operation is effected, and at what stage the flowers must be when operated on? INQUIRE.—[A raiser of new varieties, who has had twenty years' experience, informs us that the process of cross-breeding must be learnt by practice; it cannot be taught in books. But he gives these hints as aids to beginners: Pollen is usually to be had from any variety, so do not be anxious about that. Your first care should be to fix on the seed-bearing flower, and the moment it begins to open, and before it is open, take a tiny pair of scissors, and cut out the stamens. This is to prevent its being fertilised by its own pollen. Now you may think of the pollen to fertilise it with; and on the second day after the flower opens the stigma is usually fully developed, and the cross will take. The smallest particle, applied by a camel's hair pencil, is enough, and it should be applied at mid-day.

TOWN GARDENING.

"OUR SQUARE" AND ITS HISTORY.

THE open spaces in London devoted to a little greenery of trees, grass, and flowers, are such invaluable oases in our great desert of bricks and mortar, that an interest in the methods of their planting and "keeping up," so as to insure the greatest amount of enjoyment, becomes the duty of every citizen who can now and then spare a stray half hour from the absorbing duties of ordinary life routine. If such men, and women too, who are residents in London, and yet have had opportunities of cultivating a taste for gardening, would devote a few of the above-named half hours in endeavouring to influence stolid vestrymen and others to a sense of duty in such matters, we should soon see a vast improvement in those green features of the great city, which ought to be so attractive, but which are often so much the reverse, as in the the unfortunate example of Leicester Square. "Our Square" is but a comparatively small open space; but yet, properly treated, might be made very pleasant to the eye from our drawing-room and dining-room windows, enabling us to look gratefully upon a small expanse of green, chequered in summer with the many vivid hues of gay flowers, instead of compelling our outward gaze to travel right across the open space and meet the dingy façade of houses on the opposite side, which, though not quite so close upon us as those of an ordinary street, are yet somewhat too near; while their architecture, though tolerable enough for the stucco school of domestic Corinthian, does not call for a continual study of its decorative features.

The pleasing temptation to the eye to rest half away across, among the green turf and gay flowers has not, however, been realised by the speculative builder who assumed to himself the position of *arbiter elegantiarum* in the matter of this town garden, the result of his inscrutable design being that which is about to be described. First: he wisely enough considered that, as the space was not large enough to serve as a promenade to the inhabitants of the square, it would, if left open, be made a mere playground for nursemaids and children, to the rapid destruction of any floricultural attempts he might feel disposed to make, in his natural wish to impart an agreeable aspect to his property. With this view, it was determined that the inhabitants should not be admitted within its railings, and that there should be no walks, in order not to encourage any latent wish to lounge forth in the cool of a summer evening among the flowers and shrubs of the square. The whole of the enclosure was, consequently, laid down in turf, in which were planned certain geometrical flower-beds, to be filled in summer with Geraniums and other "bedding plants." So far, the plan was consistent enough; but what was the subsequent "move"? Why, incredible as it may seem, the tasteful builder-proprietor, in order to guide his next step, looked to the example of other squares and their arrangements, not wishing, as it would seem, to run too much in the face of established custom all at once; and finding that they were almost invariably planted

inside the palisades with close hedges of Privet or Holl where either would grow, he at once went and did likewise. The effect of this last stroke of genius being, that our grass and flowers, which we were only allowed to inspect from the outside, were thus entirely concealed from us by a thick hedge of Privet and Holly; which soon became a ragged soot reservoir, that effectually hid the flowers from us, as by the interposition of a murky, smoke-blackened veil.

It should be remarked that the concealment only took effect when the spectator sought a glimpse of the flowers from the level of the street; and that it merely prevented him from standing and staring at the Geraniums on his road home to dinner, which perhaps might be getting cold while he was indulging in flower-admiring ecstasies; and so, it might be argued, the enchantment was wisely shut out from his view.

It may be urged, on the other hand, that lovers of flowers and of the soft and soothing aspect of a bit of green turf, might deem a glimpse of them agreeable from the dining-room windows, and might consider that their being shut out from that point of view was, in a small way, a kind of hardship. But to this aspect of the case the advocate of the tasteful builder might again reply by telling us that when in the dining-room, instead of straining the sight after the distant flowers in the enclosure, it would be far wiser to concentrate the powers of the visual organs on the cauliflower flowers close at hand on the table. This, for a moment, might appear tolerably conclusive: and, it might be further remarked, that from the drawing-room windows (a much more suitable position for the indulgence of reveries about flowers), we could obtain a nice comfortable view over the top of the black and sooty veil of Privet and Holly. But that ingenious form of advocacy was carefully provided against by the ingenious plotter and planner of our little oasis; for, in addition to the hedge of Holly and Privet, he also surrounded the enclosure with the tallest young Limes and Planes that he could get; and they have thriven sufficiently well to form a tolerably dense screen, which obscures the view of the grass and flowers as effectually from the level of the drawing-room windows as the black hedge did from the pavement and the windows of the dining-room. It is true that from the upper rooms of the house a sort of bird's-eye glimpse could be obtained; and the housemaids told their mistresses that from the attic windows the summer view of the Geraniums in the square was beautiful. It might be so, and it was no doubt a source of gratification to know that the maids had a nice view from the top of the house, but it did not quite satisfy the denizens of the drawing-room.

Such was the state of things up to Christmas last, when our garden Mæcenas was induced, after many struggles against deep-rooted convictions, to take away the dingy hedge, bring the turf close up to the palisades, and allow us to get a peep at the flowers and grass. But he persistently retained the Limes and Planes; and it will evidently require another little revolution, "all on the square," before his opposition to our views is thoroughly uprooted. In the meantime we have just induced him, *en attendant* the season of Geraniums, &c., to fill the great round central bed with Wallflower plants, which already form a pleasing mass of fine deep-green in place of a bare patch of black earth, and in a short time masses of bright golden flowers will mingle with the sober foliage, and fill the atmosphere of our little square with grateful fragrance. These are steps in the way we want to go, and we must patiently await others. Garden reforms, like the trees themselves, must *grow*; they cannot be effectually secured *per saltum*, for if done all at once, reaction is always to be dreaded. In our horticulture, as in our "glorious constitution," we must be content to train and develop, for that has proved the secret of permanence in our institutions of all kinds, from gardening to politics; and so, we of the square have full faith in the uprooting, in due time, of the objectionable Limes and Planes of our little enclosure, and the removal of one or two of them to a central mound, where with a third, fourth, and perhaps fifth additional tree of different kinds, the group may form itself into a pleasing mass of foliage, and prove an admirable nucleus from which the other garden features should radiate in graceful and not too regular lines; the whole composition becoming uninterruptedly visible to the inhabitants from the dining room to the attic. H. N. H.

THE PICTURESQUE SPRINGS OF FLORIDA.

THE springs of Florida, as described by a newspaper correspondent, appear to be so copious and so picturesque, that, while there is yet time, they ought to be secured as national property, never to be vulgarised by cotton mills or other commercial undertakings, but made the central objects of national parks, as in the case of the magnificent Yosemite Valley in California. These springs in the State of Florida are so wonderful as almost to surpass credibility. One of these, called "The Big Spring of Chipola," is literally a river bursting out of the earth from under a high bank covered with large oak trees. The orifice is thirty feet by eight wide, and the stream forms a river six rods wide and eight feet deep, which joins the Chipola River and makes its way to the Gulf. Another, named "Silver Spring," in the county of Marion, is perhaps more accessible to the tourists on the St. John's River, and is large enough to admit to its very source the steamers that navigate the Oclawaha River. Within a hundred yards of my present residence, from a wide cleft in a rock some eighteen feet down, breaks forth a living stream, which, with lavish generosity, pours out its tide at the rate of three thousand gallons per minute. Another hundred yards, and the stream is lost in the dark solemn waters of the St. John's River; but if it rose on high ground, and in the interior, it would be sufficient I fancy to turn all the mills of Lawrence or Lowell. And yet Green Cove Spring does not take high rank in Florida for its magnitude, though in beauty I should say that it yields to none. The waters are beautifully clear, and the bottom, which is some twenty feet square, is covered with a rich emerald. All around the spring, and almost overhanging it, are the graceful forms of semi-tropical vegetation, both trees and shrubs, in richest profusion—the magnolia, water oak, dwarf palm, &c.; the trees all decorated with the solemn yet exquisite drapery of the trailing moss. Birds, quite secure, flit about and lend their forms and song to fill up the picture. The trees and shrubs are mostly evergreen. In a week more (February 20) all those not now in leaf will be putting forth their foliage, and flowers will be springing up in every direction. In short, one here enjoys summer in the month of February.

Grass.—Gather a single blade of grass, and examine for a minute quietly, its narrow sword-shaped strip of fluted green. Nothing, as it seems there, of notable goodness or beauty. A very little strength, and a very little tallness, and a few delicate long lines meeting in a point—not a perfect point neither, but blunt and unfinished, by no means a creditable or apparently much-cared-for example of Nature's workmanship; made, as it seems, only to be trodden on to-day, and to-morrow to be cast into the oven; and a little pale and hollow stalk, feeble and flaccid, leading down to the dull brown fibres of roots. And yet, think of it well, and judge whether of all the gorgeous flowers that beam in summer air, and of all strong and goodly trees, pleasant to the eyes or good for food—stately palm and pine, strong ash or oak, scented citron, burdened vine—there be any by man so deeply loved, by God so highly graced, as that narrow point of feeble green. It seems to me not to have been without a peculiar significance that our Lord, when about to work the miracle which, of all that He showed, appears to have been felt by the multitude as the most impressive—the miracle of the loaves—commanded the people to sit down by companies "upon the green grass." He was about to feed them with the principal produce of earth and the sea, the simplest representations of the food of mankind. He gave them the seed of the herb; He bade them sit down upon the herb itself, which was as great a gift, in its fitness for their joy and rest, as its perfect fruit for their sustenance; thus, in this single order and act, when rightly understood, indicating for evermore how the Creator had entrusted the comfort, consolation, and sustenance of man, to the simplest and most despised of all the leafy families of the earth. And well does it fulfil its mission. Consider what we owe merely to the meadow grass, to the covering of the dark ground by that glorious enamel, by the companies of those soft, and countless, and peaceful spears. The fields! Follow but forth for a little time the thoughts of all that we ought to recognise in those words. All spring and summer is in them—the walks by silent, scented paths—the rests in noontide heat—the joy of herds and flocks—the power of all shepherd life and meditation—the life of sunlight upon the world, falling in emerald streaks, and failing in soft blue shadows, where else it would have struck upon the dark mould, or scorching dust—pastures beside the pacing brooks—soft banks and knolls of lowly hills—thymy slopes of down overlooked by the blue line of lifted sea—crisp lawns all dim with early dew, or smooth in evening warmth of barred sunshine, dented by happy feet, and softening in their fall the sound of loving voices: all these are summed in those simple words; and these are not all.

—John Ruskin.

THE LIBRARY.

FLOWERS AND GARDENS.*

A PLEASANT and singular little book, discoursing agreeably about some of our old garden favourites. The subject is approached from the æsthetic side, and the author appears to us to take a true and just view of most of the subjects upon which he touches. The following extract will serve to give an idea of the style and aim of the book, to which we shall probably again advert:—

"I believe that nearly every plant has an especial loveliness of its own—a something distinctive, that is, which is capable of endearing it to us. And though such degraded forms as *Torilis nodosa* may attract us chiefly as curiosities in all but exceptional instances, this loveliness finds itself upon some form of genuine beauty—beauty, I grant, which, as a whole, is often of an inferior order; thus there is nothing to strike the eye in the common wild *Mignonette*, or in many of the *Galiums*, *Willow-herbs*, *Groundsels*, *Rushes*, *Sedges*; and yet it frequently happens that these plants, not generally attractive, excel at particular times and in particular ways. Usually few people would admire the *Yellow Charlock*, yet what splendour it often casts over the yet green corn-fields when blended with the scarlet of the *Poppies*! *Anthriscus vulgaris*, *syvestris*, and many of the *Umbelliferae* are remarkable for the beauty of their earliest leaves; those especially of the great *Cow Parsnip* might serve as models for the stone carver; and the coarse insignificant *Goosegrass* (*Galium aparine*), which children rub over their tongues to make them bleed, fills every hedge bottom in January and February with a host of tiny star-crosses as delicate as the work of fairies. Then observe that tall *Anthriscus syvestris* later on in June, how it varies the long level of many an unmown meadow with the dull misty white of its flowers, giving, by the looseness of its growth, a wild, indefinite look, here and there almost reminding us of tumbled foam, an effect which is greatly aided by the meanness and unimpressiveness of its foliage. Then the two common *Dead Nettles* (*Lamium*) are very undeservedly depreciated. The red *Dead Nettle* is one of our earliest spring flowers, and there is a soft vividness in the red, especially in the earlier blossoms, which leads off most exquisitely through the purplish tints of the upper leaves. As to the white *Dead Nettle*, I will say nothing of it in the spring-time, when it is outshone by more brilliant rivals. I always prefer it when the November mists are falling, and its large soft flowers, undamaged by the weather, look forth here and there from the hedge. Truly, they have a wonderful fascination then. In early spring the plant has a too excessive vigour—an air of rude health, which often spoils it, partly, I think, by affecting the leaf colour; besides, the stems are apt then to be far too numerous. It is otherwise in November.

"Plants are thus far more universally beautiful than animals, because plants can never disgust or repel—animals can. And though it were easy to name plants in which one feels no vivid interest, as, for instance, *Senecio sylvatica*, I find, on running through our native lists, these to be comparatively so few, that the fault lies most probably with the observer."

THE CULTURE OF THE PEAR.†

THIS is one of those thoroughly practical, and therefore scientific, little books on fruit culture which one so often meets with in France. In it the culture of the pear is concisely and lucidly given, together with full descriptions of select kinds and their special wants, if any. M. Baltet is in all respects an excellent writer. There are some who ridicule gardening literature, and if they confined their ridicule to that which is bad they might be right; but a good book is the harvest of a good man's thoughts so arranged as to be easily digested, and, therefore, like that before us, commends itself to our favourable notice. We have no doubt that such publications as this have had much to do with the excellent pear culture one sees in every part of France.

Garden Flowers. (London and Edinburgh: Nelson & Sons.)—A packet of twelve small coloured plates, each representing a group of garden flowers, the whole in a neat packet. The flowers are charmingly grouped, and for the most part well coloured. We particularly admired a group of *Foxglove* and *Harebells*. We heartily welcome this effort to popularise such pretty objects. The packet forms a suitable little present, and the plates will give pleasure in many a home where living flowers are never seen; while in the home blessed with a garden, where flowers are "all a blowin' and a growin'," they will testify how well the artist has expressed their beauty in these cheap little pictures.

* "Flowers and Gardens: Notes on Plant Beauty." By A. Medica. Man London: Strahan & Co.

† "Culture du Poirier." Par Charles Baltet. Paris: Victor Masson & Fils.

FAMOUS TREES.

THE DRAGON TREE.

(DRACÆNA DRACO.)

THE giant specimen of Dragon Tree, growing at Orotava, in the island of Teneriffe, was entirely destroyed during the autumn of 1867 by a gale of wind. It was first brought into general notice by Humboldt, some sixty years ago, and was computed by him to be 6,000 years old. It had, however, been previously noticed in 1797 by Sir George Staunton, and in 1771 by T. C. Borda, a Frenchman, whose drawing of the tree was subsequently published by Humboldt. In July 1819 a storm deprived it of part of its crown, and a large and good English engraving of it was published after its mutilation. Webb, in his "Natural History of the Canaries," describes it and gives its measurements, and it has since afforded a theme for the pen of almost every traveller who has visited Orotava.

not to be wondered at, for even in their native country they attain the age of thirty years before they emit branches.

This tree is usually known by the name of Dragon's-blood Tree, on account of a resinous exudation which it emits at certain times from cracks in the trunk. At one time the resin formed a considerable branch of commerce, being highly esteemed in medicine, but it has now almost fallen into disuse.

As a type of tropical vegetation it is peculiar, and worth attention on account of the contrast it makes with other forms of plant-life with which it is associated. Young plants of this species are valuable for the conservatory at all seasons, and for placing out of doors in summer in the warmer parts of these islands.

The Looshai Highland Flora.—Now that the Looshai mountaineers have been punished for their raids on our Assam tea plantations, and the prisoners they had carried off recovered, science will probably derive unexpected advantages from the opening-up of

The Dragon Tree (*Dracena Draco*).

The trunk was hollow, and in the interior was a staircase, by which one might ascend as far as the part from which the branches sprung. It was said to be seventy feet in height, and, according to Le Due, seventy-nine feet in circumference near the ground; it was supposed to be one of the oldest vegetable inhabitants of the world. We have plants of *Dracæna Draco* in our stoves; but so unlike are they to the wonderful specimen represented by our illustration, that nobody would imagine for a moment that they were one and the same thing—so wide is the contrast between youth and age.

Dracæna Draco is a native of the East Indies, but the Canary Islands seem to have suited its growth admirably. It has a tree-like stem, much branched at the top, where they form a crowded head of lanceolate linear entire leaves, of a glaucous green colour. The leaves embrace the stem at their base, and on falling off at maturity leave a scar on the branch. In our stoves the plants are usually unbranched, a circumstance

the Looshai highlands. The fauna and flora of those extensive mountain ranges are almost entirely unknown to science. Of the former it is true we know something through the skill of the native tribes in trapping several kinds of birds of beautiful plumage which are found in the forests, and which they bring for sale to our frontier stations; but of the plants of that region we know next to nothing. Communications are now, however, opened-up, which will doubtless lead to successful explorations; and beautiful plants, hitherto unknown, may possibly reward our researches. It was, comparatively speaking, but the other day that the magnificent Himalayan *Rhododendrons* were discovered by one of our most justly celebrated botanists, and though letters received during the Looshai expedition may, perhaps, have raised our expectations too high, yet it is but fair to suppose that some valuable additions will be made to our exotic flora, which will add many new and attractive features to our gardens—the more especially as coming from a mountainous region many of them may prove fully as hardy as some of the new *Rhododendrons* and other plants received from the Himalayas.

GARDEN DESIGN.

WATER.

In considering the subjects of gardening, ground and wood first present themselves; water is the next, which, though not absolutely necessary to a beautiful composition, yet occurs so often, and is so capital a feature, that it is always regretted when wanting; and no large place can be supposed, a little spot can hardly be imagined, in which it may not be agreeable; it accommodates itself to every situation; is the most interesting object in a landscape, and the happiest circumstance in a retired recess; captivates the eye at a distance, invites approach, and is delightful when near; it refreshes an open exposure; it animates a shade, cheers the dreariness of a waste, and enriches the most clouded view: in form, in style, and in extent, may be made equal to the greatest compositions, or adapted to the least; it may spread in a calm expanse, to sooth the tranquillity of a peaceful scene; or, hurrying along a devious course, add splendour to a gay, and movement to a romantic situation. . . . A gently murmuring rill, clear and shallow, just gurgling, just dimpling, imposes silence, suits with solitude, and leads to meditation: a brisker current, which wantons in little eddies over a bright sandy bottom, or babbles among pebbles, spreads cheerfulness all around; a greater rapidity, and more agitation, to a certain degree are animating; but in excess, instead of wakening, they alarm the senses; the roar and the rage of a torrent, its force, its violence, its impetuosity, tend to inspire terror; that terror, which, whether as cause or effect, is so nearly allied to sublimity. Abstracted, however, from all these ideas, from every sensation, either of depression, composure, or exertion; and considering water merely as an object, no other is so apt soon to catch, and long to fix the attention. . . . In a garden, water is generally imitative. That which in the open country would be called a great pond, there assumes the name, and should be shaped as if it had the extent of a lake; for it is large in proportion to the other parts of the place. Though sometimes a real river passes through a garden, yet still but a small portion of it is seen; and more frequently the semblance only of such a portion is substituted instead of the reality. In either case, the imitation is lost, if the characteristic distinctions between a lake and a river be not scrupulously preserved.

THE LAKE.

Space is essential to a lake; it may spread to any extent; and the mind, always pleased to expand itself on great ideas, delights even in its vastness. A lake cannot be too large as a subject of description or of contemplation: but the eye receives little satisfaction when it has not a form on which to rest: the ocean itself hardly atones by all its grandeur for its infinity; and a prospect of it is, therefore, always most agreeable, when in some part, at no great distance, a reach of shore, a promontory, or an island, reduces the immensity into shape. If the most extensive view which can be the object of vision, must be restrained, in order to be pleasing; if the noblest ideas which the creation can suggest, must be checked in their career, before they can be accommodated to the principles of beauty; an offence against those principles, a transgression of that restraint, will not easily be forgiven on a subject less than indefinite: a lake whose bounds are quite out of sight, is circumscribed in reality, not in appearance; at the same time that it disappoints the eye, it confines the imagination; it is but a waste of waters, neither interesting nor agreeable. If the length of a piece of water be too great for its breadth, so as to destroy all idea of circuity, the extremities should be considered as too far off, and made important, to give them proximity: while at the same time the breadth may be favoured, by keeping down the banks on the side. On the same principle, if the lake be too small, a low shore will, in appearance, increase the extent. But it is not necessary that the whole scene be bounded: if form be impressed on a considerable part, the eye can, without disgust, permit a large reach to stretch beyond its ken; it can even be pleased to observe a tremulous motion in the horizon, which shows that the water has not there yet attained its termination. Still short of this, the extent may be kept in uncertainty; a hill or a wood may conceal one of the extremities, and the country beyond it, in such a manner, as to

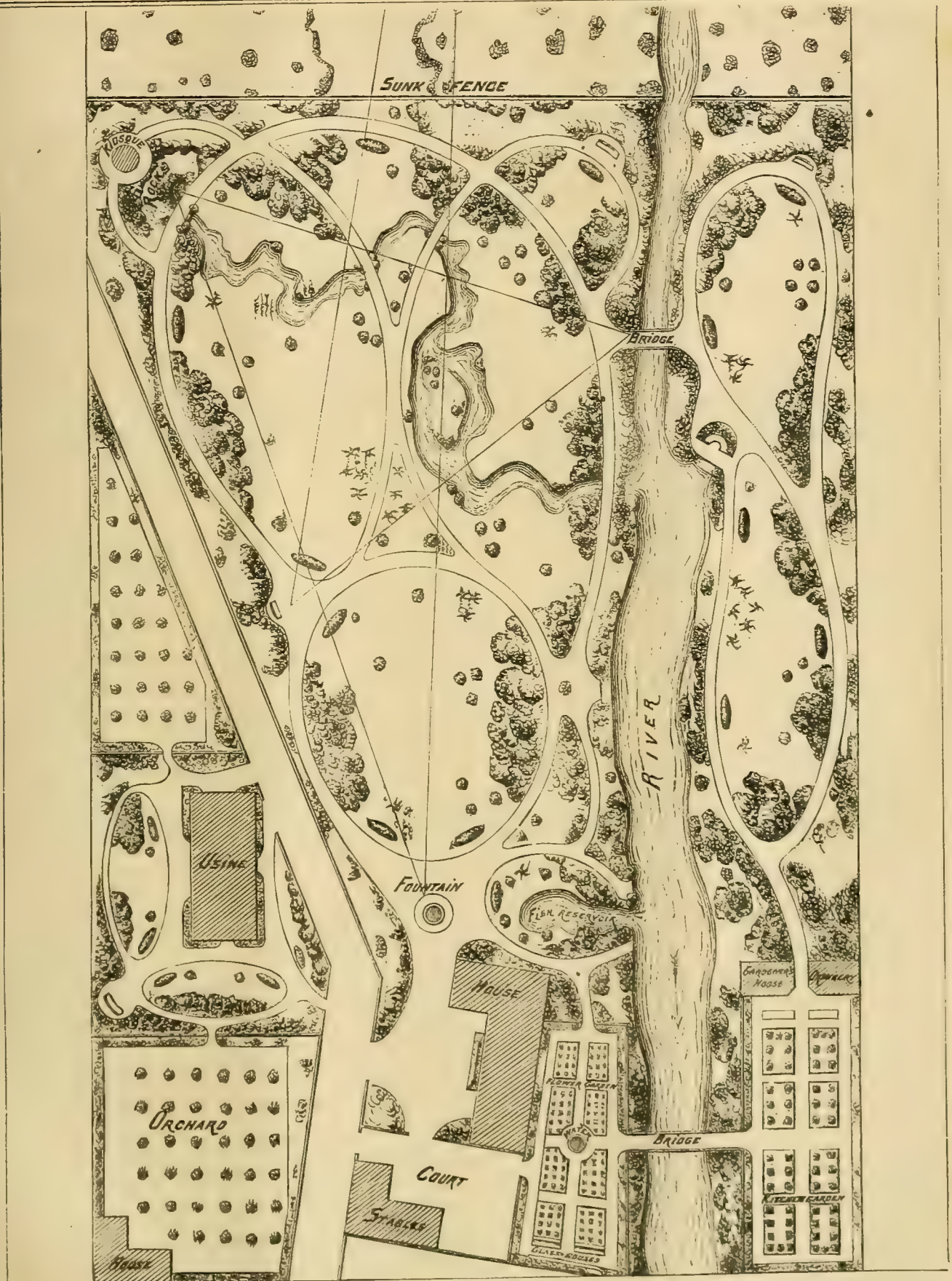
leave room for the supposed continuation of so large a body of water. Opportunities to choose this shape are frequent, and it is the most perfect of any: the scene is closed, but the extent of the lake is undetermined; a complete form is exhibited to the eye, while a boundless range is left open to the imagination. But mere form will only give content, not delight; that depends upon the outline, which is capable of exquisite beauty; and the bays and the creeks, and the promontories, which are ordinary parts of that outline, together with the accidents of islands, of inlets, and of outlets to rivers, are in their shapes and their combinations an inexhaustible fund of variety. A straight line of considerable length may find a place in that variety; and it is sometimes of singular use to prevent the semblance of a river in a channel formed between islands and the shore. But no figure perfectly regular ought ever to be admitted; it always seems artificial, unless its size absolutely forbids the supposition. A semi-circular bay, though the shape be beautiful, is not natural; and any rectilinear figure is absolutely ugly; but if one line be curved, another may sometimes be almost straight; the contrast is agreeable; and to multiply the occasions of showing contrasts, may often be a reason for giving several directions to a creek, and more than two sides to a promontory. Bays, creeks, and promontories, though extremely beautiful, should not, however, be very numerous; for a shore broken into little points and hollows has no certainty of outline; it is only ragged, not diversified; and the distinctness and simplicity of the great parts are hurt by the multiplicity of subdivisions: but islands, though the channels between them be narrow, do not so often derogate from greatness; they intimate a space beyond them whose boundaries do not appear; and remove to a distance the shore which is seen in perspective between them. Such partial interruptions of the sight suggest ideas of extent to the imagination.—*Thomas Whateley.*

ARCHITECTURE AND NATURE.

WE are forced, for the sake of accumulating our power and knowledge, to live in cities: but such advantage as we have in association with each other is in great part counterbalanced by our loss of fellowship with nature. We cannot all have our gardens now, nor our pleasant fields to meditate in at eventide. Then the function of our architecture is, as far as may be, to replace these; to tell us about nature; to possess us with memories of her quietness; to be solemn and full of tenderness, like her, and rich in portraiture of her; full of delicate imagery of the flowers we can no more gather, and of the living creatures now far away from us in their own solitude. If ever you felt or found this in a London street—if ever it furnished you with one serious thought, or one ray of true and gentle pleasure—if there is in your heart a true delight in its grim railings and dark casements, and wasteful finery of shops, and feeble coxcombr of club-houses—it is well: promote the building of more like them. But if they never taught you anything, and never made you happier as you passed beneath them, do not think they have any mysterious goodness nor occult sublimity. Have done with wretched affectation, the futile barbarism, of pretending to enjoy: for as surely as you know that the meadow grass, meshed with fairy rings, is better than the wood pavement, cut into hexagons; and as surely as you know the fresh winds and sunshine of the upland are better than the choke damp of the vault, or the gas-light of the ball-room, you may know, as I told you that you should, that the good architecture, which has life, and truth, and joy in it, is better than the bad architecture, which has death, dishonesty, and vexation of heart in it, from the beginning to end of time.—*The Stones of Venice.*

PARC DE COURCELLES.

THE grounds of this domain slope very much from the point where the waters which descend from the mountain emerge, to the river which runs through the property. The total area is about twenty-five acres. The bounds of the property are concealed by thick clumps of large trees and underwood shrubs. At the crossings of the walks other clumps hide the great sandy spaces, which are always so disagreeable to the sight. A marked centre depression of the surface extends through the entire property to the adjacent meadows, from which the domain is separated by a sunk fence, so that no appearance of an inclosure is presented. The roundish points mark isolated groups or single trees standing on the slopes, while the position of conifers is denoted,



PLAN OF COURCELLES. BY EDOUARD ANDRÉ.

by an asterisk-like mark. The kitchen garden and the flower garden have been laid out behind the dwelling-house, so as not to spoil the general effect of the park landscape; they are joined by a bridge which crosses the stream. The incline on the left bank is very steep and picturesque. The walks on that side run in a cross direction, or length-ways. As the soil is for the most part moist, the trees which have been selected for the plantations are principally deciduous kinds, which do best in cool moist ground. The garden is the property of M. Boivin (Haute Marne), and was laid out by M. Ed. André. The straight lines indicate the points of view.

There is much to admire in this garden, and only one radical fault—the senseless semi-geometrical walks which, as usual in the modern French garden, thrust their ugliness through the fairest parts of the garden. Just look at them where they meet towards the central portion of the grounds! There is no more occasion for this violation of the repose of a private garden than there would be for placing analogous bands of yellow through some charmingly painted landscape.

PUBLIC GARDENS.

KEW GARDENS AND OUR PUBLIC PARKS.

THE management of the Royal Gardens at Kew, as well as of the public parks, is not so simple a matter as some of your correspondents seem to think. It is easy enough to point out defects and to complain that there are details very ill-carried out, but if your correspondents knew the difficulty with which every alteration is made that involves expense, they would be surprised—not that so little has been done, but so much. I perfectly acknowledge the debt which is owing to you, for urging the true principles of gardening, and endeavouring, as you have done, to introduce a system founded on what makes all art good—nature. In public establishments, however, under the control of shifting Governments, it is impossible to act in the same manner, as is easy where the establishment is private and the purse that feeds it large. There may be obvious improvements, which yet cannot be made. The result of what is done may be marred by injudicious economy. The Royal Gardens at Kew are under the management of a gentleman not only of high scientific acquirements, but of excellent knowledge in ornamental detail. Their object has never been either to give lessons in landscape gardening or to produce picturesque effect. Their establishment was principally for a scientific purpose, and they present facilities for study perhaps unequalled in the world. The plants in the conservatory are not arranged in the manner most pleasing to the eye, but the best for instruction, the products of each country being kept, as far as possible, together; and the same principle is maintained in the grounds. In the open air there are great difficulties to contend with. Neither the soil, climate, or atmosphere is well adapted to the growth of what may be most valuable.

The avenue of Deodars has not succeeded, and in place of each Cedar three deciduous trees have been planted, in the hope that one at least may thrive. None of the Coniferae seem likely to make fine trees at Kew, though it is necessary there should be specimens of as large a number as is possible, not for ornamental effect but in order that the student may study, the gardener learn, and the amateur choose.

There is another obstacle at Kew. The collection is constantly increasing by gifts or exchanges from all parts of the world, while no increase is made in the resources of the garden.

The management of the Parks is beset by perhaps greater difficulties than are the Royal Gardens at Kew, for the latter are acknowledged to be of great scientific use to the nation at large, while there is a growing indisposition in the House of Commons to vote money for the exclusive enjoyment of Londoners. At the same time there is a zealous opposition to the proper control of the Parks, essential, if they are well kept. The progress of the Bill affecting them, lately introduced by Mr. Ayrton, and the vacillation of the Government points this out. Many, I believe, think that the Parks had better be left to a variety of gravel paths, with the occasional grass the "people" choose should not be laid bare; and that they ought to be devoted to the exclusive enjoyment of the lowest class.

The principal improvements which have been of late effected in the Parks are owing to Mr. Cowper Temple, who acted with an independence and liberality that exceptional circumstances enabled him to assume. Had his Italian garden in the Regent's Park been carried up to the Zoological Gardens, a very fine result would have been achieved.

The Office of Works is, in reality, under the control of the

Treasury, which, having to pass, can refuse any of its estimates. The object of the Treasury is naturally to keep down expenditure, and it is seldom the Office of Works is not required to reduce its accounts as far as can be done. When the Army and Navy estimates grow big, the estimates for the Parks and Public Gardens are expected equally to grow small. The whole constitution, too, of the Office of Works is wrong, if it is intended to be an important department of State, and control in any degree the public taste. It is very doubtful, however, that the country wishes for more than is already done, and that any increased expenditure, whatever the result, would not be decidedly unpopular. If I was to venture to give any opinion, I should suggest that the First Commissioner be made independent, that he should move his own estimates, and be alone responsible for what he spent and what he did. It is impossible under our present Parliamentary system to make him a permanent officer, or prevent political considerations, rather than personal fitness, from having great influence in his appointment. He might, I think, be assisted by a permanent board, who would have the professional knowledge he might lack, assist him with their advice, and be responsible for carrying out works begun during one and finished during another Government. But if London is to be regarded only as a huge workshop out of which everyone is to get as fast as possible, and that the principal merit of a Government is to pare down as much as they can, I do not think it likely any Parliament will be found to vote money for the embellishment of London, or a "Minister of Public Taste" be ever appointed.

BRINSLEY MARLAY.

Val de Travers Asphalte Paving Company.—This company announces a dividend of twenty-five shillings per share, being at the rate of fifteen per cent. per annum. At its recent annual meeting, the chairman said a large amount of work had been done during the ten months the company had been established. It had laid down 47,000 yards on footpaths, and had also done a considerable extent of private work in laying down floors for stables and in manufactories. The profit for the period mentioned was £16,162 on works executed. It had established subsidiary companies in Great Britain and Ireland. The Scottish Company expected a great deal of work, the Birmingham Company was in active operation, and the Manchester Company had already laid down the asphalte pavement in two streets.

AMERICAN ALOE SPIRIT.

A CORRESPONDENT of the *Tribune*, accompanying the Seward party in their visit to Mexico, thus relates his experience in drinking the liquor of the Mexican Aloe:—"A bottle of the fiery liquid distilled from the mescal plant, otherwise called the 'American aloe,' or 'century' plant, which blossoms in this latitude once a year, instead of once in a hundred, as is commonly believed at the north—called 'mescal,' or 'tekala'—is sold at the little wayside stands for six and a quarter cents, and it will produce as much drunkenness as a barrel of North-American whisky. I took one drink of it, under the supposition that it was anisette or some other light liquor, swallowing possibly about an ounce, druggist's measure, before I smelled the burning flesh as the lightning descended my throat. As I set down the glass, my head began to increase in size so rapidly that I saw at once that unless I got outside immediately, the door would be too small to admit of my passing through it. Seizing my hat, which appeared to have become about the size of an ordinary umbrella, I turned it up edgewise, and succeeded by a tight squeeze in passing through the door; the street then appeared funnel-shaped, and I remember an odd fancy that I was to resemble the man who 'went into the big and came out at the little end of the horn.' Curiously enough, my legs decreased in size as my head enlarged, and my last recollection of the affair is that my person resembled a sugar-hogshead walking off on two straws; body I had none. No more tekala for me, please! The teamsters and muleteers drink this clear, colourless, harmless-looking concentrated lightning with apparent impunity; but a single bottle of it will cause a rebellion among an entire regiment of soldiers, and very likely result in a *pronunciamiento* on the spot."

Carbolic Acid versus Moulds.—A contemporary states that the decomposition of paste may be prevented by adding to it a small quantity of carbolic acid. In the same way, the disagreeable smell which glue often has may be prevented. If a few drops of the solution be added to ink or mucilage, they will not mould. For whitewash, especially when used in cellars and such places, the addition of one ounce of carbolic acid to each gallon will prevent mould and disagreeable odours.

GARDEN STRUCTURES.

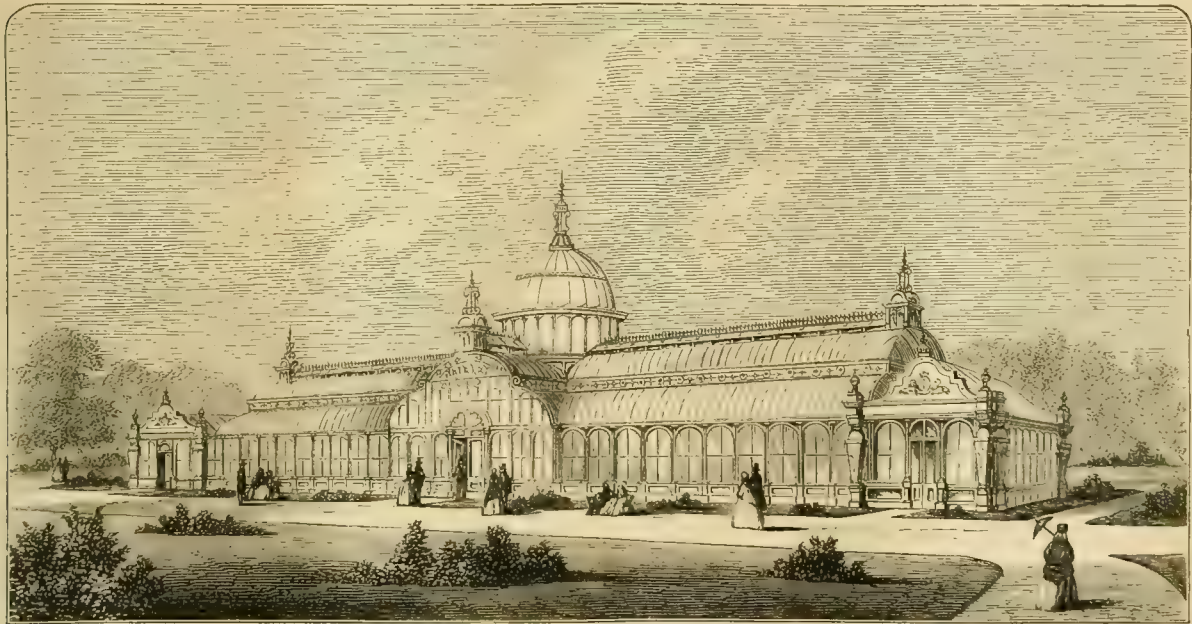
A NEW WINTER GARDEN.

THE structure represented by the annexed illustration measures one hundred feet long, thirty feet wide, and twenty-two feet high inside. The foundations on which the iron walls rest, and also the corner columns, are of polished freestone. The central block, in which the principal entrance is placed, extends fifty feet in a northerly direction, and is surmounted by a graceful dome thirty-four feet in height. The wings at either end of the main building, and which are shown in the illustration, measure fifteen feet wide, and are used for waiting and retiring rooms.

At right angles to the main entrance the pathways branch off, and are carried round the interior of the building. These pathways are six feet wide, in the centre of which are placed the hot-water pipes for heating the building, the heat escaping through gratings two feet wide. At either side of the

HEATING BY GAS.

WHEREVER gas is to be had at a reasonable price I am convinced that it is much more economical to heat a greenhouse with it than with an ordinary boiler; and where a large greenhouse is in question it will pay anyone well to make his own gas. Outside a room, seventeen feet by ten feet, and ten feet high, I have a small conservatory, seven feet by three feet, just covering the opening of the window, which has been taken entirely out. Round this little greenhouse runs an inch and a half iron pipe, communicating with a copper boiler outside on the leads. This boiler is broad and shallow, and during the last two winters I have maintained a temperature of 50°, without any fire in the room, by merely lighting the gas under the boiler from eight o'clock at night until the same hour the next morning. Of course the boiler is sheltered from wind and rain. The burner, which is one of those known as a "roarer," is five inches high, and shaped like the chimney of an ordinary paraffin lamp, rising up through a globe. The gas enters the gaspipe and passes to the globular part of the burner, where the pipe is closed, except at an orifice considerably smaller than an ordinary sized pin's head. Through this hole the gas rushes upwards towards the tube or chimney, and before entering it becomes completely mixed with air



Winter Garden at Edinburgh.

gratings mosaic tiles are laid to form the full width of the pathway. A line of ornamental iron tabling, thirty inches wide, is placed along the front, next to the pathway, for the display of plants in pots. The centre of the house is devoted to the culture of large Camellias, Azaleas, Aloes, Palms, and other types of exotic vegetation. At either end of the main portions of the building are placed large mirrors, by means of which plants in bloom are reflected.

Ample ventilation is provided, without which, in a house of this description, all attempts in the way of successful cultivation would end in failure. The ventilators are made to move by means of rods and levers, and the whole of them may be opened, or shut, or regulated in a few minutes. Though this is a great improvement upon old modes of ventilating, yet one now and then finds the old-fashioned plan in operation even in places in which we might expect better things.

The heating apparatus consists of one of Shanks's malleable iron boilers of improved form, so placed that it heats effectively both the winter garden and a range of stove and propagating houses adjoining it. The structure itself, which is a composite one, built of iron and wood, was designed and erected by Messrs. Shanks for Messrs. Downie, Laird, & Laing.

in its passage through the central opening. On applying a light at the top of the chimney, the mixed gas and air unite to form an almost colourless flame, which emits intense heat, accompanied by a "roaring" noise, which, however, paradoxical as it may appear, is very slight.

If the boiler were a large one it would require several such burners, and it should in all cases be as shallow as possible, and well "packed." The products of combustion could of course on a large scale, be carried through the hothouse by the ordinary flue, and thus the whole of the heat would be utilised. There is not the slightest soot produced by these burners, nor smell of any description, even when the gas is impure. I may perhaps here mention that if owners of greenhouses were to place the heating pipes so that they could be regularly black-leaded, they would find a saving in fuel of at least fifteen per cent. after all expenses attending the process were paid.

W. M., Swansea.

Stove for Small Greenhouses. What is the best stove to heat a small greenhouse? *QUESTER.* We hear a very good account of Walker's, 58, Oxford Street, Birmingham; but know nothing of it personally. There is also one advertised by a manufacturer at Hounslow, of which we have had favourable reports. The point requiring attention is to keep the gas from escaping into the house, and thus injuring the plants. This remark, as a matter of course, does not apply to cases in which the gas is merely used to heat a boiler furnished with hot-water pipes.

THE KITCHEN GARDEN.

THE ASPARAGUS CULTURE OF THE ANCIENTS.

WITH reference to the inquiries on p. 385, on this subject, the following may furnish the information which your correspondent requires:—

CATO "DE RE RUSTICA," CHAP. CLXI.

Dig up ground that is moist and rich: after it has been dug, make beds, so as to be able to hoe and weed, right and left, without treading on it. To this end make spaces half a foot broad betwixt them in every direction, and then sow. With a stake deposit two or three seeds at a time in line, and with the same stake cover the hole with earth. Afterwards scatter manure over the beds. After the vernal equinox, where it (the crop?) shall have sprung up, frequently clear the weeds,* and take care that the plant be not plucked up along with them. In the year after sowing, cover it with litter during winter, that it may not be pinched or nipped. Then in early spring uncover the beds, hoe and weed them. Three years after sowing, burn† the soil or surface at the beginning of spring. After this, do not hoe before the asparagus has sprung up, lest in hoeing you should injure the roots. In the third or fourth year gather the asparagus close to the root; for if you break it off, sprouts will arise, and die off. You may pull continually, till you see the plants go to seed. Beware of breaking off the shoots. Take care to lay on as much sheep manure as possible; it is best for this purpose. Other manure engenders weeds.*

Elsewhere (chap. vi. s. 3) Cato recommends sowing the wild asparagus (*corruda*) in a reed-bed, because it is dug and burned and shady at times, and so suitable for the wild asparagus, "from which come the cultivated sorts" (*unde asparagi fiant*).

It would seem that the "*corruda*" was what Columella refers to in his line,—

"Et bacca asparagi spinosa prosilit herbâ,"

one of a prickly species *acutifolius*, *aphyllus*, and *horridus*, which occur in Greece, Italy, and Sicily. (See Dr. Daubeny's "Lecture on Roman Husbandry," p. 250.)

The doctor adds: "That the Romans cultivated asparagus for the table appears from Pliny, who calls it *altius* (fatted), but it does not appear whether what is intended by Columella in the verse quoted is the latter, or the prickly '*corruda*.' Dr. Sibthorp, however, in his MS. notes on 'Dioscorides' adds that the young shoots of the *Asparagus acutifolius*, and perhaps also *A. aphyllus*, are boiled and eaten in Greece, as the garden asparagus is with us." (*Ibid.* p. 251.)

Pliny's notices of asparagus are to be found in his Nat. Hist. xix. 8 and xix. 4. Juvenal, in a description of a dinner to a friend, supplied from the produce of his farm, mentions "mountain asparagus," "*posito quos legit villica fuso*," xi. 69.

"Asparagus beside,
Pick'd by my bailiff's plain but cleanly bride;
Who, when the wheel's domestic task is o'er,
Culls on the hills my vegetable store."—*Hodgson's Translation.*

Suetonius, in his Life of Augustus (c. 87) says that that emperor was very fond of it, and that there was a Roman proverb of things done with haste:—"Quicker than the cookery of asparagus."

Columella (xi. iii. 43-47) goes over much the same ground as Cato, with a few additional directions. JAMES DAVIES, M.A.

POTATOES.

POTATO planting-time has again arrived, and with it we must take into consideration what sorts we shall plant. But why do people so persistently leave the ordering of their seed tubers until the spring, instead of getting them in the autumn? For small gardens a few shallow boxes would hold all the "seed" that is needed, and but little care is required to keep it from frost; then the purchaser has this advantage, that when his sets begin to grow he can expose them to light and air, and thus secure for planting tubers in the best possible condition. But if "seed" orders are left till the spring, what is the difference? Why this, that probably the tubers supplied have already pushed shoots which have been rubbed off, thus weakening the tuber, or else, if the shoots remain on, then the bulk in measurement is reduced to the detriment of the purchaser. Some early kidneys must be secured. In this particular section we have

* "The weeds." The Latin word here is "*herbas*," which more strictly means "grass" or "herbage." It may mean green shoots.

† Burn the soil or surface." The Roman author merely says *incendio*—"burn," by which I conclude he means to refer to the practice of burning the soil and the plants on its surface, to which Virgil alludes in *Georgic* I. 84, &c., for the purpose of giving back to the soil the essential ingredients of its decomposed vegetable matter, and of correcting sourness of soil, or perhaps of improving soil that is over-moist and too adhesive. (See Dr. Daubeny's "Lecture on Roman Husbandry," pp. 92, 93.)

in the matter of earliness as yet made no great advance, but in regard to both quality and cropping there is decided improvement. Myatt's Ashleaf, as a first market kidney, still holds its place, but private gardeners adhere to the Royal Ashtop, Veitch's Improved Ashleaf, Alma, Gloucester Kidney, and Harry Kidney, all of which are certainly good. In succession, then, let us take Webb's Imperial, Sutton's King of Potatoes and King of Flukes. And for long keeping kinds, such sorts as Yorkshire Hero, Rixton Pippin, Belgian Kidney, and Yorkshire Hybrid, any and all of these are fit for any gentleman's table, and may be recommended with perfect confidence. With respect to round kinds there is not so wide a choice, but still enough that are really first rate from which to select. For earliness and quality combined none will be found to exceed Turner's Union and Hogg's Coldstream; then follow with Scotch Blue, Early Emperor, alias Carter's Main Crop (for it is the same thing), and Onwards; or, if that is not obtainable, take Dalmahoy, which is the best of all the Regent section. To succeed these for a late crop, take Victoria, Alexandra, and Wellington, these latter being not only the best of croppers, but also excellent late keepers.

If tubers for exhibition are wanted, select them from among those just named, which will furnish some of the handsomest obtainable for that purpose; and if it is desirable to secure a sound, healthy crop of moderate-sized tubers rather than a heavy crop of large roots, it will be found that judges will invariably award prizes to samples that are clean and handsome rather than coarse.

If the soil be naturally free, and the situation warm, planting should commence at once; but if the soil be stiff, and still full of moisture, then wait patiently a week or two longer until the dry winds of March have freed the earth from its superabundant wet. If the soil be deeply cultivated, and the application of manure be early, dry situations will invariably produce sounder and better flavoured tubers than moist soil, howsoever good otherwise it may be. Lime applied to the soil before the planting, and in a dry-slacked state, not only sweetens the earth, but adds materially to the quality of the tuber. It is an exceedingly cheap manure, and should be much more generally used. A. D.

SINGULAR FREAK OF A POTATO.

SEVERAL potatoes have been sent to us in which a new potato had formed within an old one, and, by its expansion in growing, broken the potato apart. It is either the case that the potato has deeply seated dormant eyes, or that it possesses the power, under favouring circumstances, of forming buds where none previously existed. Dr. Hexamer has found that potatoes which were pared and every visible trace of eyes removed, would sometimes produce shoots and tubers.



Abnormal Potato.

We present an engraving of a remarkable instance of the abnormal growth of which we have spoken. The specimen, as it came to us, was a partially cracked tuber with a small one just forcing its way out of the fissure. Upon breaking open this old tuber we found within a distorted mass of branches, upon which several small tubers were forming, as shown in the accompanying reduced illustration. Upon all the specimens of this singular growth that we have seen, the outer surface of the old tuber was dry and hard, and it is probable that when the bud or eye started into growth it found less resistance towards the centre of the potato than it did in pushing towards the circumference.—*American Agriculturist.*

OUGHT I TO COMPETE?

AFTER marking out my seed order, I saw that several seedsmen had offered special prizes for vegetables at the forthcoming show of the Royal Horticultural Society. I am young and enthusiastic, and pride myself that I can grow vegetables; and I also have a good garden of eight acres to grow them in. On seeing the announcement my pulse started beating more rapidly than usual, as I thought, Here is a chance to exhibit to the world the fruits of my cultural abilities, and perhaps gain a prize that will cover my expenses to Birmingham; but on reading the conditions I find I have not ordered a single thing that the above-named seedsmen insist on having. Well, I am in no way indebted to my present seedsman, except it be for his honesty in supplying me with seeds good and true before the law attempted to force him to do it, and his strict attention to small orders for things

wanted in a hurry. I am at liberty to deal where I choose, and my employer will not look at the details of my garden account provided the grand total is not too high; why not then change my seedsman, and procure new peas and cucumbers direct from the growers? But there is another consideration: there are required, in the first place, six varieties of peas to be exhibited all at once. I must make two sowings at least of each to have a chance of getting a dish at the right time, as most of the sorts are strange to me; and all varieties of peas do not take *exactly* the same length of time to grow. This would take up a good bit of my garden, as well as time and money, and it would also be a radical change for me, who only grow two kinds to supply the table from the middle of May to November with good marrow peas, which are Little Gem for early and late, and Veitch's Perfection for general mid-season crops. There may be better peas than these, but on consideration I think I had better not discard my old and tried friends till I am sure one or two of the new ones are better. I do not want many sorts—they do not cook well mixed. I must have marrows when they are to be had, and I cannot waste my ground with tall-growing kinds. These thoughts make me decide not to try for the Challenge Cup.

But what about the cucumbers? I grow cucumbers successfully, a week has never passed for the last three years without my having at least half a dozen to cut; but here again I have an old and tried friend staring me in the face, one that would not be noticed on an exhibition table, but which is always ready for my employer's table when wanted, and its flavour is pronounced excellent. (By the bye, why do not judges taste cucumbers? is it supposed they are only grown to be looked at? they are grown here to be eaten as the most *recherché* of second-course vegetables.) So, taking all things into consideration, I have made up my mind, for this season at least, to stick to my old and tried friends—peas, cucumber, and seedsman.

J. WILLIAMS, Chippenham, Wilts.

TRUFFLE CULTURE AT WELBECK.

WHEN I first came to Welbeck in 1837, no truffles were ever found or heard of in the locality, but they afterwards appeared in a young oak wood near the pleasure-ground, and close by the lake. The oaks in this wood had a growth of about twenty years, and I thought, from the nature of the soil, that truffles were likely to grow in it, if I could manage to introduce them. I had, therefore, the over-ripe truffles and the parings of the skins of others from the kitchen planted there for a series of years, and was agreeably surprised one autumn by one of the men bringing me a fine truffle that he had found when mowing the grass near the verge of the plantation. This tuber had grown near the surface, for he had cut a small portion of the top off with the scythe. This discovery was amply rewarded by the then Duke of Portland, for the man got a gratuity, and was ordered to point out the place, which was not disturbed afterwards for a year or two. The oak leaves were not raked off, but allowed to rot on the surface, and afterwards I found plenty of truffles every autumn, not by a dozen or two, but sometimes as many as six pounds at a time, when wanted for particular purposes. I sent once a tuber of the weight of six ounces to the late Dr. Lindley, who wrote me back that it was a very fine specimen of the true truffle, *Tuber aestivum*. From not having truffle dogs to scent out the ripe ones, a great many young or only half-grown tubers were taken up every autumn, which was, of course, against the supply. The squirrels were the best purveyors for finding the tubers; for as soon as they began to ripen, Mr. Squirrel scented them out, and, if not disturbed, scratched down to the truffle, and had a good feast on it. The soil of the oak wood which produced these truffles was of a calcareous nature, and had evidently been originally excavated from the bottom of the lake, for it was full of small fresh-water shells. This plantation produced truffles every year till some alterations in the pleasure-grounds were planned, when all the young oaks were cut down, and the ground raised four feet higher, which, of course, settled all the interesting colony.—William Tillery.

NEW KIND OF SEAKALE.

"For a century or more," says Mr. W. Prestoc, in the *Field*, "we have been plodding on with little or no improvement in the varieties of seakale which we cultivate. Ten or twelve years ago, I found one plant pushing much earlier than any of the others, and, on more minutely examining it, it proved to be distinct from the old purple-crowned variety, and much more robust. It also came into bloom much earlier. I carefully saved all the seed, and in the following April sowed it in the usual way. All went on satisfactorily, the produce being strong plants fit for forcing the next season. From this first batch of seedlings I selected a few of the very strongest for seed another season. Thus I went on until I could readily perceive

a new character in the plant altogether. It became unusually large, of a pink colour when blanched, and a fortnight earlier than the old sort. Having thus determined on my selection, I again saved all the seed I could, and from this stock I again selected twelve of the strongest. From these I saved enough seed to sow a quarter of an acre of ground. I next made choice of a very poor piece of gravelly land in an open field, to which not one ounce of manure was given. I sowed the seed about the middle of last April. With this I send you a fair sample of the plants. This is not all. I cut excellent seakale fit for any nobleman's table in February, without artificial heat of any kind; no forcing whatever, but simply cutting the old plants to pieces, with three or four inches of root; placing them in a trench—just such a trench as one would dig for celery—ranging the "sets" regularly in the bottom, with a few leaves and a little packing fern as a blanching material. With the sample of plants I also send a sample of the kale. You will perceive it is pushing up for bloom, a proof it ought to have been cut for table a fortnight ago. I think I may now lay claim to a new and distinct early variety of seakale, in which there is just the same difference as is to be found between the old Tobolsk rhubarb of forty years ago and the Victoria or Prince Albert rhubarb of the present day. One thing is certain; I have no need in future of using any artificial heat for seakale after January."

[This communication was accompanied by a parcel of seakale of fine quality and size.—Ed.]

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Long Asparagus.—I would suggest that when you see asparagus grown up eighteen inches or two feet, do not let it—for that reason at least—be wasted; snap it off (do not cut it, but snap it off as low down as it will snap), cut it into half-inch lengths, and treat it as you do peas, boil it and serve it with melted butter; and if you do not find it by far the finest vegetable you ever tasted, why, then put no more faith in me.—C. F. W.

Pea Growing.—My method of growing peas may not perhaps be altogether without interest, especially as in this neighbourhood gentlemen who have gardens wonder how my peas always do so well, and never seem affected by dry weather. I dig a trench, and in this trench lay a good coating of manure; this is then dug into the trench and levelled with the spade. The peas are then put in one by one, at about two and half inches apart, the row being the width of the spade; this is rather tedious, but well repays the labour. They are then covered with sifted ashes, and over that the leeward side of the trench is drawn over, covering the peas about three inches. They are thus protected by the ridge until high enough to have sticks, and all through the winter's frost and snow the pea never bleaches or withers.—*Amateur*.

Planting Early Potatoes.—I would warn intending planters of this kind of vegetable to defer planting until from the first to the second week in April. Many plant early, thinking to be before their neighbours. Never was a greater mistake. The proper plan is to lay them out singly in a late viney about Christmas, or in any outhouse protected from frost. By planting-time they will have made fine strong green shoots, when they should be taken up carefully, putting them into drills about three inches deep, when they go on growing at once, and will all be fit for lifting at the same time.—*Delta*.

Earliness of the Season in Dorsetshire.—According to your article on Market Gardening about London, page 365, I find—although this is a cold climate for a southern county—I have produce more advanced than I should have thought; for instance, I cut asparagus to-day four inches long; and for the last three weeks have pulled rhubarb—Dancer's Early Scarlet and Linnæus. Both these are grown in the open air, without any protection beyond that afforded by a walled garden. I have not heard that any others are so forward in this neighbourhood. The asparagus beds were made and planted last year with three-year-old plants, and are composed of sea sand and horse dung to a depth of three feet, with a top dressing of sea weed. The rhubarb bed is composed of sea sand, horse, cow, and pig manure.—JAMES KER, *Portville, Bridport*.

How to grow fine Parsley.—Sow it towards the end of August. Let the soil be comparatively poor but well drained; but if circumstances prevent such selection, choose the ground which comes nearest to it. It may be sown either in lines where it is to remain, or in seed beds; but in any case it must be transplanted, for parsley does much better, and lasts longer in that way than by the usual mode. Spring-sown parsley runs to seed much sooner than that sown in autumn. It will be fit to transplant in March, and should then be put in whatever positions you wish it to remain. The plants so transplanted will be found excellent to pop into pots and boxes for the winter, as is the rule in gardens where a winter supply of parsley is indispensable in all weathers, or for any other purposes for which parsley is used. Edgings of parsley near a dry walk or alley are desirable for the convenience of picking when the ground is sloppy in winter.

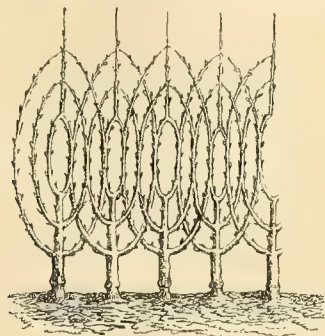
Stringing the Beans.—"What do you want a needle and thread for, Bridget?" "Well, mum, cook has just told me to string the beans, an' sure an' I want a neydle an' thrid for that."

THE PROPAGATOR.

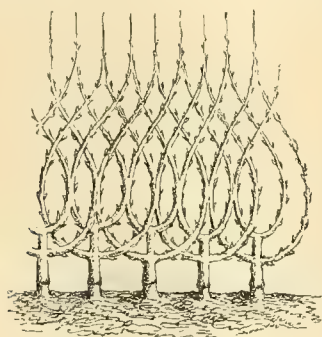
THE ART OF GRAFTING.

(Continued from page 387.)

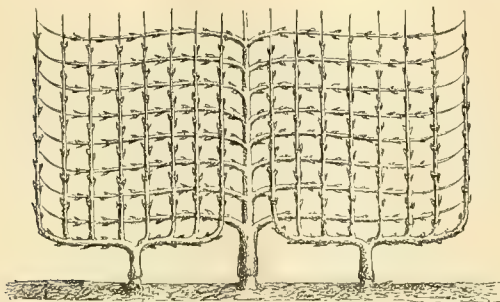
APPROACH GRAFTING IN FIGURE TRAINING.—In order to show the happy results of grafting by approach, we have here figured some specimens of espaliers trained in the garden of M. Nallet, at Brunoy. The trainer, M. Forest, has employed grafting either to complete their construction or to preserve the equilibrium of growth. MM. Van Hulle and Burvenich described these trees, in 1867, in their reports to the Belgian



Government. Annexed is a representation of an espalier of Pear trees, formed with small palmettes, the branches of which interlace and touch each other. The trees are grafted at the points of contact in the centre of the design, where the branches touch back to back, and not where they cross and diverge. The slight curvature of the branches, which gives each tree an elliptical outline, is favourable to the development of fruiting branches; the extremities are inarched into the leading shoot formed by the union of the branches of the third series. The next illustration is a variety of the preced-

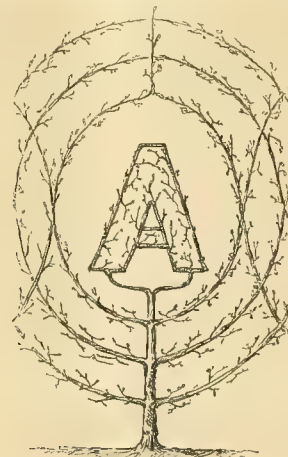


ing arrangement, and a preferable one. It requires only palmettes of two series, and the sinuous form of the branches permits long pruning, and maintains the fruit spurs regular. The leading shoots are crossed in lozenge form, and are grafted by approach at the top. This charming design, which is less

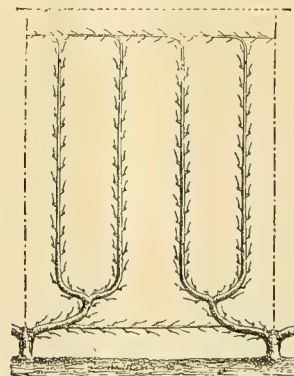


complicated than it appears, is produced with regularity if the outline has been previously traced with switches fastened to the trellis. In the third illustration a palmette and two

chandeliers are united and support each other mutually. The extremities of the branches of the horizontal palmette are inarched into the outer branches of the chandeliers. It is better not to graft the branches where they cross each other. A group like this should be grown in the open ground, and not against a wall. The next figure represents a palmette-chandelier, of which the branches—following a regular curve and

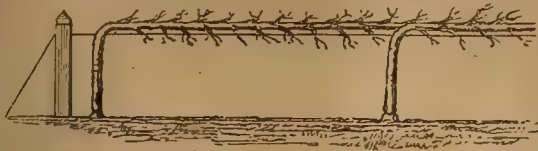


grafted together at the ends—represent a target. In the centre, M. Forest has formed a letter by approach grafting. A row of six such trees exhibits the name of M. Nallet. In designs of this kind we prefer that the letters should take the most prominent part and not be merely accessory; accordingly we have formed the name of our establishment in one of our borders. Each Pear tree forms a letter, so that in case of damage the injury can be more speedily repaired than in the case of a tree which forms several letters. The different modes of grafting by approach are useful here. A similar design has been formed with Peach trees on a wall. The fruit gardens of M. Alexis Lepère, at Montreuil, and of others, contain handsome specimens of trees joined by approach grafting, and representing inscriptions or designs accurately completed, according to the method of M. F. Simon, an amateur at Crecy-en-Brie. The accompanying representation

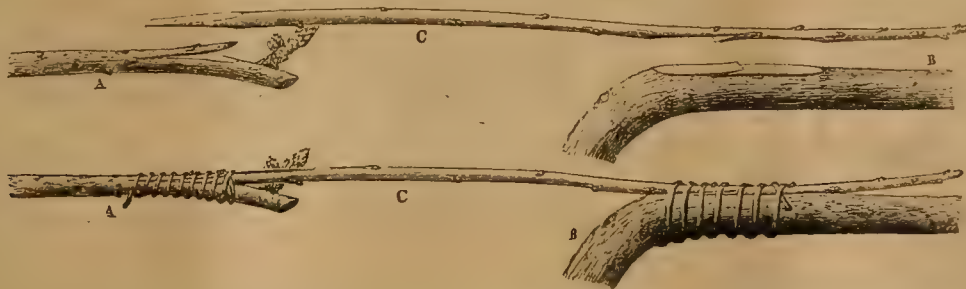


shows two halves of Peach trees trained in the form of double U, or a small four-branched chandelier by means of their sub-division the arms of which are united at their extremities by means of approach grafting. We have also proved the good effect of approach grafting in forming winged pyramids, vases, harps, &c., either isolated or on trellises in the fruit garden of M. A. Mas, pomologist, of Bourg, and in the orchard of the Agricultural School, at Saulsaie (Ain), made by Verrier. The single cordon (improperly termed horizontal on sloping grounds), which is especially adapted to the Apple tree, should have the trees which compose it grafted one upon another. The end of each is cut with a sloping or splice cut and inarched or inserted under the bark of the next tree at the bend. A continuous even line of small trees is thus obtained. It may happen that from want of vigour, or in consequence of

an accident, one tree cannot reach its neighbour. In such a case we have recourse to the method of lengthening or joining shown in the accompanying figures, which were communicated



to us in 1861 by M^r Jules Ricard, of Beaune. The subject (A) not being long enough to reach its neighbour (B), we take a well grown branch (C), of the current year if we operate in August, and of the preceding year if we graft in April. The base of this is cut with a double slope, and is introduced into the incision on A, which penetrates the alburnum by the process



of side cleft grafting. The other extremity is cut with a notch in the part which will bear upon the other tree, in which a corresponding cutting is made. The parts, being fitted into each other, are bandaged and covered with grafting wax. The method of inarching might also be used here with equal advantage.—C. Baltet's "l'Art de Greffer."

(To be continued.)

L A W.

Poisoning by Means of Yew Tree Clippings.—A case of this kind was tried at Maidstone the other day. The plaintiff and defendant were two gentlemen who live at Lewisham. Their premises adjoin, and are only separated by a kind of lane or passage. In this lane, against the fence of the plaintiff, was a rubbish heap, on which garden cuttings, dung, and other refuse were thrown. On the defendant's premises, near his fence, was a yew tree, which, in the autumn of 1870, was clipped, and the cuttings were thrown by his gardeners on to the rubbish heap against the plaintiff's fence. The plaintiff observed the heap gradually rising to the height of his fence, and complained of it, thinking that the defendant ought to cast his rubbish against his own fence. However, the heap was continued, and a day or two afterwards two colts of the plaintiff's, which were in a paddock bounded by the lane, put their heads over the fence and ate of the yew tree cuttings and were killed. The plaintiff wrote to the defendant claiming compensation, and setting the value of the colts at £1,000, but offering to take £500 if paid within a week. The defendant, however, denied his responsibility, and the claim was resisted. In the plaintiff's evidence it was stated that the defendant first raised the rubbish heap, and it was admitted that it was well known that yew tree cuttings would poison horses or cattle. A few days before the accident the plaintiff wrote complaining of garden cuttings being put upon the rubbish heap. He did not, he said, notice yew tree cuttings, but he admitted that he was well acquainted with the defendant's garden, in which the yew tree was. It appeared that the defendant had employed a jobbing gardener at Sydenham to put his place to rights, and two men were sent down for the purpose, who had orders from both the defendant and his wife. The latter directed them to cut the yew tree down, though the defendant did not wish it, and when his back was turned the lady gave the order, and it was cut down and the cuttings were thrown into the lane on the rubbish heap. It was submitted on the part of the defendant that there was no evidence of authority to cut the tree down, and even if there was, there was no evidence of negligence on the part of the defendant, as both parties were equally cognizant of the nature of yew tree cuttings. It was urged that it was very hard that a man should have his yew tree cut down by his wife's order against his own will, and that then he should be held liable for consequences which could no more be foreseen by one party than the other. The Lord Chief Justice, in summing up the case to the jury, said it was one of some novelty, and would involve various questions. First, were yew tree cuttings dangerous and poisonous to cattle and horses? He supposed they would not doubt

it. (The jury, after some hesitation, said that on the evidence they could not say otherwise.) Then were they satisfied that the defendant was aware of it? (The jury said, "Decidedly not.") Then, thirdly, if not, was it so notorious that he ought to have known it? (The jury said, "Certainly not.") Fourthly, was the gardener the servant of the defendant in the matter, or of the jobbing gardener, who paid him? (The jury said, "The jobbing gardener's.") Fifthly, were there any orders given either by the defendant or by his authority for doing the act complained of? Most people, the Lord Chief Justice observed, had a notion that a wife had her husband's authority; but that was only so as matter of law in the ordinary affairs of a household. As to other matters, an express or implied authority, in fact, was necessary; and certainly there was no legal authority to cut down his trees. Then the husband would not be responsible for the act of his wife without his authority. In the present case there was not only no evidence of authority to cut down the tree, but it appeared rather that it was cut down against his will. However, what was the opinion of the jury on the point? (The jury consulted together and said that the tree was cut down without his authority.) Next, were the yew clippings placed on the rubbish heap by the authority of the defendant or any authorised agent of his? (The jury said they were not satisfied of this.) Upon these findings the Lord Chief Justice

said the verdict must be for the defendant, but it might be well that the jury should say what they thought the value of the colts was. (The jury said £75.) The verdict was entered for the defendant.

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

PRIVATE GARDENS.

Indoor Plant Department.—In conservatories, which are now as gay as they will be at any time during the whole year, and in which the young shoots of many of the inmates are pushing freely into growth, cold draughts are carefully guarded against; for should such be allowed to pervade these structures, what would become of the many cool Orchids now in bloom in them, together with *Medinillas*, *Franciscas*, *Begonias*, *Æschynanthus*, *Eranthemums*, *Thyracanthus*, early *Gloxinias*, *Coleus*, and other introductions from warmer houses? Specimen *Boronias*, *Chorozemas*, *Genethyllis*, *Heaths*, &c., now add to the beauty of conservatories, whilst specimens of other things are being forced, or have their blooming season retarded by removal to houses with a north aspect. Balsams and *Celosias*, of different sorts, for early flowering, are shifted before they get pot-bound, using for them an open rich soil. *Coleus*, for indoor work, are also kept shifted, and pinched to keep them shapely; they enjoy being plunged in bottom heat. *Mignonette* is, in some cases, neatly trained on wire trellises. Both Show and Fancy *Pelargoniums* for early flowering get a little manure water, applying more to the weaker than stronger varieties. To those for later flowering abundant ventilation is given. *Camellias* and other plants done flowering and pushing afresh, are syringed regularly, sufficiently early in the afternoons to admit of their foliage becoming dry before night. Stove plants which are syringed freely, enjoy a moist atmosphere. *Stephanotis floribunda*, in some places is in flower; in others it is now in full growth. It requires plenty of moisture, and whether grown in pots or borders, on pot trellises or on wires along the rafters, it must be regularly tied and shifted. *Allamandas*, *Clerodendrons*, *Bougainvilleas*, and *Dipladenias* require similar treatment, and have the benefit of being plunged in bottom heat. *Ardisias*, *Gardenias*, *Durantas*, *Lagerstromias*, *Plumbagos*, *Rondeletias*, &c., are well syringed morning and afternoon; an operation which keeps down insects. *Poinsettias* that flowered early and now breaking, are pruned back to within a few eyes of the base, and started afresh; in some instances cuttings are only retained, the old plants being thrown away. Among Orchids, *Calanthes*, *Odontoglossums*, *Cælogyns*, and others belonging to the Mexican house, are still being repotted, top-dressed, and placed on new blocks where necessary. Water at the root is as yet given only sparingly. Ferns are allowed

plenty of water, and the greenhouse and hardy kinds are being repotted.

Pits and Frames.—The propagation of bedding plants now requires particular attention; plants of *Coleus*, *Alternantheras*, and others are being subjected to a high and moist temperature in order to induce them to yield cuttings, which are struck and potted off singly in great quantities. *Centaureas*, *Lobelias*, *Petunias*, &c., are being now sown in heat, and as soon as fit to handle are pricked off into pots, pans, or boxes. *Liliums* are kept near the glass in cold frames; no water is, however, given them until they appear above the surface. *Sempervivums* and many other hardy things kept during winter in cold frames and houses are being placed outside. *Calceolarias* from cuttings kept in frames are now lifted and replanted in good mould further apart. In forcing pits regular supplies of *Lily of the Valley*, *Spiræas*, *Dielytras*, *Roses*, *Azaleas*, *Kalmias*, *Callas*, *Deutzias*, *Lilacs*, *Cytisus*, &c., are being kept up for the decoration of the conservatory.

Flower Garden and Shrubbery.—Beds of spring flowers, which are kept neat and clean, now prove very attractive. Borders in front of shrubberies are being manured and dug, and where hardy edgings, such as *Stachys lanata*, *Cerastium*, variegated *Polemonium*, *Sempervivums*, are to be used, they are lifted, divided, and replanted. Lawns and grass everywhere are now being mown. Evergreen shrubs still continue to be lifted and transplanted (though the present is not nearly so good a time for that operation as September), and large plants intended for removing next season are having their roots pruned. Pruning of roses, evergreen, and other shrubs is being proceed with. Where conifers throw up more than one leader, the contending ones are being removed, leaving that which is most promising.

Indoor Fruit Department.—In the case of Pines, new tan-beds are being prepared for plunging those about to be potted. From those fruiting suckers are being removed, their ends dressed with a sharp knife, and potted. Smooth *Cayennes* done fruiting, have their leaves shortened to induce them to produce suckers. Vine shoots are being thinned and tied, and a steady moist temperature maintained. Peach shoots are being tied in, and superfluous ones removed. The syringe is freely used amongst the foliage. A rather low and equable temperature is maintained until the stoning process is over, a kind of treatment which is especially applicable to Cherries. Figs are liberally watered both at the root and overhead. Strawberries in bearing are kept rather dry, and too many are never allowed to ripen on one plant. A regular succession is kept up, by which means there is never any scarcity. Cucumber and Melon beds have their heat maintained by means of renewed linings. Succession crops are being sown, and when the plants have formed two rough leaves they are potted off singly, and kept near the glass in a warm, moist pit or frame. Beds in which bearing Cucumbers have been kept throughout the winter, are being renewed and furnished afresh with young plants. French Beans are being sown, and those about to flower earthed up. They are frequently syringed. Tomatoes are being potted off, and others sown. Chilies are sown in heat. Celery is pricked off into boxes of rich mould. Asparagus and Seakale continue to be forced. Potatoes in frames have plenty of air, and are earthed up as they require it.

Outdoor Fruit and Kitchen Garden Departments.—Trees on walls are being protected. A dusting of lime over fruit trees and bushes is found to be beneficial where birds, insects, and moss are troublesome. Cauliflowers are lifted with good balls, and planted in rows two feet apart each way. A little protection at night, if practicable, is of great benefit to them. Small sowings are also being made. Savoy and Brussels Sprouts are sown to succeed those put in in the first of the month. Of Borecole or Kale main sowings are made. Parsley is being sown in rich soil, in lines along the sides of plots of ground, for which it acts as an edging. Radishes and Lettuces are sown as required. Peas are being sown in succession in drills three inches deep; those that have come up a little have some earth drawn to them and are being staked. Where stakes are scarce, the dwarf kinds of Peas are sown. Peas are also sown in boxes in heat, for cutting when three inches high for use in soups. Between lines of Peas early Cabbages are being planted one foot apart, so that when too close every alternate one is drawn, leaving the others two feet apart for hearting. In ground where "clubbing" prevails, the roots are dipped in a mixture of earth, soot, and water, about the consistency of paint. Potatoes are being planted, excepting in cold or heavy soils. Main crops of Parsnips and Leeks are being sown; also of Onions where not already done. Dustings of lime, or finely sifted coal ashes scattered over the surface of the ground, act as good preventives of slugs and snails. The hoe is used freely amongst growing crops of all sorts.

NURSERIES.

Indoor Department.—Propagating constitutes the chief work in nurseries at present. Clematises are being struck from eyes and short jointed cuttings containing two eyes. Dahlia roots, placed in heat, are now furnishing young shoots in abundance, which are taken off and struck, and as soon as they are rooted they are potted off singly; when fairly established they are placed in a cooler house. Hollyhocks are started in pots in heat, the shoots slipped off with a heel and struck. Young *Dracænas* from pieces of the stem and roots are being potted and kept close. *Allamandas*, *Clerodendrons*, *Dipladenias*, &c., are being raised from cuttings, to which is attached a "heel" of the old wood. Begonias are being increased by laying good, firm, well-matured, healthy leaves on the surface of a pan or pot of silver sand, and pegging them down; the main ribs being first broken to encourage the production of young shoots. Heaths, *Epacrises*, *Boronias*, *Diosmas*, and many other hard-wooded greenhouse plants, likewise conifers, such as *Cypresses*, propagated in autumn are in some cases kept in gentle heat, and in others placed in cold frames covered with bell or hand glasses. When there is time to spare, and the plants are well rooted, they are potted singly, and kept for a time under hand lights in warm pits. Ferns are raised from spores sown in pots and just pressed gently in on a fine surface, over which a piece of glass is placed, or the pots are kept in close frames within the propagating pit. Such as have covered the surface of their pots with young plants are cut into pieces about half an inch square, and these are planted in small pots, or in pans, keeping them about an inch apart. Farther advanced seedling ferns are being potted, and kept in a warm, close, and equable temperature. Hardy ferns are being potted. Some of the finer sorts of Lilies are being put into small pots, and kept without water until they appear above the surface, when they are plunged in cocoa-nut fibre in cold frames, protected merely from frost. Grafting of evergreen shrubs, such as Yews, *Cypresses*, *Hollies*, &c., is being carried out; the more tender varieties being worked on the hardier kinds of stocks; they are kept in a close gentle heat and shaded. *Rhododendron* seed is being sown; a layer of damp moss is placed on the surface to prevent evaporation. Young hybrid varieties are being potted off. Grafting of *Roses* and *Rhododendrons* is likewise being proceeded with.

Outdoor Department.—Herbaceous plants in pots continue to be divided and potted singly. Primulas from seed are being potted off. Hollyhocks from seed are transplanted from their seed beds into borders. Carnations are being transferred from pots into beds. Foxgloves in seed beds are being transplanted into lines a few inches apart. *Phloxes*, *Pentstemons*, and other choice hardy plants wintered under cover, are now being moved to beds of coal ashes out of doors. Young Figs in pots are kept in cold frames uncovered. Vines in pots are being cut back and taken indoors. In the open ground, *Roses*, both standards and stocks, are being laid in in lines. Deciduous and evergreen trees are likewise being laid in, and the training of fruit trees is now receiving attention.

MARKET GARDENS.

No sooner is a piece of ground cleared of one crop than it is heavily manured, dug, and at once prepared for another. Rhubarb is now plentiful out of doors. A variety named *Champagne* is that most used, on account of its fine deep red colour. The *Linnæas* is also much grown because of its productiveness, and the *Victoria*, which is a late variety. Seakale, like Rhubarb, is now also obtained from the open ground. Seed of it is now being sown thickly on four-foot beds, and plants of last year's sowing are being transplanted in lines a foot apart each way. Celery ground, as it becomes clear of its crop, is levelled, manured, dug, and planted with Lettuces, Cauliflowers, &c. Strawberry plantations are still being made; *Stirling Castle* seems to be the favourite early variety. Borders in warm situations are being prepared for French Beans, which, however, will not be sown for some weeks yet. Globe Artichoke plantations are still being made on deeply-worked well-manured ground. Peas are sown in succession in single lines, which, in the case of dwarf varieties, are about three feet apart. Taller varieties are put in at considerable distances apart, so as to allow space between the lines for crops requiring some little protection. A second main crop of Beans is now sown, and plantations of Horseradish made, the pieces of roots being set twelve inches apart, and fifteen inches deep. The produce is generally allowed to remain undisturbed till the second year after planting. Skirret, Salsify, and *Scorzonera* are sown in small quantities for early use, but main crops not yet, as they are apt when sown early to run to seed. Successional sowings of Radishes are regularly made, in many cases without covering the beds with litter. Those above ground have the litter raked off them during the daytime with a

wooden-toothed rake. Tomatoes, Vegetable Marrows, Cucumbers, Celery, &c., are raised in great quantities in hot frames. Frames containing Lettuces and other crops are being held in readiness for their reception, and trenches are dug in the ground, filled with hot dung, over which some light mould is placed, in which Marrows are to be planted.

While we write (March 21st) snow is falling heavily, destroying the hopes which the brilliant weather of the last few weeks, was calculated to inspire, and doubtless rendering considerable modification necessary as regards many of the operations named above. Half-hardy plants especially will require increased attention.

SOCIETIES, EXHIBITIONS, &c.

ROYAL HORTICULTURAL SOCIETY.

An interesting meeting of this Society was held last Wednesday, in the Conservatory at South Kensington. The weather was fine though cold, and there was a grand display of spring-flowering plants. Hyacinths, as heretofore, formed the principal feature of the exhibition, which was well supported by Messrs. Veitch, who furnished no fewer than 275 plants of extremely well-grown Hyacinths. The same exhibitors took the first prize for eighteen distinct kinds, which consisted of Von Schiller, Blanche Formidable, Cavaignac, Vuurbak, Haydn, Macaulay, De Candolle, Blondin, Solfaterre, Charles Dickens, Lord Byron, Graudour a Merveille, Blackberg, La Graudesse, Koh-i-Noor, King of the Blues, Ida, and Lady Palmerston. Another fine collection of Hyacinths, consisting of 114 plants in excellent condition, was staged by Messrs. Paul, of Waltham Cross.

The amateurs' class contained plants in every way commendable, being distinct in colour and kind, and well grown. Several new Hyacinths were exhibited, some of them distinct in colour; amongst them Chapeau d'Orange, Lady Mayo, Excelsior, Prince de Naples, and l'Ornement de Rosa, are pinks of different shades; Sylvia, J. H. Veen, Mrs. Radcliffe, are pale blues; Lila Major, Tricolor, Lord Mayo, and Yescho, are dark coloured ones. These were contributed by Messrs. Veitch, Mr. W. Paul, and Mr. Douglas, gardener to F. Whitbourne, Esq., Loxford Hall, Ilford.

Of Tulips over seventy pots were staged by Messrs. Veitch, who carried off the first prize with Pride of Haarlem, Rouge Luisante, Brutus, Rose Miniature, Due de Holstein, and Fabiola. Some fine Tulips were also shown by amateurs, more especially by Mr. Rowe, gardener to Mrs. Lewis, Roehampton, who received the first prize.

About fifty pots of well-bloomed plants of Narcissi were staged by Messrs. Veitch. There was likewise exhibited a collection of cut blooms of Narcissi, of more interest, perhaps, to botanists than to horticulturists; but still valuable to the latter as types of what they grow in that way, in which there is generally much confusion.

Orchids were shown more abundantly, in greater variety and in better condition than on previous occasions. Amongst them we noticed Lycaste Skinneri, a variety of *Odontoglossum hystrix*, with three fine spikes of flowers; *O. luteum purpureum*, a fine variety with two flower spikes, furnished respectively with fourteen and twenty-two blooms, in fine condition; *O. Uro-Skinneri*, and *O. pulchellum*, both well-flowered. Of *Cattleya Trime*, there was a fine plant; also an *Angraecum sesquipedale* in fine condition, *Cypripediums* of various sorts; *Trichopilia suavis*, to which an extra prize was awarded; *Laelia cinnabarina*, in unusually good condition; *Dendrobium lassioglossum*, with light coloured flowers; *D. Devonianum*, a charming species with two fine spikes; *D. Wardianum*, with four flower spikes; *D. Farmeri*, with three charming spikes; *D. lituiflorum*, a species in the way of *D. nobile*; *D. albo-sanguineum*, profusely bloomed, and others, all from Mr. W. Denning, gardener to Lord Londesborough, at Grimston Park, Tadcaster. The same exhibitor also showed two plants of *Dendrobium Devonianum*, raised from seed ripened in this country three years ago. This fact should stimulate cultivators to experimentalize in the same direction, it being evident that there is less difficulty in raising Orchids from seed than is generally imagined. Among other collections we noticed *Dendrobium fimbriatum oculatum*, with beautiful yellow flowers, having a distinct dark spot on their under lip. A fine variety of *Phalenopsis Schilleriana*, with very broad flowers, of fine quality, was shown by Mr. Williams, of Holloway. A purple variety of *Odontoglossum Alexandrie*, called *roseum*, received a first-class certificate, as did also an excellent kind called *C. Andersonianum*, the result of a cross between *O. gloriosum* and *O. Alexandrie*. The beautiful *Masdevallia Harryana*, a fine deep magenta-coloured kind, previously named *amabilis*, was shown by Messrs. Veitch. A large pan of the beautiful *Anaethochilus imperialis*, in flourishing condition, was exhibited by Mr. W. E. Dixon, Norwood Nurseries, Beverley. The same exhibitor received a cultural commendation for a group of new and rare plants. A cultural commendation was also given for a handsome plant of *Beaumontia grandiflora*, bearing great trumpet-shaped white flowers. This was shown by Mr. J. Chambers, gardener to J. Lawrence, Esq., Eddington, Surrey. This plant is commonly considered difficult to cultivate—an idea which the specimen just adverted to tends to annihilate.

Perhaps the most attractive plant in the exhibition was a magnificent specimen of *Medilla magnifica*, fully eight feet in diameter, and orna-

mented with some half hundred glorious pendent racemes of rosy pink inflorescence. This was shown by Mr. Williams. Six pots of *Mignonette* trained as pyramids, about two and a half feet in diameter, received a first prize; these, together with three plants of tree *Mignonette*, filled the house with fragrance, and formed objects of great attraction. These were shown by Messrs. Rollisson, of Tooting. A cultural commendation was awarded for a fine basket of *Clematises*, from Mr. Noble, of Bagshot. A cultural commendation was likewise awarded to some splendid varieties of *Cyclamen persicum* from Mr. Wiggins. A collection of *Cyclamens* was also exhibited by Mr. Goddard, gardener to H. Little, Esq., Cambridge Villa, Twickenham, to which an extra prize was awarded. Roses in pots and cut blooms were unusually fine, and largely exhibited by Messrs. Veitch, Mr. Wm. Paul, and Messrs. Lane & Sons. A very fine tea-scented variety in Messrs. Veitch's collection, named *Belle Lyonnaise*, received an extra prize. Prettily flowered young plants and cut flowers of *Camellias* were also shown, as were likewise some nicely flowered *Rhododendrons* and *Azaleas*. Of the latter we noticed the singular variety called *A. linearis*, which is more interesting in a botanical than in a cultural point of view. For a well grown *Caladium*, Prince Albert Edward, a cultural commendation was given to Mr. Dixon. A cultural commendation was also awarded to *Agave gemminata Williamsii* from Mr. Williams; likewise to *Euryclia amboinensis*, from Mr. Ball. Amongst other things were several very fine palms, such as *Kentia australis* and *Forsteriana*, *Veitchia canterburyana*, *Calamus verticillaris*, a variegated form of *Rhapis flabelliformis*, *Uncaspermum vani Houttei*; and to one named *Ptycosperma Alexandrie*, from Messrs. Rollisson, an extra prize was awarded.

Amongst *Dracaenas* we noticed *D. Macleanii*, a fine dark coloured variety, with broad drooping leaves, in the way of *D. Cooperi*. A fine pan of *Trichomanes radicans* from Mr. Dixon received an extra prize; from the same exhibitor also came a grand specimen of *Gleichenia Spelunca*, and a large plant of *Platyocentrum grande*, growing on an old tree fern stump. We also observed *Philodendron Lindenii*, a noble leaved plant.

Cinerarias distinctly coloured, and otherwise in beautiful condition, were furnished by Mr. Cutbush, and some of good form and substance came from Messrs. Standish & Co. To *Epimedium lilacinum*, a charming little plant, an extra prize was awarded. Associated with it were double and single *Primroses* with white and lilac; also the lovely *P. nivalis*, Lily of the Valley, *Polemonium reptans*, *Adonis vernalis*, *Trillium grandiflorum*, *Pansies*, a pretty dwarf *Fritillaria*, and a variegated form of *F. imperialis*, the exquisite little *Iris pumila*, *Funkias*, *Pinks*, &c., all from Mr. T. Ware. A basket of a fine tricolor *Pelargonium*, named Mrs. Headley, two baskets of *Auriculas*, and a collection of the new whites forcing pink, named *Lady Blanche*, were exhibited by Mr. Turner, of Slough. From Mr. Cutbush came a group of *Aucuba aureo-maculata* with large yellow blotched leaves.

Fruit was shown in good condition; a cultural commendation was awarded to a box of *Lady Downe's Seedling Grape*, in fine plump condition, from Mr. J. Hudson, gardener to J. C. Ingham, Esq., Champion Hill, Camberwell. Apples, both dessert and kitchen kinds, were contributed; of dessert sorts, the winning varieties were *White Nonpareil*, *Claygate Pearmain*, *Cornish Aromatic*, *Cockle Pippin*, *Cox's Orange Pippin*, *Scarlet Nonpareil*, *Ribston Pippin*, and *King of the Pippins*. Among kitchen varieties the following were the successful sorts, viz., *Northern Greening*, *Lewis's Incomparable*, *Striped Beefing*, *Wellington*, *Alfriston*, *Kentish Filbasket*, *Blenheim Orange*, and *Dumelow's Seedling*. A dish of good *Chaumontel Pears* were also shown by Mr. C. Ross, gardener to C. Eyre, Esq., Welford Park, Newbury. For three fine heads of *Snow's Winter White Broccoli* Mr. Ross also obtained a first prize. Three large heads of white *Broccoli*, called *Matchless*, came from Mr. Cooling, Bath. A brace of *Seedling Cucumbers*, called *The Winter Supply*, was shown by Mr. T. Record, gardener to the Marquis of Salisbury, Hatfield; as were also three dishes, one of limes, one of citrons, and the other of *Sweet Lemons*, from Mr. E. Elworthy, gardener to Sir W. C. Trevelyan, Bart., Nettlecomb, Somerset. An interesting collection of *West Indian Yams* (*Dioscorea sativa*) was exhibited by Messrs. Rollisson.

BIRMINGHAM EXHIBITION.

The local committee of the Royal Horticultural Society held a meeting on the 14th inst., the Marquis of Hertford in the chair. There was a large attendance, to whom it was announced that H.R.H. Prince Arthur had signified his intention of opening the show to be held at the Lower Grounds, Aston, in June next. It was stated that the sum of £100, placed at the disposal of the implement committee for prizes, should be appropriated to the award of medals as under:—Five gold medals, one to be given for the best horticultural building; one for the best heating apparatus; one for the best collection of vases or other garden decorations; one for the best collection of garden machinery, tools, &c.; and one for the best collection of garden wirework. It was further recommended that the judges should be empowered to award silver and bronze medals, not only to any meritorious exhibits in the classes just enumerated which might not obtain gold medals, but also to any others besides those which might appear to them to deserve such a distinction. They were of opinion that the funds at their disposal would enable them to offer five gold medals, thirty silver medals, and forty bronze medals. It was also reported that Mr. Joseph Moore had been commissioned to prepare designs for the medals.

The draft of the schedule of prizes was then submitted and agreed to, but as contributions to the special prize fund were reported to be coming

in daily (it amounts at present to £880, including £100 subscribed by the Birmingham Rose Show), a sub-committee was appointed with full authority to revise, amend, curtail, or extend the special prize list as circumstances may necessitate. A class is set apart for dinner-table decorations, to be exhibited and judged by gas-light. Each exhibitor will be required to completely furnish a table for fourteen persons, and the decorations must be so arranged as to show the best means of utilizing fruit and flowers in its adornment. The prizes offered are £20, £15, £10, and £7, which should secure an attractive exhibition. The local committee of the Royal Agricultural Society's show of last year have contributed a special prize of £10.

THE GARDEN IN THE HOUSE.

THE CREEPING MYRTLE (MYRSIPHYLLUM ASPARAGOIDES).

In the interesting notice of this plant in No. 15, p. 324, the writer expresses an opinion that its application for ornamental purposes must be peculiar to America, as he did not find it in European plant catalogues, nor mentioned in any foreign works on floriculture. I am glad to learn, from the editorial note appended, to the description which you have given of this interesting plant, that it is occasionally to be met with in botanical or rare collections in this country; but I wish to remark that it is well known in Sicily, and that it is cultivated and largely used for ornamental purposes in Palermo. The Palermitan belles find, from experience, that its delicate graceful sprays outlive all other green foliage in the heated air of a ball-room, and they arrange it with great taste for personal decoration, adding some of their splendid camellias, or other brilliant flowers, which grow in profusion in what is literally a land of flowers. I made an experiment some years ago at Palermo with a branch of the *Myrsiphyllum asparagoides*, which was brought to me as a specimen of the plant so much used by ladies there for the decoration of the hair, on account of its long retention of greenness and freshness. It was laid on a table in a room without water, in order to ascertain how many hours it was possible to keep it fresh. Unfortunately, no record was kept of the actual length of time, although it impressed all of us at the time. I have long wondered why our English ladies did not adopt this very beautiful and delicate plant as an addition to their ball-room toilette. I can only surmise that its merits have been comparatively unknown in England, and I trust that your interesting notice, coming, as it does, all the way from across the Atlantic, will eventually lead to its universal cultivation in greenhouses in this country. G.

ARRANGEMENT OF VIOLET BLOOMS.

VIOLETS are not easy flowers to arrange well; their heads are too heavy for their legs. I never like to see them stuck into a vase in a bunch, just as they are sold. Often we find them in vases without any leaves or foliage of any kind. Then I am uncharitable enough to consider that those who so arrange them, if arrangement it can be called, have less taste than the children who gather them and make them up into bunches, encircled with a few of their own leaves. Where time is not an object, and fine blooms of Neapolitan Violets are at your disposal, it is worth while to pass a piece of fine soft wire (called by bouquetieres, binding wire) through the back of the flower and to curve it over in the direction of the flower-stalk, giving it one or two turns round the stalk to keep it in its place. Flowers so treated, can be stuck one by one into a vase or saucer full of moss, and thus preserve the position in which they were when on the plant. A dozen blooms thus prepared and arranged amongst a sufficient supply of their own leaves, have a natural effect, and their appearance commends itself, even to those whose taste has not been, so to speak, educated. But many have neither the time nor the inclination for such fidgetty work. To them I would recommend the use of Aconite leaves, or of any other similarly constructed leaves that are out thus early; tie two or three of them together by their stalks, which should be cut two inches long, and place the bunch into a saucer with the tips of the leaves resting upon its edge. The violets may then be placed between the divisions of the leaves, and will be supported by them in a natural position. If near the sea, small plants of *Plantago coronopus* might be used, instead of the finely divided palmate leaves of the Ranunculaceous plants to which I have referred, or other leaves from plants of the same natural order.

W. T.

COVENT GARDEN MARKET.—March 22nd.

Flowers.—These chiefly consist of Hyacinths and Tulips; Cinerarias, among which dark blues prevail; Spring Heaths (*E. gracilis*); Epacris; Azaleas; *Spirea japonica*; Cyclamens; Fuchsias; Pelargoniums, of many kinds. Cut-flowers of Orchids and other things are also abundant. Bouquets consist of white Camellias or some light coloured Tea-rose as a centre piece, about which are tastefully arranged Lily of the Valley, Cyclamens, Mignonette, light-coloured Orchids, wired "pips" of white Hyacinths, Heliotropes, the jasmine-flowered Bouvardia, blue Cinerarias; and Pelargoniums, edged with Maidenhair Fern, sprays of which also pervade the whole of the bouquet. "Button holes," backed by sprigs of Ferns, consist of pink, white, and yellow Tea-roses, in front of which are placed double red Pelargoniums. In others are sprays of *Spirea*, a white rose-bud, and a bit of red Pelargonium, or some red-coloured Pink; others again consist wholly of a white Pink set on a green background.

PRICES OF FRUIT.

	s.	d.	s.	d.		s.	d.	s.	d.
Apples ½ sieve	2	0	4	0	Pears, kitchen doz.	2	0	4	0
Chestnuts bushel	10	0	20	0	dessert doz.	3	0	8	0
Filberts lb.	0	6	1	0	Pine Apples lb.	6	0	10	0
Cobs lb.	0	6	1	0	Strawberries oz.	2	0	3	0
Grapes, hothouse lb.	15	0	20	0	Walnuts bushel	10	0	25	0
Lemons 100	7	0	10	0	ditto per 100	1	0	2	0
Oranges 100	4	0	10	0					

PRICES OF VEGETABLES.

Artichokes per doz.	4	0	6	0	Mushrooms pottle	1	0	2	0
Asparagus per 100	6	0	10	0	Mustard & Cress, punnet	0	2	0	0
Beans, Kidney per 100	3	0	5	0	Onions bushel	2	0	4	0
Beet, Red doz.	1	0	3	0	pickling quart	0	6	0	0
Broccoli bundle	0	9	1	6	Parsley, doz. bunches	3	0	4	0
Brussels Sprouts ½ sieve	1	6	3	0	Parsnips doz.	0	9	1	0
Cabbage doz.	1	0	1	6	Peas, Continental, quart	0	10	0	0
Carrots bunch	0	6	0	0	Potatoes bushel	2	0	3	0
Cauliflower doz.	2	0	5	0	Kidney do.	3	0	5	0
Celery bundle	1	6	2	0	Radishes doz. bunches	0	6	1	6
Chilies per 100	1	6	2	0	Rhubarb bundle	0	6	1	0
Coleworts doz. bunches	2	0	4	0	Salsafy do.	1	0	1	6
Cucumbers each	1	0	3	0	Savoy doz.	0	9	1	0
Endive doz.	2	0	0	0	Scorzonera bundle	0	9	1	3
Fennel bunch	0	3	0	0	Seakale basket	1	0	2	0
French Beans per 100	2	0	4	0	Shallots lb.	0	4	0	6
Garlic lb.	0	8	0	0	Spinach bushel	3	0	4	6
Herbs bunch	0	3	0	0	Tomatoes, small punet	3	0	0	0
Horseradish bundle	3	0	4	0	Turnips bunch	0	3	0	9
Leeks bunch	0	2	0	6	Vegetable Marrows, doz	0	0	0	6
Lettuce doz.	1	0	2	4					

Early-leaving Horse-Chestnuts.—The best known tree in Paris is an early-leaving horse-chestnut in the Tuileries Gardens—the "*Maronnier du vingt Mars*." It comes into leaf a few weeks earlier than the other trees in the gardens, and is popularly supposed to be in good leaf on the 20th of March every year, though we saw it behind its time in the spring of 1867. It is not generally known that such trees are by no means rare. In Kensington Gardens on the 6th of March this year we saw half a dozen within sight at the same time, and all with partially unfolded leaves. The majority of the trees of the same kind were quite bare, and we have since observed the same thing in several of the London parks.

Pansies in Bouquets.—In passing through the central row in Covent Garden the other day I was surprised and pleased to see dark coloured Pansies tastefully worked into bouquets. The bouquets were for the most part composed of white Camellias, and other pure white flowers. The effect of the rich dark pansies among these was very charming as well as quite novel.—H. V.

ANSWERS TO CORRESPONDENTS.

Y. (Exhibitions of Hyacinths may now be seen at the nurseries of both Messrs. Veitch and Cutbush.)—J. T. T., GUERNSEY. (From any of the Paris nurseries where herbaceous plants are grown. If you get plants in pots they may be planted out at any time.)—BIRCHFIELD (Through any good nurseryman.)—M. (Next week.)—MESSRS. M. (The Cow Parsnip.)—C. G. (Tobacco smoke will kill green and other fly indoors; outside try applications of tobacco water, sulphur, and Scotch snuff, washing them off on the second or third day with clean water applied with force from the garden engine or a powerful syringe.)

NOTICE.—Country booksellers having reported some of the earlier numbers of "The Garden" to be out of print, we beg to state that every page has been stereotyped, and consequently "The Garden" can never run out of print.

Readers who may find it difficult to procure THE GARDEN regularly through the newsagents, may have the numbers sent direct from the office, at 19s. 6d. per annum 9s. 9d. for six months, or 5s. for a quarter, payable in advance. All the back numbers may be obtained through all newsagents, at the railway book-stalls, and from the office.

All communications for the Editorial Department should be addressed to WILLIAM ROBINSON, "THE GARDEN" OFFICE, 37, Southampton Street, Covent Garden, London, W.C. All letters referring to Subscriptions, Advertisements, and other business matters, should be addressed to THE PUBLISHER, at the same Address.



"This is an art

Which does mend nature: change it rather; but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE SIX OF SPADES.

CHAPTER VIII.

INDEED, I think that there are few institutions more healthful, and few sights more pleasant to the eye and heart, than that of a village flower show. It induces first of all that communion of classes which teaches men, more forcibly than schools or sermons can, to recognize their place and duty; and does this with a cheerful ease and freedom very sparse (please to observe the fashionable adjective "sparse," a new shilling, I assure you, in the coinage of etymology) in the assemblies of Englishmen. Orchids, delicately reared in heat, are gathered under one tent with the hardy wild flowers of the field; the luscious Grape from my lord's vinery rests upon the same table with the Gooseberry, hirsute and corpulent; and as the question is, not which of these is more beautiful or better than its neighbour, but which is best of its kind, which has been most carefully and wisely cultivated; so when men meet together, lawmakers and brickmakers, coronets and "billy-cocks," the consideration for each to take home with him is this, not whether he is richer in purse or higher in grade than another, because God has put all men in their places, but whether he is useful and good *in himself*. It concerns every man, and vitally, to reflect, not whether he is a duke or a ditcher, for that is pre-arranged and fixed, but whether his dukery or his dike are in the best available condition.

If it be said that very few will make this inference, or note my obscure analogy, I may lay stress at all events upon the fact that *there is* the communion of classes, pleasantly established, and that from this kindly genial intercourse new sympathies cannot fail to spring. All are in good spirits and good temper to begin with. The Duke congratulates Mr. Oldacre upon that glorious basket of forced fruits, Grapes, Peaches, Nectarines, Apricots, worth a hundred guineas in Covent Garden Market; and Mrs. Cooper is still more delighted with a long-legged dusty Geranium, which would soon put an end to the Pelargoniums at Slough, by causing them to die with laughter, but which, nevertheless, has achieved to-day the third prize for window plants.

Then comes a friendly fusion of exhibitors. The owner of the soil has hearty words for that occupier who proves to-day that he is not abusing it, and whose neat garden proclaims to the landlord, every time he passes in his carriage, industry, happiness, and the rent gradually accumulating in the recesses of an old stocking. Again, I say, it is a goodly sight. The people of a village ought to be as one family, and to-day they seem to be so; and when the band of our Volunteer Riflemen—a good band, too, though the performer on the trombone might be accounted podgy for military purposes—concludes with "God Save the Queen," we feel every one of us that we have met for good, that there are refreshments in life which can cheer and strengthen for many a toilsome day, and that the surest purest happiness is that of men working with the means which are at hand, so ample and so apt when charity seeks them, to make those around them happy. I remember to have heard from an elderly colonel of my acquaintance, that, when a young man, he was in the habit of going frequently for tea and picquet with an invalid aunt, because he thought it his duty. It was an awful bore at first, he said, but he afterwards found in his kinswoman a most genial companion and excellent friend. "I learned more wisdom from that gentle sufferer," he told me, with an earnest thankfulness, "than could be

extracted from a platform-load of Spurgeons; and, though I give you my honour that I always thought, until the day of her death, that she was in straitened circumstances, she left me ten thousand pounds." "Oh!" exclaims the sceptic, with his unbelieving sneer; and I only wish the colonel could hear him. He would repeat his small observation in a very different key.

But where's the Curate? We left him communing with Cooper *père*—he is now with Cooper *fils*. And there can be no question whatever that Tom junior is at this moment the happiest individual out. He has won the first prize for a posy of wild flowers (we call it a bouquet in our schedule, but I like the sweet old English word far better, and so do the little florists), achieving this victory over thirteen competitors, and surmounting obstacles of a stupendous magnitude; for it is currently reported, not only that Billy Jenkinson's mother had been seen, on her return from weeding, with large contributions of field flowers for her sweet William, but further that Tim Norris's big brother "got all his, and tied 'em up for him." Against these fearful odds, these grand advantages, Tom Cooper has won the day; he has utterly discomfited the mother of Jenkinson and annihilated the large fraternity of Norris. There he stands, reading the card, which proclaims his conquest, for the ninety-third time, and merrier than Mr. Merry himself when Thormanby shot forward opposite the stand, and all that he wished was won.

Whence came, I wonder, Tom's taste for wild flowers, and his cleverness in grouping them so prettily? Ask him, and he will look up with a smile at the Curate, who is even now suggesting to him how he might have made some little improvements; and if you would know furthermore how and when the lesson is learned, ask the Curate, as I have asked, and you will hear his system.

On Sunday evenings, in the summer-time, some twenty boys from the village school assemble, when the weather is fine, at his Reverence's garden gate. They have been good lads in church and school, or they would not be there; and as our ecclesiastical Spade comes out, with some books on wild flowers in his hand, little blue-eyed Joe Birley plucks him by the coat, and whispers proudly into an ear very promptly inclined to receive the information, "If you please, sir, I said all that big cholic" (collect for the day intended) "to Miss Rose, and never made no mistak." Whereupon Joseph is permitted to carry one of the volumes for reference, a dignity esteemed in that boy brigade as highly as the Victoria Cross by a soldier; and off they go for the fields. At the first stile, which leads to the inclosures, there is a halt for choosing sides, the Curate nominating two of the most experienced artists as leaders, and these electing their forces alternately. Then the subordinates receive from their commanding officer their special orders and instructions; some are to remain with him to help in arranging; these are to gather white flowers, those pink, and so on; while others must bring "totter-grass," fern, or variegated leaf, to complete the outer circle of the collection.

Each company has a librarian, whose office it is to find in his illustrated works the flowers brought in by his brothers, and to communicate their name and history. Their English names, mind you, for our Curate wisely declines to muddle their small brains, and weary their young jaws, with botany. I never saw him angry but once, and then with a bilious old gentleman, who proposed that all wild flowers exhibited at our show should have their Latin names and classification. "I'll tell you *my* mind," quoth the curate, "botany is a grand science for those who have the head and the time for it, but it's about as useful to a ploughman's child as a ball-room fan to an Arctic voyager; and, therefore, so far from rewarding any of my young rustics for Latinizing our dear old country flowers, I should be inclined to award for the precocious pedant transportation to Botany Bay. Carry out your idea, and we shall have the labourer's child no more exclaiming, 'Oh, faythur, there's a Dandelion!' but 'Aspice, O paterfamilias dilecte, ubi Leontodon Taraxacum flavescit!' while his sister, pointing to a Buttercup, shall astonish its mammy by requesting her to 'employ her optical apparatus in the direction digitally indicated, and to admire the Ranunculus bulbosus, of the class Polyandria, and the order Polygynia.'"

"I try to teach them something better about Buttercups,"

he said to me, as I met him one evening with his boys, and he referred to the subject; and plucking one of the flowers in question, he held it before a charming little fellow, who could scarcely have seen half-a-dozen summers, and asked him if he had learned any verses about it. The answer came promptly, in that soft reverential tone which makes a child's recitation so very touching:—

"It would be wrong on pomp or dress
To spend our thoughts or hours;
Another lesson Christ has taught,
Showing the simple flowers."

There's not a yellow Buttercup,
Returning with the spring,
But it can boast a golden crown
As bright as any king.*

"That will do," said the Curate. "Now, Johnny," and he called another of his pupils, "Tell this gentleman about 'all things bright and beautiful.'" And Johnny began forthwith:—

"All things bright and beautiful,
All creatures great and small,
All things wise and wonderful,
The Lord God made them all.

Each little flower that opens,
Each little bird that sings,
He made their glowing colours,
He made their tiny wings,

The rich man in his castle,
The poor man at his gate,
He made them, high or lowly,
And ordered their estate."†

And Johnny was commanded to cease firing. "They love these verses," our pastor continued, "as they love the flowers; and my hope is, that through life they may connect the one with the other.

"There is a wondrous revelation in these earth-stars, blue and golden, as Longfellow has told us in his grand melodious rhymes, and I trust we are reading it together. I love to imagine that when these boys are men, the labourer, going to his work and from it, may be reminded, as he looks upon these old familiar friends, of the lessons we are learning now; that "the hewers of wood" may stop to recognize, with pleasant memories of the past and brighter hopes of the future, the Anemone, the Primrose, the Violet, the Lily, or the Hyacinth; that pale mechanics, in their Sunday walk, may repeat to their little ones the precepts which are taught by the flowers; and that soldiers and sailors far away may dream of the meadow and the grove, and awake with a deeper affection for their beautiful English birthland, a braver heart to maintain its freedom. Yes, I love to imagine that the recollection of these happy wanderings among the summer flowers may help to revive in weary men the freshness of boyhood's happiness; that some of these lads may hereafter be of that company of whom our greatest sacred poet† has said:—

"There are, in this loud stunning tide
Of human care and crime,
With whom the melodies abide
Of th' everlasting chime;
Who carry music in their heart,
Through dusky lane and wrangling mart,
Plying their daily task with busier feet,
Because their secret souls a holy strain repeat;"

and may know, to quote the words of our greatest divine since the Reformation,‡ how to 'reconcile Martha's employment with Mary's devotion; in the midst of the works of his trade to retire from time to time within the chapel of his heart; and to converse with God by frequent addresses and returns.

"I want these little men to be what Mr. Kingsley calls 'minute philosophers;' to find by the roadside and by the brookside some of 'the riches which God has given the poor;' to feel, as it is wisely said by Alphonse Karr, in his delightful 'Tour round my Garden,' *Le bonheur n'est pas une rose bleue,*

le bonheur est l'herbe des pelouses, le liseron des champs, le rosier des haies, un mot, un chant, n'importe quoi.'"

And much more pleasant converse had I with our Curate on that sweet summer's eve, what time the happy boys were racing to and fro with the pretty posies in their hands; and the gorgeous kingfisher shot down the brooklet, like a meteor, at the sound of their merry voices; and the swift trout darted to his hole, as they plucked the champions from the bank; and the landrail craked in the mowing grass, complaining, I infer from his harsh tones, that, being long-toed and formed for the swamps, as a great naturalist tells us (Darwin "On Species," page 186), he should be thus uncomfortably located in the meadows; and far in the distance "the cuckoo told his name to all the hills," some of them distinctly repeating it, as though Mr. Cuckoo were going upstairs to a party; and we wandered and wondered, until the dews wept for that gentle day; and the two floral armies fought the battle of the bouquets, and victory was adjudged; and victors and vanquished supped, "as only boyhood can," upon the Curate's bread and cheese and beer; and we all went thankfully home, and "bedward ruminating."

S. R. H.

(To be continued.)

HORTICULTURAL TOASTS IN AMERICA.

CHARLES DICKENS, in one of his letters from America to his friend Forster, wrote:—"The general talent for public speaking here is one of the most striking of the things that force themselves upon an Englishman's notice. As every man looks forward to being a member of Congress, he prepares himself for it, and the result is quite surprising. The old custom of drinking sentiments is quite extinct with us; but here everybody is expected to be prepared with an epigram as a matter of course."

A rather remarkable display of the kind of epigrammatic toast-giving alluded to by Dickens took place at the anniversary dinner of the Massachusetts Horticultural Society some few years ago, from which, suppressing the names of the epigrammatists, a few examples may be given, which will not be altogether out of place in the pages of THE GARDEN.

- 1ST TOAST.—HORTICULTURE—that rational and noble art which regales and delights all the senses; which nourishes a generous gratitude to the Author of all Blessings, and enables man to create a new Eden in place of that which his first ancestor forfeited.
- 2ND TOAST.—THE MEN OF SKILL in enlightened cultivation, who have changed the Crab into the Newtown Pippin, and the Hog-peach into the Noblesse and Vanguard.
- 3RD TOAST.—THE ART which makes all climates one, making the tropics tributary to hyperborean regions, and giving even to snowy Russia the Pine-Apple and the Mangosteen.
- 4TH TOAST.—THE ENCOURAGEMENT OF A TASTE FOR FLOWERS.—God gave them for our delight, and it should be one of the signs of a cultivated age to love and study them.
- 5TH TOAST.—AGRICULTURE AND HORTICULTURE.—The allied powers that make the Desert teem with abundance, and bid the Wilderness exhale the perfume of Roses.
- 6TH TOAST.—THE TWO GREAT FACTS.—God made the first GARDEN; Cain built the first city.
- 7TH TOAST.—THE RISING GENERATION.—May these young TWIGS be so TRAINED as to need but little TRIMMING; may they become valuable STANDARDS, produce FRUITS worthy of a PREMIUM, and receive prizes at the great FINAL EXHIBITION.
- 8TH TOAST.—GARDENING.—The art by which Nature is made to improve her own productions.
- 9TH TOAST.—May we henceforward deem it more honourable to crown with garlands the successful cultivator than to gather laurels on fields of battle.
- 10TH TOAST.—THE GREATEST HAPPINESS OF THE GREATEST NUMBER. The whole world a GARDEN: hands enough to cultivate it, and mouths enough to consume and enjoy its abundant produce.

It is needless to add that each of the foregoing toasts was received with uproarious and long-continued applause, or that many other toasts were spoken and drank to on that "festive occasion," some of which may possibly be reproduced in these pages at some future opportunity.

H. N. H.

* From "Hymns for Little Children." † Keble. ‡ Bishop Jeremy Taylor.

THE LIBRARY.

NATURE; OR, THE POETRY OF EARTH AND SEA.*

ILLUSTRATIONS that make hideous the subjects which they attempt to "illustrate" are unfortunately not uncommon. But in the book before us there are illustrations in which the very life and spirit of vegetation are expressed so truthfully that

one obtains a new idea of the exquisite power of good engraving as a teacher. The things represented seem to live—to toss on the breeze, to bathe in the glorious sun; yet all is in black and white. By such art as this we teach in the highest sense. Numbers have no opportunity of seeing at their best many of the subjects with which they have to deal. This particularly applies to gardeners, who are debarred from seeing many of the noblest objects of their charge in their native habitats or in the places where they happen to attain perfect beauty and vigour in this country. To such, illustrations which fully render the beauty and the dignity of the subjects they represent are a priceless boon.

The present volume, and some other books recently published by Messrs. Nelson, seem to inaugurate a new era in the art of faithful and artistic rendering of the most beautiful objects in nature. The illustrations are mostly drawn by Giacomelli, who seems the prince of graceful designers on wood. To give some idea of Madame Michelet's style, as well as of the charming illustrations with which the book abounds, we quote a portion of her introductory chapter on the garden, accompanying it by one or two of the beautiful engravings:—

Waterside Vegetation.

"The garden! How many meanings in that one single word! How many interpretations have been given to it! But remember that the garden which our hearts really love is no vast space in which the vision is utterly lost, but rather that limited enclosure which retains the soul half captive; its concentration acts all the more powerfully as an inspiration, and lends wings to our dreams. A limited enclosure, and even something less. Who does not

remember the pathetic history of the prisoner of Fenestrella, all whose garden was a tiny lowly herb, which had sprung up between two stones in the lonely courtyard? And this herb took entire possession of him, linked him to heaven and space, and so firmly held his soul that even liberty would have been nothing to him without it. What more could he need? He who has loved most truly, he it is who alone has thoroughly comprehended the *povera Picciola*.

"Fortune does not allow all of us to see the globe—the wide, wide world. But all of us may wander in this garden—the miniature of a world, which furnishes us with a little turf, a limited degree of cultivation, something of the shade of woods and the freshness of waters—sometimes the sweet illusion of a fair perspective—and the vague uncertain murmur as of distant seas and dying waves.



"I do not speak here of those monumental gardens which are the pride of great cities; or, rather, their saloons, given up to noisy and thoughtless crowds. Much more heartily do I love that little plot of ground of which Virgil speaks; the quiet retreat of the good old man to whom War had left but a small portion of his demesne, and that not the best. Yet not the less did it contain everything—the agreeable and the useful—grass, vegetables, fruits, and even bees, with a few tall and venerable trees, rich in so many pleasures for him who sat beneath their shade.

"Those great and noble trees, in the potent magic of sunshine and shadow, possess all the charms of memory. How many souls, souls (as we feel) akin to our own, have passed away, never to return again! In spite of ourselves we dream of them: all life seems informed with regret.



English Palace and Gardens.

"But sweet friendships are more easily formed with secondary and less imposing lives—with lives, that is, within our own range of sympathy. The fruit tree which mounts no higher than ourselves, and droops its fruit into our grasp—and, still lower, the humble flowers of the field—these are our true friends. And the latter—so small and so exquisite!—seem to breathe forth in their fragrance the subtle soul of the earth; one might almost say, its *thoughts*.

"The famous 'Paradises' of Persia were no more than this—an agreeable confusion of fruit and flower. Even the kings in their

* "Nature; or, The Poetry of Earth and Sea." From the French of Madame Michelet. With 200 Designs by Giacomelli. London: T. Nelson & Sons.

royal gardens were desirous of nothing more. Not an inch of ground was wasted on an empty effect of grandeur. No trees everywhere displayed their barren majesty. There were few broad alleys, but, on the contrary, a maze of narrow paths wound here and there among the orchard-growth. Flowers—everywhere flowers! In that land of light they seem a coruscation, and it is with them that nowadays we have awakened a glow of warmth in our pale West. In the few openings of our mighty forests, what have *we*? The French vervain, whose sombre leafage is scantily brightened by a single and almost imperceptible flower.

"From Persia we have derived all the adornment and wealth of spring. It seems as if its sunshine were not so much warm and genial, as fresh and youthful; it is, so to speak, a ray of dawn. Tulips, anemones, jonquils, and all the variety of ranunculi, were its gifts; aye, and those violets, lilies of the valley, pinks, and narcissi which seem so thoroughly our own. The delicate lilac, the peach with its shower of virgin snow, and finally, supreme above all, the rose in its close sympathy with the bulb—song mingled with sweet odours. All this, too, for the first innocent hour of the young year! Later on, with the languishments of summer, the daughters of India come to greet us, and the children of Tropical America."

"Nature" is divided into seven "Books," as follows:—I. The Garden; II. Pastoral Scenery; III. Woodland Scenery; IV. Mountain Scenery; V. River Scenery; VI. Lake Scenery; VII. The Sea; each of these being again divided into from three to twelve chapters. Our extracts and illustrations speak sufficiently of the merits of the book, though they tell nothing of its excellent finish in printing and paper. We strongly recommend it to every lover of nature.

THE FRUIT GARDEN.

CHOICE APPLES ON WIRE FENCING.

MANY years ago, on taking charge of the gardens here, I found the slip of ground outside the kitchen garden protected with a rabbit-proof fence. The fence consisted of a dwarf wall and wire netting in these proportions: on the wood side the wall was a little more than two feet high, on the garden from eight inches to one foot; on the top of this wall wire netting two feet high was fixed to a strained wire at top and another at bottom. Thus the fence was four feet high from the outside, and a little less than three from the inside. The height so made up has proved sufficient for the exclusion not only of rabbits, but also of hares. Its bare and naked appearance was, however, anything but pleasing. Therefore for that reason, as well as on economic grounds, it was resolved to cover it with fruit trees. The east side was consequently at once devoted to pears, the north to apples, and the west partly to apples and partly to plums. I will, however, now only allude to the apples, which have done best, although the pears have done well. The plums have not succeeded satisfactorily—the cold spring winds, against which the net affords no protection, generally blighting the blossoms, in spite of other protecting expedients. For this reason I would not recommend plums for such positions. But such a fence has proved itself one of the very best places for apples and many of the hardier varieties of pears.

Having planted the young trees at about eighteen feet apart, the next process is the training. If the tree is intended for horizontal training, little cutting will be needed. The main shoot might be bent and twisted in various forms, to compel the dormant buds to break throughout its entire length. A simple removal of the terminal buds, and the proper amount of divergence from the straight line, will generally suffice. The space at command may thus be furnished in less time. There is attending this mode just the risk of breaking the buds; occasionally some one or more of them refuse to yield to such compulsory practice, and then the form of the tree is marred for life. For this reason, and for very dwarf trees, it is safer and surer practice to cut them boldly back, say, two or three months after planting, to within six inches or a foot of the stock. From the very bottom of the tree four or six shoots will then spring forth. The lower ones on each side must then be carried to the right and left horizontally, and the others ranged above them in regular order, and at regular distances. The width of the branches from each other is an

important point. The object being a screen, the branches should be closer than usual. On a space not quite three feet high six or seven branches are arranged; thus close, of course the screen is complete; but perhaps for general purposes, one foot between the branches would be a safe rule. Having started the trees on the right track, the next consideration is, when are they to be stopped in their growing career? This brings me to the question of summer pruning, about which there are two important points. The first is the best time, and the second the proper extent to prune. In reference to young trees of this kind, don't prune them at all the first summer. Having relieved them from the knife in spring, let them not afterwards be meddled with until the autumn. Started on the right track, the further they run, within reasonable limits, the better for their future vigour. A yard or four feet will not be an excessive distance to have traversed. Towards the middle or end of September, however, it will be necessary to examine into the character of the growth made, and to bend it into the direction of fruitfulness. This will be best accomplished by lopping off probably one-third from its length, and, if so much labour can be bestowed, by bending the shoot left as much back upon itself as it will endure without breaking. The tendency of this will be to equally develop all the buds on the shoot, to prevent the terminal ones breaking into new growth, and to store up in them all alike the germs of fertility. All these highly essential objects will be more effectually promoted if, towards the beginning or middle of October, the roots of the tree are carefully examined, and a few of the largest pruned. If any are found, notwithstanding the horizontal spread at planting, to have acquired a vertical bend, they must be boldly removed. This first examination of the roots must be performed with skill. Growth must be tenderly checked. If these operations are properly performed at the right period, no more wood will be made the first season, but many more of the thin angular wood buds will be developed into plump roundish fruit buds; and from this period in the history of the tree the production of such buds is to be the chief object aimed at in all future prunings of either root or top. With such a mode of planting as is here described, wood will be produced in abundance. The knife may occasionally be useful to give it the proper form, but the chief use of pruning henceforth will be as an aid to fertility. And it must ever be borne in mind that fertility is chiefly secured through pruning the root rather than the top of the tree. Root pruning may have for a time to be repeated annually, or biennially. If the trees show a tendency to run too much to wood, pruning is the remedy. After a time, however, the necessity for this will cease.

If these preliminary prunings have answered their proper purpose, the shoots next summer will be covered with fruit buds. From or near the clusters of fruit, a wood bud will also spring forth into a shoot. What is to be done with this side shoot? Let it grow until June, and then shorten it back within four or six leaves of its base. It will soon break out into new growth, and this growth may either be persistently pinched off—say every three weeks—or allowed to grow freely. I prefer this mode until the end of September, and then to cut clean off, back to and beyond the point cut to in June. The exact point must be regulated by the condition of the buds at the base of this shoot. These are our reserve for fruiting next year. Sometimes, if they are very plump, cutting close to them, even at so late a period, will start them into growth. If this happens, next year's crop is ruined; so, if fully developed, it is safer to leave a few buds of the second growth than to cut up to or beyond it. On the other hand, if the base buds are backward, cut back fearlessly to one or two buds only. This will concentrate the remaining energies of the tree upon the organization of fruit buds. However, unless well versed in a knowledge of the two kinds of buds, and the growing habits and peculiarities of different trees, it will be safer practice merely to cut back to the point shortened to in June than to go beyond it. This final shortening completes the summer pruning.

The extending growths on each shoot should be treated the same as last year, until the whole space devoted to the tree is covered; after that all growths should be stopped, pinched, or pruned, in the manner described, for the side shoots. There

will be no want of shoots for furnishing the top of the tree. If a straight stem is chosen, its leading shoot must be cut in year by year, as recommended for the maiden tree, until enough branches are formed for the furnishing of the sides. Its furnishing mission is now ended. In fact, the difficulty with liberal culture is not the want, but a redundancy, of wood, and the needful skill to turn this wood to fruitful account. By the modern improvements in fruit culture, winter pruning is reduced to a minimum. It consists in merely completing the much more important process of summer pruning. Its amount is regulated by the extent to which the shortening process was carried during the growing period. The spurs should then, if any have been left to shorten, be cut back to within a bud or two of their base. After the trees are fairly established such a shortening often becomes unnecessary. Nevertheless, the proper time of this final pruning is of the utmost consequence. From what has been said about summer pruning, it will be obvious that the trees which need most cutting now are those that were then in the most excitable state. For this reason the spurs were left longer upon them. Now this fact affords the proper cue to their final pruning. The great danger to be most sedulously guarded against is the early flowering of fruit trees. Spring frosts are the greatest destroyers of fruitful prospects. Consequently our interest is to keep the buds dormant as long as possible. With this object in view, the final pruning must be deferred to the latest moment. Therefore, instead of performing the winter pruning at the fall of the leaf, leave it until the middle or end of March; for the last cut of the knife is the startling summons for the bud to come forth and bloom.

When the trees are thoroughly established, and a fruitful habit induced, less pruning of any kind is needed afterwards. It thus happens that the induction of fruitfulness speedily supersedes the necessity of much, or any pruning; for, like any other good habit, once established, fruitfulness repeats itself readily; and this habit is the most powerful agent that can be employed either by nature or art for reproducing fertility in continuity. Vegetable life indeed seems to have no choice in this matter; and herein consists a danger to inexperienced growers. A fruitful state of a tree demands modifications of previous practice; an excess of fruitfulness may become a real danger. It is easy of course to remove part of the crop; and this ought at all times to be attended to. In the thinning of fruit it should be remembered that one fine fruit is of more value than six small ones; but I do not chiefly refer to thinning: the whole culture that induced the fruitfulness will require modification. The restrictions upon the growth of wood must be relaxed. Root pruning will not only become unnecessary, but injurious. Prunings and toppings in June may be completely dispensed with; in fact, Nature will often take this matter into her own hands by offering no growth to stop. Any young shoots that are produced may be cut close back in September without the slightest danger of the dormant buds at their base bursting into growth; but for the evil of an early bloom such is the best course to pursue, as the whole power of life should now be carefully husbanded for the manufacture of fruit. In such cases there is literally no winter pruning; the sole pruning being confined to the removal of any young growths in September.

Trees thus bent upon fruitfulness require feeding. Two or three good soakings of sewage in the course of the summer, or top dressing three inches or four inches thick of well rotted manure in the winter, will keep them up to their work for years. The fence here described has now got into this state. The whole care it needs is summer pruning and winter nourishing. A determined fruit-bearing habit has been secured, and the duty of the cultivator consists in promptly and discriminately thinning, carefully feeding, and complacently gathering the regularly displayed and tempting produce. That produce is extraordinary in quantity and fine in quality. The trees stretch right and left along the fence to a distance each way of nine feet, and the branches are arranged one above another six or seven rows deep. Their ropes of fruit are so massive in themselves, and are placed so close together, as to form a complete screen that renders the fence invisible. It is literally a fruit screen, set off to the highest advantage by the fine

foliage that struggles through, between, or out from among the continuous clusters of fruit.

Singular enough, too, although rabbits occasionally get upon the edging of the dwarf wall, and hares can reach to the lower branches by standing on their hind legs, they seldom attack the produce. They seem to dislike nibbling at the apples through the wire netting of $1\frac{1}{2}$ inch mesh. All who have seen this fence are charmed with these dwarf fruit trees, and it would be difficult to find a more profitable boundary to a kitchen garden. It combines in a high degree the merits of utility and beauty, and is just as efficient as an unclothed fence for the exclusion of vermin.

F.

PEARS IN THE CHANNEL ISLANDS.

IN reply to Mr. Willis (p. 384), allow me to say that the evidence as to quality of British or French or Channel Island pears does not rest upon the two varieties he names, viz., Chaumontel and Duchesse d'Angoulême. What he says respecting these two sorts is simply in accordance with what is well known to all who have given attention to the subject of pear growing—viz., that the large, coarser varieties of pears are of better quality grown in France and the Channel Islands than we can produce them in England; and the further north the worse they are. Two hundred and fifty miles north from this place, Chaumontel is very inferior, and the Duchesse is no better than a turnip. But this is no evidence as to the point at issue. I maintain that, for all qualities, size excepted, I have grown, and seen others grow, the best varieties of pears, such as Marie Louise, Louise Bonne, Seckle, and Winter Nelis, and other good sorts, of better quality than ever I have seen grown in France or the Channel Islands.

T. BAINES, *Southgate*.

COLD MASTIC FOR GRAFTING PURPOSES.

THE inconveniences that always attend the use of warm compositions, and the trouble of making them, have brought very much into fashion cold mastics, which soften under the heat of the hands, or remain unctuous from the nature of their composition. Up to the present time, no cold mastic can compete with that of M. Lhomme-Lefort, manufactured by his son at Belleville, Paris. This mastic is sold in tin boxes, in which it preserves its pliability, even after the box is opened. It is spread on the graft with a spatula, and should it be necessary to touch it with the fingers, these should first be wetted. Once exposed to the air, it hardens a little. It does not crack with frost nor run in hot weather, and is the best composition that can be used. We have seen in Germany a cold composition invented by M. Lucas, pomologist. This is made of Burgundy pitch melted over a slow fire. Into this is poured the third of its weight of alcohol of 90°, stirring the mixture constantly with a stick. The only drawback with cold mastics is that they do not harden sufficiently in winter when they are applied in autumn, then the frost, having an advantage over a soft substance, can reach the tissues of the tree thus insufficiently protected.

C. BALTET.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Moss on Fruit Trees.—How am I to get rid of moss on my apple trees?—J. B., *Hertford*.—Many scrape it off, but neither scraping, washing, nor painting have any permanent value. The ground in the neighbourhood of the trees must be thoroughly drained and enriched so as to induce a more healthy growth. The existence of moss and lichen on fruit trees is simply an indication of decrepitude, removable in the case of young trees, whose growth may be improved under more liberal treatment; but generally irremovable in old ones, on which, however, the moss does little harm beyond, perhaps, that of harbouring insects.

Neglected Orchards.—I have lately come into possession of an orchard which has been so neglected as to be literally a thicket of weeds and rubbish. How ought I to proceed to improve it?—B. — In the first place pare and burn the surface, then spread the ashes over the ground and dig them in along with a good dressing of manure. The burning is effected as follows:—A heap of faggots, prunings, and other garden refuse is piled up together, so as to form a cone; this is covered to the thickness of some eighteen inches, with the surrounding soil, which is charred and burned by setting fire to the wood in the middle of it. One ton of wood, it is said, will burn three tons of soil; therefore by erecting and firing several mounds simultaneously in the way just described a large amount

of burnt earth may soon be obtained, and if saturated with liquid manure it becomes an excellent fertiliser. Paring and burning is also a good plan for getting rid of slugs and other vermin.]

Vines Shedding their Fruit.—The starting of my vine this year has reminded me that last season, although it started well, and was well furnished with incipient bunches, the bunches themselves, after a short time, turned yellow, and fell off. Can you tell me what was the cause of the bunches thus falling off? I should, if possible, like to take means to prevent a recurrence of it this year.—SUBSCRIBER.—[It is difficult to state the cause of your vine failure without some acquaintance with the condition of the border in which it grows, and likewise the temperature at which the house was kept during the time it showed its bunches. When forcing commences at this time of the year, if the border is properly drained, and the temperature kept at about from 60° to 65° at night, ranging by sun heat to between 75° and 80°, there ought to be no failure such as you complain of. Last year, in March, April, and May, the season was wet, and if your border, if outside, was not well drained, and if a too high temperature was kept up during the time your vine showed fruit, it would most likely fail in the way you describe. If you are in doubts about the state of the border and your vine roots, some wooden shutters, or a piece of tarpaulin, might be used to cover the border till dry summer weather sets in, and be sure not to keep the temperature too high, unless your vine is of the Muscat or the Frontignan section.—T.]

Select Pears.—Will you kindly favour me with the names of a few good Pears, such as will succeed both on walls and in open quarters?—CHATTERIS.—[The following may perhaps answer your purpose. Those marked with an asterisk do best on a wall:—Citron des Carmes, Baronne de Mello, Beurré Diel, *Beurré Rance, Beurré Hardy, *Beurré Sterckmans, Beurré d'Amanlis, Beurré Superfin, *Bergamotte d'Esperen, *Duchesse d'Angoulême, *Easter Beurré, Flemish Beauty, *Gluon Moreau, Jargonelle, Josephine de Malines, Knight's Monarch, Louise Bonne of Jersey, *Marie Louise, Thompson's, Urbaniste, Williams' Bon Chrétien, and *Winter Nelis.]

GARDEN IN THE HOUSE.

LILACS FOR INDOOR DECORATION.

LILACS stand cutting admirably; a branch is a bouquet in itself, and several branches are furnishing fit for any vase, glass, or basket. The Persian lilacs, of which there are three or more varieties—the Persica, *P. alba*, and *laciniata*, or cut-leaved—are the neatest in flower and foliage. Next in order of value for cutting are the two white varieties of the common lilac, a large and smaller one, of spotless purity, which is more than can be affirmed of the so-called white Persian variety. This common lilac is perhaps the least useful for cutting. Of a bluish tinge, it is less effective than many of the other and newer sorts. Charles X., *Coccinea rubra*, *insignis*, *grandiflora*, and *spectabilis* are among the best varieties for colour and size of bloom. These or any other high-coloured and fine sorts produce a fine effect mixed with the white and plentifully relieved with fine foliage. The latter is no figure of speech, as the leaves of the lilacs differ almost as much as the flowers, and range from purplish tints to a faded-looking green. For bouquet work no leaves of lilac are admissible but those of the Persian varieties, and of those the cut-leaved is the most effective, either interspersed with other flowers or as an outer fringe. Lilac flowers are largely employed, chiefly out of season, in bouquet making. When seen in every town square and cottage garden, and sniffed in every breeze, they are very generally discarded as too common for these purposes. But the mode of making up into hand bouquets is at all seasons alike, and may be briefly adverted to.

The flowers of lilac, unless it be on weak plants of the Persian varieties, are far too large for bouquet work. Each branchlet of the bunch of blooms must be separated and mounted on an independent stem formed of small stick or wire. These artificial sprigs should be alike in size and form as near as may be. Two general styles will be needed, according to the place they are intended to occupy. Stiff compact little branches—that is, comparatively, always retaining more or less of the natural shape—should be made up for the central portions, and thinner, more slender sprays for the outer edges of bouquets. The lilac is almost equally adapted for any part of bouquet making. They form a good foundation to be dotted overhead with other more showy or contrasting flowers, such as white Camellias, Azaleas, and Eucharis. On a red ground of lilac, throwing up a few dividing sprays between white flowers have a grand effect. They mix well with most other material, and hardly ever seem out of place; and few flowers, except those of Spirea, can exceed lilacs for fringes and finishings. Elegant drooping sprays of white lilac, partially hidden on a green ground of maidenhair fern, the double fringe contrasting with a bouquet containing three or five high-

coloured Camellias, is a bouquet as near perfection as may be in a certain style of arrangement.

Scarcely anything need be added about the culture of the lilac. The plants grow anywhere and anyhow. In the dark sunless courts of great cities, half choked with dust and wholly begrimed with soot, the lilac lives and opens its fresh treasury of sweets every May. Its home is the shrubbery or thin wood, though in the commonest gardens, on waste places, hedgerows, the lilac is found. Still the plant pays for culture. Give it good soil and a clean rich root run, enriched with well rotted manure, and the leaves and flowers will well repay the trouble. They will reach a size, acquire a substance, put on a glow of colour, and diffuse a fragrance far beyond the reach of commonplace lilac, if indeed any lilac can be properly called common. Lilacs have a tendency to overcrowd themselves into weakness from below, and over-flower themselves into weakness from above. For remedy the first, thin out or remove all the suckers; for the second, behead the plant and start afresh. It is well to keep up the stock by planting a few suckers a yard or so apart every year. To cut the largest amount of bloom from the smallest area of leaf or branch, lilacs ought to be kept to a single stem like huge standard roses. Allow no suckers from root or stem; prune back any irregular branches that may break away from the head. Trained and managed thus, the plants become highly artistic, and will yield many more and far better flowers for cutting.

D. BURY.

HANGING BASKETS AS HOUSEHOLD ORNAMENTS.

IN our large cities, one of the most fashionable diversions of the ladies is to fill their windows with pretty plants, either planted in *jardinières* of costly tile, or else in hanging baskets of most rustic make. After a little time, when they have grown to appropriate height, and the drooping plants have attained sufficient length, the beauty of the window garden is apparent.



Fig. 1. Suspended Window Basket.

Every visitor on the very moment of entrance into the room is pleased at the simple beauty of the flowers and plants, and even the passer-by on the side walk will stop for a moment in his hurry, and look upon the cozy bower of bloom just inside the glazed window panes.

Fig. 1 is a design for a hanging basket. The box is made of handsomely carved wood, the inside lined with zinc or clay;

the basin is filled with earth, and in it are planted Begonias, Caladiums, Coleus, Geraniums, Ivy, Callas, and quite a variety of other flowers. The size is about 2 by 3 $\frac{1}{4}$ to 3 $\frac{1}{2}$ feet. Few or no hanging baskets we have ever seen surpassed this. Fig. 2 is an illustration of a large, deep basket filled with a dense growth of



Fig. 2. Blue Convolvulus.

the *Convolvulus mauritanicus*. This is a highly ornamental plant of drooping, half shrubby character, slender habit, with a profusion of elegant light blue blossoms, upwards of an inch in width, forming an admirable plant for suspended vases or baskets. It continues long in blossom, and thrives very well in a room.—*Horticulturist*.

GARDEN DESTROYERS.

THE LACKEY MOTH.

BY EDWARD NEWMAN.

This lackey is only too familiar to all who possess gardens or orchards. In insect biography we always begin with the egg, and this, the first stage of its existence, is in the present instance the most interesting stage, because the most abnormal. We are accustomed to see some insects' eggs shaped like minipins, and set up on end as if for a game at skittles, and we constantly find others shaped like a Dutch cheese, and glued fast by the base to the upper surface of a leaf; but it is not common to find a hundred or more of the eggs of any insect arranged with symmetry in a circle, round a twig, and united together so as to form a compact broad band like a bracelet or armlet; and this is exactly the manner in which the female lackey deposits her eggs. When you have cut the twig in order to preserve this curiosity, which must attract the notice of even the most incurious, and the twig has shrunk in drying, the bracelet can be moved up and down, round and round, with the same facility as a real bracelet on the wrist of its wearer. Each individual egg is fashioned something like that production which for some occult reason is called a pork pie, a delicacy supposed to be particularly attractive to the frequenters of the Crystal Palace and of

railway "refreshment rooms"; there is a slight depression on the top, and round this a raised rim. Such is each egg *per se*.

It appears that the parent female is possessed of two pear-shaped reservoirs, situated in the lower part of the abdomen, and filled with liquid glue, or at any rate with something that has the appearance and properties of liquid glue. Each of these reservoirs or glands has a passage connected with the oviduct, and at the moment of the passage of the egg through the oviduct a portion of this glue is discharged, and completely envelopes the egg, not only fixing it to the twig, but forming a coating or shell exterior to the ordinary egg-shell. The glue of which this top coat is formed instantly becomes hard by exposure to the atmosphere, and is so tenacious that two pieces of cardboard once cemented together with it cannot be separated without tearing. The glue is perfectly insoluble in water; it is neither dissolved nor disintegrated by the influence of rain or frost. Immersed in this glue, the eggshells remain compactly united together for years, like jewels set in some not very showy metal; a circular hole in the crown, when present, revealing the secret that the infant caterpillar has escaped. The united band or bracelet of eggs is as hard and as compact as porcelain; and when we reflect how feeble, how minute, how excessively soft, and how liable to injury is each infant caterpillar on its emergence from the eggshell, it is difficult to conceive by what means it escaped.

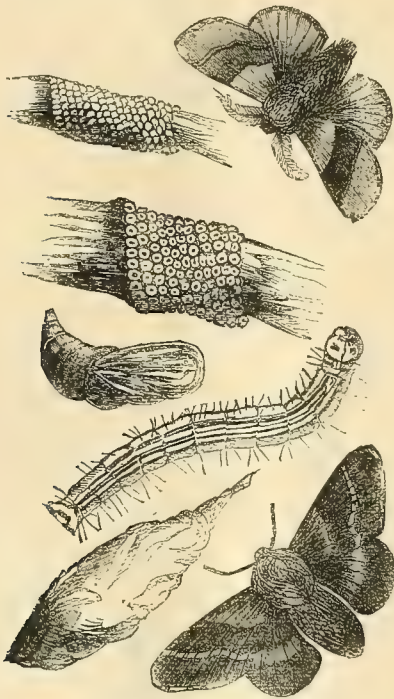
No sooner have the little dingy hirsute beings made their appearance and breathed the invigorating air than they set to work spinning and weaving, and very speedily indeed do they manage to construct a silken tent, and to enclose a few leaves of the apple tree, and on these they feed until entirely consumed. All the caterpillars contained in one band or bracelet of eggs unite in the construction of one tent, under which they reside in harmony, a happy family. As soon as the leaves originally inclosed are consumed, the caterpillars take in other leaves, which they consume in the same way; and so they go on, continually enlarging the field of operations, until the bough favoured by their selection presents the appearance of a disgusting mass of clammy web.

When about to change their skins—a process all caterpillars are doomed to undergo—they creep from under this tent, and each, fixing itself firmly on the outside by means of its claspers, crawls out of the skin that it has outgrown, and leaves it adhering to the roof of the dwelling. I have seen more than fifty of these cast-off habiliments decorating the roof of a single tent. It must not, however, be supposed that the lackeys continue very long under shelter of their tents. When they have grown old enough, and strong enough, and bold enough, they take advantage of the shades of evening to see—or perhaps, more correctly, to feel—a little more of the outer world. But then this difficulty occurs to them: "Supposing we wander about in the dark, how are we to find our way back at day-break to this safe and comfortable retreat?" Who has not heard of "Rosamond's Bower," and the "labyrinth," and the "clew of silk?" Of course, caterpillars know all about it; and so, to guard against all possibility of losing his way home, each caterpillar before leaving home spins for his own guidance a silken clew; he produces it as he crawls, just as a boy's kite as it goes farther and farther takes out more and more string. It matters not how far he travels, or how tortuous his course; the clew he has provided remains where he left it, and by its guidance he can at any time find his way back to his bower through the labyrinth of leaves and twigs. After these experimental excursions the caterpillars rapidly increase in size, cease to live in company, and each enters on a solitary and independent state of existence.

In gardens, this species feeds on apple, plum, and many of our ornamental trees and shrubs, even including laurel, although this is a taste rarely exhibited, and we might have supposed, from the deadly effect of chopped or bruised laurel leaves on mothkind generally, that this would be a diet rather to be eschewed than chewed; and yet, so impartial is the lackey in the distribution of its favours, that it may occasionally be seen munching laurel, and weaving its web over the polished leaves as if it were the most innocuous dainty. As for standard roses, it will occasionally envelope them, if neglected, with such a mantle of web as to mystify the uninitiated gardener, and cause him to talk profoundly of the deleterious effect of east winds generally, and last night's frost in particular. In hedges it delights in the hawthorn, and in woods may occasionally be seen on aspen, alder, hornbeam, elm, and beech.

When full-grown this caterpillar rests at length singly among the leaves and twigs, and if the tree or bough be shaken, it falls helplessly to the ground; it does not feign death, but immediately crawls to the stem of the tree or shrub whence it has fallen, and sets itself to reascend without loss of time; it never rolls in a ring, being of a feeble and flaccid habit, and betraying a most evident absence of vertebral column. The head is quite as broad as the second

segment; the body is long and almost uniformly cylindrical, but furnished with a conspicuous skin-fold all along each side just above the legs; the twelfth segment has a dorsal elevation, scarcely amounting to a hump; every part of the body emits fine soft hairs, but these are not sufficiently numerous to conceal the bright colours hereafter described. The head is bluish lead colour, with two conspicuous black spots on the forehead, which have a superficial but striking resemblance to eyes; the second segment of the body is dull orange, with two nearly square black spots on the back; the rest of the body is beautifully striped; there is a narrow stripe down the very middle of the back of a snowy whiteness, but bordered on each side with black; outside this on each side is a broader orange-coloured stripe, intersected throughout its length with black, and also bordered with black; this is followed by a broad side-stripe of a bluish lead-colour, sprinkled throughout with minute black dots; this broad stripe includes four large black spots; these are on the third, fourth, twelfth, and thirteenth segments, one on each. This is again followed by a narrow orange stripe, bordered with black; below this is a narrower and very irregular lead-coloured stripe, reticulated with black, and including the blackish spiracles; and below the spiracles is a faintly indicated and irregular orange stripe; the belly is smoky lead-coloured, variegated with black; the legs are black, and the claspers lead-coloured and paler towards the feet.



Transformations of the Lackey Moth.

About the middle of June this caterpillar ceases to feed, and wanders about for a while apparently aimless and objectless, but eventually takes up its station on some fence, railing, tree trunk, stone wall, or other durable object, or even spins together the leaves of its food-plant. In either case it forms a cocoon of yellow silk, the outer portion of which is loose and thin, the inner compact oval, and much resembling the cocoon of the common silkworm. This cocoon is remarkable, inasmuch as it contains a large quantity of a dry yellow powder a good deal resembling sulphur; the nature and object of this, and the source when it comes, have never been discovered, and I have attempted in vain to gain any information on these points. Within the cocoon, in six or eight days the caterpillar turns to a dark brown or even black chrysalis, without gloss, and beset with short brown hairs, which are particularly abundant towards the two extremities.

The moth appears on the wing in July, the males being smaller than the females. The fore wings are bright red, brown, or yellow, with two pale oblique transverse lines, the first being situated rather before the middle of the wing; the space between these oblique lines is frequently darker than the rest of the wing; the fringe is alternately pale and dark. The hind wings are red-brown, generally paler than the fore wings, and have an indistinct straight broad bar

across the middle. The head, thorax, and body are of the prevailing red-brown colour of the wing. It is a variable insect, scarcely two specimens being exactly alike. The male is distinguished from the female by having pectinated or fringed antennæ.

The intermittent visits of this insect are very curious. Ten years ago, and indeed for many years previously, the few apple trees I possess were annually devastated by it, but subsequently to that date not a web was to be seen until 1866, when it again made its appearance. During the intervening years its destructive mission appears to have devolved upon the small ermine moth, *Yponomeuta padella*, which year after year completely stripped the apple trees. In 1866 the lackey returned in force, and this was not only the case at Peckham, but all the southern environs of London suffered from its visit; a correspondent of the *Entomologist* says that in the neighbourhood of Hounslow and Harlington its depredations were so extensive that considerable alarm existed among the market-gardeners lest the apple trees should be entirely denuded of their leaves, and the crop thus ruined. It may be worthy of notice that during this year they were particularly attracted by the better kinds of fruit, as Quarendens, King of the Pippins, Nonpareils, Keswick Codlings, Ribston Pippins, and Hawthorndens. Many thousand of the caterpillars were destroyed by shooting them with a mixture of sand and gunpowder, but no observation appears to have been made as to the effect of this treatment on the trees; and it will scarcely do to recommend a remedy which may prove too thorough.

It is certain that the egg bracelets are manufactured in early autumn, and it is equally certain that the eggs remain unhatched during the winter. I am unable to suggest a better remedy than, shaking the boughs of the trees when the caterpillars are feeding, and picking them up as they fall limp and helpless to the ground, and this, it must be confessed, is very like locking the stable door when the steed is stolen; but this process carefully conducted must diminish the numbers for the ensuing year. Haworth says that poultry will devour the caterpillars with avidity if admitted while the operation of shaking down is in progress.—*Field*.

THE FLOWER GARDEN.

DESERTED FAVOURITES.—THE IRIS.



ANY flowers that may be justly termed "old garden favourites," are now either lost altogether or comparatively neglected. Among these the Iris stands in the first rank. It is not inferior even to the stately Lilies themselves. The distinct and pictu, resquely graceful form of the corolla not only delighted the mere lovers of garden flowers, simply for its positive beauty, but has formed the model for graceful designs in many branches of decorative art. The Iris, for its beauty, has been worn as a badge by stalwart knights in the days of chivalry, as was the Genet, the Lily, and other flowers, often the last gift of some fair hand, and which, if worn under a fortunate star, and borne to victory, became permanent badges of a family or a city. Heraldic artists wrought the elegant form of the Iris into the exquisite device of the Florentine Lily, as it is called, into the adopted badge of Florence and of the Medici, and also into the three "Lilies" of France, gold on a field of azure; a device so long quartered with the arms of England. Flower-de-luce, or Fleur-de-lis, are both names inferring the plant to be a Lily—a kind of generic term by which the fairest and most stately flowers seem to have been distinguished from the "common people of the field," as a poet has styled the humbler flowers. "Behold the lilies of the field," is the exclamation of the Preacher on the Mount, "they toil not, neither do they spin, yet Solomon in all his glory was never arrayed like one of these." The conspicuous beauty of the Iris tribe leads to the inevitable conclusion that it must have been included among those "lilies of the field" with which the royal garments of Solomon were not deemed worthy of comparison; for in the glory of their spring-tide reign it may be said literally, and without exaggeration, that—

"Their cohorts are gleaming with purple and gold."

What floral effect in our garden scenery can be finer than a mass of the common purple Iris, such as that shown in the illustration on next page? Its erect leaves, like green sword-

blades, seem to protect the galaxy of gorgeous beauty which the profusion of flowers exhibit within and among the bristling defences; the contrast of that erect and massive assemblage of leaves, with the soft colours and elegance of the flowers is not one of the least charms of the exquisite Iris, which shares its name in common with the rainbow, the name given to it by Theophrastus, the eldest of the grand old race of early botanists, and which signifies, according to Plutarch, "the eye of heaven."

There is nothing more delightful than to lose oneself in dreams among the wild flowers that bloomed when the world was younger, and the graceful names which were given to them out of pure love for their beauty, and in dreaming and imagining all kinds of graceful stories of the fair hands that gathered them as the fairest gifts they could bestow on those they loved best, gifts to which jewels of gold would have been vulgar dross. There is nothing more delightful than such imaginary ramblings among the flowers of the past, except actual and active rambling, and trimming, and planning, and planting among the flowers of the present.

To the noble mass of purple Iris, so accurately represented in the annexed illustration, how pleasant it would be to add a noble group of Iris variegata in close juxtaposition, flashing its glittering contrast upon the royal purple of its neighbour—or, shall we divide the two with a noble clump of *I. susiana*, with its great bronze-pencilled flakes of erect petals?



Iris germanica.

But we must decide quickly, and stick to our decision firmly, or the choice, if we begin to hesitate, will become extremely difficult among the various charms of this beautiful and exclusive floral race. Its original species afford almost endless variety, both in form and colour, some bearing flowers both elegant and drooping. Such are the majority of the fibrous-rooted section of the family, others of the tuberous and bulbous-rooted kinds are crisp, glistening, and sculptural-like flowers carved in jasper or in opal. In colour, almost every shade and hue adorn these gorgeous flowers, from the most delicate agate to the richest and deepest purple, from the palest silvery yellow, like that of the rising moon, to the richest orange, with modifications of each of these leading hues varying sometimes to nearly pink, sometimes to dusky brown; and then the superadded markings, both in the original species and in the exquisite new varieties, are often so remarkable, that they at once rivet attention, and compel admiration, tempting one to compare them—here with the splendid sable slashes on the flank of the tiger—there with the exquisite brown embroidery of the skin of the hunting leopard—and, in some other charming flowers, to the cerulean mottlings on the wing of a jay. In short, how is it that the Iris family is not made a much more conspicuous garden feature? It presents a whole host of advantages—splendour of colour and form, endless variety, and a degree of hardness in most of the species not exceeded by that of the wild

I. pseud-acorus, whose conspicuous flowers flock the waving sedges of our native brooks, with glittering dashes of golden yellow in the first weeks of May. NOEL HUMPHREYS.

MY DAFFODIL GARDEN.

It is now upwards of two hundred and forty years since Parkinson described the *Narcissus*. At that period he found the nomenclature in great confusion. Since then Haworth has devoted much attention to the same subject and prepared a monograph of the genus; and within the last two years Mr. Baker, of Kew, has thrown it into sections.

Those who are interested in spring-flowering bulbs—and who is not?—could not do better than secure an entire collection of them, confining the more rare sorts to the select flower garden, and consigning those which can be purchased in large quantities at a moderate price to the wild garden, planting them amongst the grass, in the shrubberies, or wherever a floral display is a desideratum in the early spring months.

In treating of the contents of my bulb garden, I shall follow the sectional arrangement, and the first that presents itself is the Ajax of Haworth, or the *Magnicoronata* section of Baker, with their time of blooming in the neighbourhood of London in 1872.

1. *PSEUDO-NARCISSUS*.—Crown deep primrose, divisions of the perianth sulphur. In flower end of February.

2. *PSEUDO-NARCISSUS MINOR*.—Similar to No. 1 in colour, but dwarfer and finer shaped as regards the flower, and in blossom at the same time.

3. *PSEUDO-NARCISSUS MINIMUS*.—Resembling in all respects No. 2, and flowering at the same time, but more slender and smaller in the flower. Height two to three inches.

4. *SIBTHORPI*.—I take this to be *Obvallaris*; golden yellow, resembling the well-known *Maximus*, but in flower end of February.

5. *MAXIMUS*.—Golden yellow; in flower middle of March. Under this name I have grown major, lobularis, and propinquus; but the difference, if any, of the specimens in my grounds was trifling. I have reason, from one or two specimens of flowers sent to me, to suppose that there are, as in *Pseudo-Narcissus*, a gradation in the size of the flowers of this species, and I shall be glad if any one possessing such will send specimens to the office of THE GARDEN in exchange for others.

6. *BICOLOR*.—What I have grown under this name has a yellow crown, with the divisions of the perianth white; but the Rev. Mr. Ellacombe has sent me under this name a flower with a yellow crown and a sulphur perianth, and a flower such as I have described as bicolor under the name of *Horsfieldi*. Messrs. Backhouse, of York, a few years ago sent out two new *Narcissi*, counterparts of the two flowers sent to me by Mr. Ellacombe, but much larger. The one with the sulphur perianth they named *Empress*, and that with the white perianth, *Emperor*. This group is the most beautiful of the section. In flower third week of March.

7. *CERNUUS*.—I have grown this also under the name of *moschatus* and *albicans*. If there is any distinction between them, it is very trifling. Colour, light sulphur, approaching to white. In flower third week of March.

8. *CERNUUS FLORE PLENO*.—This is the double form of No. 7, and is scarce at present.

9. *PSEUDO-NARCISSUS AUREUS ANGLICUS MAXIMUS* (MASTER WILLMER'S GREAT DOUBLE DAFFODIL).—I give this name to the well-known double Daffodil on the authority of Parkinson (p. 101, fig. 7), and of this there is a lesser variety, which I have grown as *minor flore pleno*, not more than two-thirds the height. A flower which I have received from Mr. Ellacombe as *plenissimus major* I find described by Parkinson as "*Pseudo-Narcissus maximus aureus*, fine *Rosus Tradescanti*—John Tradescant's great Rose Daffodil." This latter is a monstrosity, apparently a number of flowers in one, as the specimen in question has several centres. This same variety is sold by the Dutchmen as *Tradescanthus*. The single forms of these varieties I have not been able to identify, unless it be that a flower which I met with in Covent Garden Market some days ago, as large as *maximus*, and of the sulphur colour of the divisions of the perianth in No. 8 is the single form. Information on this subject will be acceptable. The flower in question comes in with the double variety above named.

10. "*QUEEN ANNE'S DAFFODIL*." This flower I received from Mr. Ellacombe. It is a double self-sulphur-coloured *Narcissus*. He thinks it is the double variety of *Pseudo-Narcissus minor*; but, to me it looks more like a small form of *incomparabilis*. I put it, however, in this section on Mr. Ellacombe's authority.

11. *BULBOCODIUM*, or *CORBULARIA* of some; yellow. A very distinct species, with rush-like foliage. In flower in May.

12. *BULBOCODIUM TENUIFOLIUS*.—This species has not yet flowered with me.

13. *NARCISSUS MINOR* (OF LINNÆUS).—This resembles *Pseudo-Narcissus minimus* in height and size, but is yellow throughout. Flowers beginning of March, and is a scarce species.

14. *BULBOCODIUM MONOPHYLLUS*.—A species recently introduced from Algiers, but not yet in commerce. The flowers resemble the yellow variety in all respects except in colour, which is a sulphury white. P. BARR.

P.S.—Readers are invited to send specimens of flowers of anything uncommon.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Coleuses.—I have some old plants of these. Can I bed them out this season?—DELTA.—[We would not advise you to retain your old plants for bedding purposes; place them at once in heat, and they will yield abundance of cuttings, which are very easily rooted under a bell-glass in a warm frame or pit. *Coleus Verschaffeltii* is very effective out of doors. Coleuses require a temperature of 50° during winter.]

Amarantus salicifolius.—This beautiful *Amarant* is now so well known to most of our readers, that description is needless. We merely allude to it for the purpose of pointing out how it may be employed with best effect in the flower garden. The plant, in all respects, is extremely graceful, and is, when well grown, fully furnished at the bottom, hence it will not be wise to use it as a central figure among a crowd of other subjects, unless they are very dwarf in stature. As an isolated plant, it will prove most effective; also as a vase plant, either indoors or out. As a "sub-tropical plant," it will, of course, prove very popular, and may be considered the most striking annual in that way.—H. V.

Sarracenias.—Kindly name the bit of *Sarracenia* I have sent you, adding at the same time the kind of treatment I must give it.—S. P.—[Your plant is *Sarracenia purpurea*. Towards the end of next month shake it out, removing some of the old soil, and re-pot in a mixture of sphagnum and peat; and bear in mind that good drainage is of the utmost importance. Give abundance of water at the root, and allow the pot to stand in a saucer of water. This plant is perfectly hardy, and its culture quite possible in the open air in England, either in the artificial bog or by the margin of ponds. A sunny position, with plenty of air, in a cool house, is then all that is required.]

Carnations and Picotees from Seed.—Permit me to advise your readers to make a trial of those collections of *Carnation* and *Picotee* seeds that are now offered by most of the principal seedsmen. They answer beautifully for mixed borders and out flowers; few things except the *Rose* can equal them. There is an amount of vigour too about seedlings, that is absent in many of the named varieties; they will flourish in any ordinary garden soil, and a great proportion of the flowers will come double. There is also a considerable interest attached to raising seedlings, even when we know beforehand that there is not much chance of getting anything very superior from them, measured by a florist's standard of merit. To most people, however, a flower that is bright, sweet, and beautiful will give satisfaction.—H.

EARLY VIOLETS.

High through the blue of noon
The clouds move sweet with rain,
Fleecy, and white, and pure,
Sheep in a sunny plain,
While sudden drops are blown
And splinter on the pane.

O, for the April woods
That never shadows hold,
Fresh with the shining leaves,
Sweet with the odorous mould!
And O, for Primrose nooks
Of greenness starred with gold!

But dearer far than all
The breezy wold, where hide
In softly nested nooks
The violets, April's pride,
Of their own breath betrayed
Ere in sweet gloom descried.

And, season bright and brief,
Betwixt the bud and bloom,
Thoughts of thy violet nooks
Will darkest hours illumine,
Will yield thy brightness light,
And sweeten all thy gloom!

—*Cassell's Magazine*.

THE ARBORETUM.

HARDY TREES AND SHRUBS.

THE HEART-LEAVED CUCUMBER TREE (*MAGNOLIA CORDATA*).

THIS forms a handsome deciduous tree from thirty to forty feet high. In June and July, when decorated with its numerous tulip-like flowers, it makes a fine display, especially if planted singly on a lawn. It is a native of South Carolina and Upper Georgia, where it grows on the sunny banks of rivers; consequently it succeeds best when planted in a deep loamy soil and in a rather moist situation; but it will nevertheless thrive in any good garden soil, if not too dry in summer. It is increased by means of layers or imported seeds, the first of which reached this country in 1801. The leaves are alternate, and either broadly heart-shaped or ovately subcordate, entire, and on longish footstalks; the upper surface is smooth and the under one tomentose, and they measure from four to six inches long, and from three to five inches broad; just before they fall off they become dark brown. The branches are rather stout, stiff, and somewhat erect, with the naked young wood hoary and brown. The flowers are yellow, terminal, solitary, erect, and from three to four inches in diameter, but they seldom expand fully. The petals are from six to nine in number, oblong and incurved, with their inner surface slightly streaked longitudinally by several reddish lines. The fruit is nearly cylindrical, three inches long and about three-quarters of an inch in diameter, and when young green, and very much resembling a gherkin or small cucumber, and hence the name; but when ripe, rose coloured and somewhat cone-shaped.

THE LONG-SPIKE FLOWERED PAVIA (*PAVIA MACROSTACHYA*).

THIS forms an elegant deciduous small tree or large bush from ten to fifteen feet high, with several stems and stoloniferous shoots and slender spreading branches, whose extremities turn up, but whose points wherever they happen to rest on the soil root into it freely. It is a native of Georgia and South Carolina, where it grows on the banks of rivers. It succeeds in any good garden soil, but thrives best in deep loam, and in a situation which is rather damp. It is readily increased by means of layers. The *Pavia macrostachya*, which was introduced to our gardens in 1820, forms, when in flower, one of their chief floral ornaments. It produces long spikes of fragrant white blossoms in July and August, a season when nearly all other kinds of trees and shrubs are past flowering. The leaves are comparatively small, opposite, palmate, and set on long footstalks, with five oblong-lanceolate leaflets, which are bright green above, downy beneath, and distinctly stalked. The flower spikes, which are terminal, consist of blossoms having four erect narrow petals and numerous long projecting stamens, which give the spike a fringed appearance. The fruit is small and smooth, and is free from prickles. It has the following synonyms:—*Æsculus parviflora*, *Pavia alba*, *edulis*, and *spicata*. GEORGE GORDON, A.L.S.

SEASIDE PLANTING.

IN reply to "Marsh Bay" (p. 373), I can only state that the principal thing to be attended to in forming an ornamental plantation is, always to allow sufficient space for each of the permanent plants to develop its natural character. Therefore, instead of planting indiscriminately, as is so frequently done, plant upon a regular plan, and fill in with plants which can afterwards be cut back or removed as the permanent ones increase in size. Half the plantations formed for ornamental purposes are planted too thickly at first, and afterwards allowed to remain without thinning, until they are rendered comparatively useless. Large and small-growing trees and shrubs are intermixed without regard to proper position.

I must also caution "Marsh Bay" against what is misnamed cheap planting, that is, merely loosening the earth, and sticking the plants in holes barely large enough to receive their roots. He will find trenching and properly preparing the ground before planting to be, in the end, true economy. With respect to the *Halimodendron* and *Euonymus*, both can be obtained from any nursery where a collection of hardy trees and shrubs is kept. "Marsh Bay" should plant the common evergreen oak, which he will find to be decidedly one of the best trees for this purpose. GEORGE GORDON, A.L.S.

"THE BIG BARKED TREE."

"THE Big Tree," *Sequoia* (*Wellingtonia*) *gigantea*, from which the bark was stripped to the height of 116 feet some few years ago, for exhibition in Europe, is still standing in the famous Calaveras Grove. When first discovered, this grove contained more than a hundred such trees, the largest of which towered to the extraordinary height of 325 feet, while the least of them reached an altitude of 231 feet. The diameter of the trunk, six feet above the ground, was fifteen feet in the largest, giving a circumference of forty-five feet, and over ten feet in the smallest of these enormous trees. The accompanying woodcut is a faithful portrait of the barked giant. It is the third in regard to size in the Calaveras Grove, and, like its big relatives, it has received a distinctive name, which is, "Mother of the Forest." The largest specimen of *Sequoia* in this grove is honoured with the name of "Keystone State," and the second, which is 319 feet in height, is called "General Jackson." The bark of the "Mother of the Forest," put up in the form in which it grew, was exhibited in many places in America before it reached Europe, and eventually found what promised to be a permanent resting-place in the Crystal Palace. It might indeed have proved so, but for the occurrence of the ever-to-be-regretted fire which destroyed so many objects of interest, and, among others, the colossal shell of the "Mother of the Forest." It will be interesting to observe the effect of the barking of this enormous tree, and to ascertain whether or not, Nature will be able to replace the bark stripped off. It was proposed some few years ago to bark the trees of the Boulevard des Italiens, at Paris, in order to get rid of numerous colonies of a small bark-feeding beetle, whose ravages threatened to destroy the trees. Experiments of the kind having been tried elsewhere with entire success, a trial upon the trees of the Boulevard was resolved on. It was objected at the time, that, while the destruction of the trees by the ravages of the beetle was slow, and by no means certain, the barking system would prove almost immediately fatal. In support of this assertion it was argued that the ringing process was one resorted to for killing trees



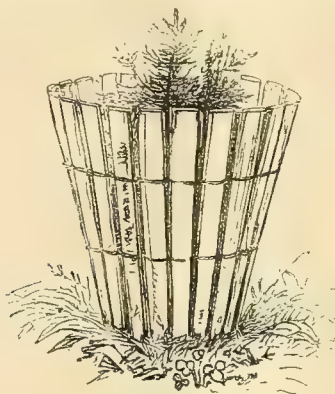
where forest clearings were being effected, and was fatally certain in its results. The answer was this, that the ringing system, to be successful, must cut through the soft coating of inner bark next the ripened wood, as well as the hard external bark, which, in such barking as that resorted to in the case of the "Mother of the Forest," or in that about to be adopted to get rid of the bark beetles in question, the soft inner bark may be left unbroken and in a condition to develop itself into a hard protective coating over the next year's formation of new bark.

Our figure serves to indicate the amazing stature of a full grown *Sequoia* in comparison with other conifers, many of which, measured by the same scale, are from eighty to a hundred feet high. A *Sequoia* of still greater dimensions was cut down about the time when the barking of the "Mother of the Forest" occurred, and if the last-named should perish from the loss of its magnificently thick overcoat, two of the veterans of the Calaveras Grove will have perished prematurely by the hand of man, after a life of some fifteen or twenty centuries, which might otherwise have defied the wear and tear of time for still a few centuries more. Several have fallen since the first discovery of the grove in 1852, just twenty years ago, which has tended to reduce still more the number of these patriarchs of the forest, but a considerable number of young trees, in different stages of growth, are coming on in the outskirts of the grove. It has been considered that *Sequoia* (*Wellingtonia*) *gigantea* will not attain gigantic size in this country; and that opinion is founded upon the observed fact that while the health of the trees raised from seed in England is exuberant, and their growth rapid during their early years (in fact, till they attain a height of twenty or thirty feet), after that they appear suddenly checked, and make but little progress, the leader appearing less and less vigorous every year. This, however, may be the nature of the tree; which in its native climate makes much more rapid growth in its early years than afterwards. If this were not so, and its early growth at the rate of from one to two feet each year were continuous, the tree whose age-rings indicate an existence, say of 1,500 years, ought to be more than a thousand feet high, instead of

from 300 to 330 feet, which appears to be the limit of its growth. If there be anything in this argument, our descendants may perhaps behold in this country towering Sequoias as gigantic as those of California. H. N. H.

CHEAP TREE GUARD.

A CHEAP, easily erected tree guard has been long a want to gentlemen who plant a considerable number of specimen trees in woods and other places where cattle cannot get at them. We use one here which has many advantages; it is cheap, put up in a few minutes, and not only guards the young plant from damage by rabbits and hares, but gives it, for the first few years after planting, protection from wind. We get palings cut at the sawmill three feet long, two inches wide, and three-eighths of an inch thick; these, slightly pointed, are driven into the ground all round the young tree, the tops gradually sloping outwards. We then twist strands of tarred cord in and out between the palings; this makes it exceedingly firm, and it will require no further attention as long as the paling lasts.



Tree Guard.

When we first began to put up these guards we used unravelled strands of galvanised wire fencing rope, which makes perhaps a stronger job; but the tanned cord is quite enough. We send any rubbish to cut into palings to the sawmills—remains of slabs left when cutting post and rails, spruce fir (fit for little else), or any waste wood pretty free from knots. If in a very exposed situation, one stronger paling can be used (part of a rail), and by driving it further into the ground any chance of the wind blowing the whole thing over would be prevented, otherwise the palings merely want a very slight tap to fix them firm enough; though from the palings being inclined outwards there is considerable space between the tops of them, still no rabbit dare leap in.

It takes from sixteen to twenty palings to each guard, according to the size of the plant to be protected; thus, at 2s. 6d. per hundred feet of sawing, they will cost, all told, labour included, about 6d., each, whereas the cheapest wire netting tree guard will be 1s. 6d., the same size; and if made of strong wire they would cost 2s. 6d., making a considerable saving, if a quantity of young pines have to be planted out.—*A Soldier, in "Field."*

DRAINAGE.

(Concluded from page 363.)

INCLINATIONS OR SLOPES OF DRAINS.

OWING to the constantly varying slopes of the country, scarcely any rule can be absolutely laid down for the inclinations at which the pipes should be laid. The greatest attention is required in laying the main pipes, into which the smaller branch pipes run. In flat countries they should always be set out with the spirit level, and the depths from the surface given to the men at every one or two chains along the line. Water will run freely at inclinations of one foot fall to one thousand, two thousand, or three thousand feet of length, where the pipes are well laid; but it must be observed that at every junction of a branch pipe the flow will be impeded in the main pipe by the water entering from the branch pipe, sometimes running with considerable velocity. So that as much inclination as possible should be given to the mains, in order that the hydraulic pressure may force the current towards the outlet. The inclinations of the minor or branch pipes

must, necessarily, be controlled by the natural slopes of the ground. In a general system, laid out on a definite plan, it is better to have as few outlets as possible, and I need hardly say that all the minor or branch pipe drains ought, at their lowest ends, to be united or joined up to one main pipe of such larger dimensions as may be proportioned to, and capable of discharging the water from a given area of land; these larger pipes being conducted to the lowest extremity of the area to be drained, and there discharged into an open drain or stream. The cost of long lengths of large pipes, increasing in size as they go, raises a question as to the expediency of using them; but the work is easier to maintain than when a large number of outlets is used. I have frequently found it most useful, in laying both large and small pipes, where the bottoms of drains are in soft, boggy, or sandy soils, and there is every probability of the pipes sinking or getting out of their proper inclination, to lay them on strips of wood cut out of three planks of elm, or other timber as durable in water, from $\frac{1}{2}$ inch to $\frac{3}{4}$ inch thick. The cost is very trifling, and is as nothing compared to that of having to re-open and re-lay the drains, while doubt of the success of the work is thereby to a great extent avoided.

OUTLETS.

The pipe at the outlet or head should be raised above the ditch or stream, which should be cleared, and, if required, deepened for some distance, so as to ensure the water not being backed up into the pipes. I have adopted self-acting iron traps at the outlets, in cases where the tide has occasionally risen against them; but the chief object was to prevent the mud, of which there is generally a large quantity in tidal waters, from being taken up the pipes, and there left to deposit itself. All outlets should be protected by brick or stonework, set in mortar or cement, the foundations being sunk from one to two feet under the bottom of the ditch or stream, which should be paved to receive the water from the pipe. Referring again to the depths of the drains, it is frequently necessary to lay the main drains six, seven, eight, or even ten feet deep in places, in order to drain land to an outfall which lies at too low a level to allow of the ordinary depths being employed.

SIZES OF PIPES FOR CERTAIN AREAS.

In the early period of land drainage, pipes of one inch in diameter were commonly used, but they were not continued for any length of time, and they were seldom, if ever, sunk in the ground deeper than two feet or two feet six inches. Pipes of $1\frac{1}{2}$ inch diameter succeeded them, and more recently, two-inch pipes have been almost universally adopted for the branch drains. There was also the horseshoe pipe, laid on a tile as a sole; but these have totally failed and become obsolete. The adoption of two-inch pipes (the area of which is 3.14 square inches), has been a great improvement, inasmuch as, besides being in nearly all cases large enough for the water to run out, they allow the air to pass up when they are not full, and thus ameliorate the condition of the soil above and around them. No single rule can apply as to size; but, as regards the sizes of main pipes, into which the minor pipes discharge, some attention is required to regulate them, and, if possible, their inclinations. These main pipes vary from three inches up to twelve inches, and two feet in diameter, in proportion to the area which will discharge into them, and the inclinations at which they are laid. The several degrees of porosity of soils between the extremes, must be treated as experience may dictate, and the inclination at which the drains are laid will affect the question; for instance, a rapid fall of the branch pipes into the main pipe would necessarily require that the latter should be increased in size; but a slow discharge does not require larger pipes than twelve inches in diameter.

DIRECTIONS OF DRAINS.

In uniform soils, whether dense or free, the usual practice is to lay drains parallel to each other, on what is commonly called the *gridiron system*. In stiff clays, where the drains are more frequent, this plan is undoubtedly to be preferred, for the reasons before stated—that the water may be equally drawn off from all parts, and the land uniformly aerated. In free soils, such as gravel, sand, and the like, where there are springs which rise to the surface, and are visibly saturating

large or small areas, the drains may be run in such directions as will enable them to tap those places, and ultimately to drain a larger area.

ROOT CHOKING.

Deep as drainage may be laid, it is never altogether free from the possibility of being put out of order by the roots of trees, or of certain kinds of crops which may penetrate the drains, and form a hindrance to the free passage of the water through them. The roots of the elm, ash, willow, and other trees, are known to enter the pipes, and even pass through the ground for several yards to reach them, as if they were attracted by the moisture and air which they find in the pipes, and by the nourishment afforded them there. To obviate this difficulty it is advisable, where it occurs or is apprehended, to use socket-pipes jointed with cement, or to lay the pipes as far as possible from the trees. I have found that embedding the pipes in lime, mortar, or concrete, has prevented them from being choked, although close to trees which it was impossible to avoid, and has kept them clear for some years. The roots of some crops, if they should penetrate the pipes, die away when the crops are removed, and are frequently washed out at the mouths of the drains by the strong flow of water through them. Other substances give the drainer a vast amount of trouble in obstructing pipes. Ochreous water, depositing oxide of iron, is a common source of obstruction. It appears to harden and consolidate as it receives air through the pipes, and ultimately chokes them. I have found it best to get at the source of the spring or springs, and conduct the water away by large pipes independent of the general system. Confervæ and parasitic plants will also get into the pipes, grow, and ultimately stop the flow of water through them; another source of trouble is the percolation of sand into the pipes, which necessitates patience and care in taking them up frequently after being first laid and relaid, until all the water has run out of the bed, and then laying them in straw and on strips of wood.

COST.

This must vary in different parts of the kingdom, according to the soil, the rate and quality of the labour for this kind of work, the seasons, and the price, quality, and cost of carriage of the pipes. Sometimes the cheapness of one or two of these items will counteract the dearness of the others, so that something like an average may be arrived at. I have kept a register for some years past, which shows the rate of cost per acre and per rod of drainage works, executed under my supervision, in localities distributed over a large part of the kingdom. This summary includes about 120 distinct works, representing every variety of soil, every degree of difficulty, and ranging in quantity from 10 to 1,900 acres. The rates of cost extend from £3. 6s. 8d. to £9. 5s. 4d. per acre, and from 14 to 36 pence per rod, whilst the number of rods of drains to the acre varies from 39 to 115. Where the rate per rod is high the rate per acre may be low, and *vice versa*. I have arranged the following table, which gives the general prices of work under the various conditions:—

Ordinary cost of cutting and filling minor drains, using 2-in. pipes at, say 25s. per 1,000.

Depth.	Rate per Rod for Cutting and Filling.	Rate per Rod for Pipes.	Total.
	s. d.	s. d.	s. d.
4 feet	0 8	0 5	1 1
5 "	0 10	0 5	1 3
6 "	1 1	0 5	1 6

DURATION OF PIPE DRAINAGE.

This depends almost entirely on the manufacture of the pipes. Where all the work has been well done, drainage executed thirty years ago is known to be in an efficient condition, although pipes were not then so deeply laid as they are now, and it may be fully expected that the deeper they are laid the less liable they will be to be injured or disturbed—a strong argument in favour of deep draining. I may add that farm bailiffs, who have other work to attend to, ought never to be employed to superintend drainage, as it requires the whole

attention of the foreman to conduct a work cheaply and securely, and it is only men who are specially trained in drainage construction who can properly superintend it. There should not be larger bodies of men than from thirty to forty under one man's charge. Another practice which should be condemned by all who are interested in the success of these works is that of giving pipes to tenants to lay themselves. Such work is never well done, and is just so much money thrown away.

R. B. GRANTHAM, C.E.

One of the members who was present at the meeting when the above paper was read said he would be glad to have more precise and detailed reasons for the assumption that four feet should be the minimum depth for draining in stiff clay soils. There were to be found intelligent men possessing a practical knowledge of the subject, who concurred in saying that from three feet to three feet six inches was deep enough; and many could point to drainage work done four feet which was said to have proved a failure. Between the two opinions he had had some difficulty in deciding which was the right one. He was speaking of the stiffest clay soils only. In attempting to decide which was the proper depth, he had come to two conclusions:—One was, that four feet drains, if near enough together, were always quite satisfactory; the other, that if it were attempted to make deep as economical as shallower draining, by putting the drains further apart, the result was apt to be unsatisfactory. If a stiff piece of land were drained three feet deep and eight yards apart, the result was tolerably good; if, however, it were drained four feet deep and twelve yards apart, a wet piece was apt to be left in the middle. To drain eight yards apart and four feet deep would, of course, be additionally expensive.

NEW, RARE, OR NEGLECTED PLANTS.

EURYCLES AMBOINENSIS.

A DISTINCT and valuable *Eucharis*-like stove bulb, producing pure white flowers in large showy umbels, on stems from fifteen inches to two feet high. It flowers freely in early spring, and placed among ferns here and there has a charming effect. It flowers the better for being dried off after blooming and making a good growth, and in other respects will succeed with the treatment usually given to that now popular stove plant, the *Eucharis amazonica*. It is a native of the islands of the Eastern Archipelago, the Philippines, &c. Its leaves are roundish-cordate, concave, strongly-nerved, and pale green. The perianth is about three inches long, including the tube, the limb spreading, and the corona white, about three times shorter than the limb, and having twelve marginal teeth, two between each of the six stamens.

GILIA LINIFLORA.

THE genus *Gilia* is already represented in our gardens by numerous handsome varieties, but this one is quite different from any yet cultivated. It forms bushes which are very much branched and dwarf; the branches being very slender and the leaves narrow and elegant; the whole plant being completely covered in the flowering season with large blossoms, like those of *Phlox Drummondii* or a large *Linum*, of a pure white, with yellow stamens. It is a charming acquisition for groups, edgings, and contrasts; and if required to flower in the end of spring, should be sown in autumn, and the seedlings kept under cover during the winter; but for summer flowering, it should be sown in March or April of the same year.

MATRICARIA EXIMIA GRANDIFLORA.

THIS fine and remarkable variety, which reproduces itself freely from seed, and which, when sown early in spring (March and April), and planted out when a few leaves have grown on the seedlings, flowers abundantly (even in the first year) throughout the summer and until the first frosts appear. The flowers, which are very double, and as large again as those of the old *Matricaria eximia*, and also fuller, are of a very pure white. They are particularly adapted for bouquets, and as the plant is exceedingly floriferous and vigorous, it cannot fail to be much in request for flower beds and groups. Its height varies according to the soil (which should be sweet and well-drained), from twenty inches to two feet, but by means of judicious pinching it may be kept dwarfer, should that be desired.

—*Revue Horticole*.

GODETIA NIVERTIANA.

ENOTHERAS are beginning to be very generally cultivated in all private gardens, from which annuals are not excluded to make room for what are called bedding-plants. This new variety, named after

its raiser, M. Nivert, is remarkable for its large, widely-cup-shaped, erect flowers, which are white (seldom flesh-coloured, like those of *G. Schaninii*), with a large spot of bright carmine (sometimes cherry colour) at the base of each petal, producing a fine effect. The usual culture and treatment for annuals is all that is required for these plants.

(To be continued.)

THE KITCHEN GARDEN.

THE CUCUMBER—ITS CULTIVATION AND USES.

The Cucumber is a native of the East Indies, and is said to have been introduced to British gardens in 1573. Whether at that early period it was cultivated for culinary purposes or not we have no means of ascertaining, but certain it is, that so recently as the commencement of the present century, its cultivation for early use—say to cut in March—was regarded as a masterpiece of the gardener's art. Then its growth was confined almost exclusively to small frames placed upon a bed of fermenting material, such as stable dung, leaves, &c., or it was cultivated in brick pits, heated by the same materials. The original species was a short, thick, rather warty fruit, closely covered with spines. It rarely exceeded four to six inches in length, and was produced in clusters of from four to six at a joint. From this, nevertheless, all the long Cucumbers of our gardens have sprung—a bright example of the ennobling influence of cultivation, and even now an inducement to us to try and improve other unpromising subjects in a similar manner. In our early days the best grown Cucumbers rarely exceeded a foot to eighteen inches in length, the varieties being few, and known by such names as Long or Short Prickly, Patrick's Frame, Flanagan's Early, &c. Still such as these and other varieties continued to improve, and by sowing seed from the largest and handsomest fruit our present kinds have come into cultivation. The Manchester gardeners were, we think, the first to devote attention to the production of Long kinds; and to Mr. Walker, a gentleman of that town, belongs the credit of raising some of the longest and most useful varieties. Walker's Black and Walker's White Spine, thirty to forty years ago, were special favourites, growing to the length of twenty to thirty inches without losing much of the proportion necessary to suit them for table use. Then Mr. Hamilton, of the same neighbourhood, but now of Stockport, was, and is, a very successful raiser of the long kinds; and here (at Nottingham), as coeval with the date referred to, may be mentioned the variety called Pearson's Long Gun, still grown exclusively by Mr. J. R. Pearson, of Chilwell, and certainly one of the largest and best flavoured varieties in cultivation. This kind is much esteemed by cooks for stewing.

SMOOTH VARIETIES OF CUCUMBER.

About the period above adverted to, the Smyrna, a nearly smooth pale green variety, and the White Turkey, a yellowish white kind with strong black spines, came into cultivation; and we well remember the surprise which a fruit of the latter occasioned in our market when first exposed there for sale. "Had it been blanched?" "Was it fit to eat?" and other questions followed, while few felt disposed to put its eating qualities to the test, as it remained unsold at the close of the market. From these two varieties, crossed with the prickly kinds, originated, after a few years' cross-breeding, the Sion House or Lord Kenyon's Favourite, said by some to be raised at Sion House, near Brentford, and by others at Lord Kenyon's seat in Yorkshire; while some contended that they were distinct varieties, and, if so, both claimants were entitled to the credit of raising them. The difference, if any, was external, and we have always had the impression that Lord Kenyon's was in colour a much darker green. Be that as it may, the two varieties may be said to have been identical in their good qualities—vigorous constitution, hardness, prolificacy, and, above all, fine flavour and suitability for cultivation in winter. The same qualities still apply to the Sion House, so much so, that at the present time there are many connoisseurs in the country who will not allow any other kind to be grown in their gardens, or be sent to their tables. In this they are quite right, for we have never tasted any variety

equal to it in flavour, Pearson's Long Gun being the next. From the Sion House has sprung the Telegraph, now a most popular favourite, and many other varieties of similar character. If we were called upon to name the two most useful cucumbers in cultivation, we certainly could not pass over the Sion House and Telegraph, nor do we expect they will ever, for table use, be surpassed. Of the character of Sion House, short but very prolific and good flavoured, may be mentioned Munroe's Prolific or Rabley, Master's Prolific, Glory of Hants, and one recently brought into notice by Mr. Dean, late of Shipley, near Bradford, viz., Dean's Winter Prolific. This is represented to be a very excellent variety for winter forcing, large enough for private use, hardy, and, as its name implies, very prolific. The long varieties of Cucumber are rarely free bearers, not continuous, and generally cease bearing much sooner than the more moderate growing kinds. From a well-established plant of the Sion House, say twenty feet long, and strong in proportion, we have frequently seen, in the height of the season, twenty to thirty fruit per week cut; while, on one occasion, we saw forty feet of Cucumbers, varying from nine to eighteen inches each, cut at one time from one plant. The plant in question was not less than twenty feet in length, strong in proportion, with a stem six to seven inches in circumference at the surface of the soil. For this reason, and for family use, we say grow the short or medium varieties; they will give fruit every day, while the long kinds will sometimes be quite destitute of fruit. With these remarks we must close our history of the origin of the cultivated Cucumber, merely remarking that if we are wrong in our estimate we shall be happy to be corrected.

SOILS.

The Cucumber is not a fastidious plant in its choice of soils. It will grow in almost any soil that is free, open, and moderately rich, but, of course, there are soils, or rather composts, which when properly prepared, are more suitable to its perfect growth than others. Mills, who wrote upon this subject some thirty years ago, recommended especially for its growth in winter a light porous peat. In that, as he grew the plants either in dung heated pits, or upon hot beds composed of the same material, he was quite right. With such a heating material there must be a large and constant generation of ammonia, and the peat in itself, being poor, would absorb and fix a large portion of that gas which, though necessary to the perfect growth of the plant, is, when present in excess, highly injurious to vegetation of all kinds. Hamilton, a very successful grower, proposes a preparation of loam, rotten dung, and leaf mould in proper proportions, pressed between the hands into compact balls. These he recommends to be placed in layers upon the surface of the soil, and, of course, in close contact with the roots, the object being, as explained by him, to get the largest quantity of rich pabulum into the smallest possible space. Others prefer pure turfy loam, leaf mould, or even decayed mushroom dung. Some of the finest crops we ever saw were grown in the latter material, and moss in alternate layers, a system that will be explained in detail in another chapter. For choice, we prefer a light turfy loam from an old sheep pasture or the face of a rock, with the grass on, cut about two inches thick, when the ground is in a dry and healthy condition. This should be stacked in a narrow ridge, but quite waterproof, for some months prior to its being used for the plants, so that the fibre may be in a decayed or decaying condition. This soil should be of tough, rooty nature, so that it may be thrown about for a long time without the soil being knocked out of it. In this the Cucumber delights to root, and it will be found rich in nutriment.

If there is not time for the preceding preparation take the turf fresh from the field, and chopping it into pieces from four to six inches square, prepare a fire with any pieces of wood that may be about, augmented by such old pea sticks, prunings of trees, brush wood, and similar material, packing it into a close compact cone, but leaving a space at the bottom through which it may be lighted. Then take the chopped turf and pack it upon the fire cone nine to twelve inches thick, and cover the whole with litter of some kind to throw off the rain should any fall. The fire may then be lighted, forming a vent for the smoke by thrusting a stake or crowbar through the soil at the apex of the cone. When the fire is fairly established the vents may be stopped up, as the object is to char or

thoroughly heat the soil through, and not to burn it. When the fire is exhausted, and the mass cooled down sufficiently, open the heap and pick the charcoal out and mix the smaller pieces and the ashes with the charred soil; this, of itself, would grow the Cucumber excellently, but mixed with about one-third of half-decayed leaf mould or dung it forms an unexceptionable compost. To the decayed turf first mentioned, the same proportion of dung or leaf mould may be added; but previously to mixing, it will be wise to sprinkle the heap with soot in the proportion of half-a-pint to each bushel of soil. Then mix all together, taking care not to break the pieces of turf smaller than a large hen's egg, and it will be in a fit state for use.

CUCUMBERS IN MOSS.

The cucumber may be very successfully grown in fresh moss, or, where it can be procured plentifully, in sphagnum or bog moss. This must be procured, and before using it should be subjected to sufficient heat to destroy any grubs, snails, insect larvæ, or seeds that may be in it. This may be effected by placing the moss on the top of a hot flue or hot-water boiler, or it may be scalded and then dried, but that is a slow and unnecessary process—simple heating will be sufficient. The moss will be used in alternate layers with leaf mould or decayed mushroom dung, as will be described hereafter.

MANURES.

Of these there is nothing better than old, decayed cow dung reduced to a fine mould, but as this cannot always be procured, a good substitute may be extemporised by placing recent cow dung upon a hot flue until it is thoroughly dried. This, when broken into pieces about the size of walnuts, will be found, when mixed with the turfy soil, an excellent stimulant. Of stronger manures, a few bushels of sheep's or deer's dung should always be at hand to make, with soot and fresh horse dung, manure water.

(To be continued.)

GARDEN DESIGN.

THE BOIS DE VINCENNES.

By EDOUARD ANDRÉ.

THE Bois or Park of Vincennes is the great eastern promenade of Paris, as the Wood of Boulogne is that of the west, and les Buttes Chaumont that of the north. Had it not been for late events, the park of the south, called Montsouris, would have been finished, and thus would have completed the graceful quadrilateral of shades, verdure, and flowers, which so agreeably surrounds Paris.

The River Marne waters the base of the Bois de Vincennes, which rises from it to the summit of a plateau terminated by a steep hill. The extensive views from this point upon a vast horizon, comprise St. Maurice, Cretail, Charenton, St. Maurice, and Joinville—all those charming villages, so esteemed by the young Parisians—by the rowers of both sexes—by the artisan and the workman, who there find a resort for enjoyment to the extent of their moderate resources, and which has given to the shades of Vincennes the name of "Bois du Peuple." Vegetation there is more abundant and more vigorous than in the Bois de Boulogne; the embellishments have been carried out with more harmony, with a larger expansion of ideas, and means; and in point of landscape also the Bois de Vincennes is superior.

The works have been divided into two distinct parts. In the neighbourhood of St. Mandé, which abuts upon the ancient dungeons of Vincennes, yet existing after having gone through a history so fertile with tragical events, close to the station of St. Mandé and the Avenue of Vincennes, which leads from the Barrière du Trône, a point of cheerful landscape presents itself, arranged with most pleasant taste. It is the Lake of St. Mandé and its environs. At the bottom of a hollow, formerly dark and dried up, the waters of the high ground of the wood have been brought together into a reservoir, afterwards being pumped into the Marne. In the middle of the lake a large island of poplars is reflected in the clear water; paths wind round the sides of the hill, rocks overhang the head of the pedestrian, and this *ensemble*, fringed by a green girdle of vigorous trees, gives one the sensation of an enchanted spot.

If, from the little Lake of St. Mandé, we pursue our walk on foot, by ascending the little rivulet, we shall pass over the Avenue Napoleon III., which leads from the fort to the Plain of Charenton;

and passing by the Pyrotechnic School, inclosed in a dense clump of trees, we come out upon the plain, where the artillery exercise their manoeuvres. Here there is nothing but barren fields of vast extent occupied by butts for cannon practice; but further on is the Hippodrome, where the races take place, in imitation of those of England, which have become so popular in France. From this point is seen in the distance, through a vista of trees, the Pyramid; and further on that part of the Wood of Minimes and the Napoleon Farm which reaches the counterfort of the Redoubt of Gravelle above the Marne. But, in taking an oblique course to the right, and still ascending the rivulet, which winds, and here and there rebounds upon the rocky points, you arrive at the summit of the plateau of Gravelle, which looks down upon the Marne, and where a restaurant, much esteemed for its extent and the variety of its views, attracts daily a great number of visitors—lovers of a fine prospect. The little Lake of Gravelle, which serves as a reservoir for the water drawn from the Marne by means of an immense steam pump, leads us close to the farm arranged by the ex-Emperor, where the buildings, designed with much taste, contain comfortable accommodation for those visitors who come to partake of the milk. The walk continues up to the Lake of the Minimes. There embellishments have been carried out already on this charming spot, well known, under the name of La Sorte Jannée, to Parisian pedestrians, and where numerous restaurants attract on Sundays many visitors. The lake is sufficiently extensive for boating, the three islands it contains are full of shade and freshness, and the Nogent Station, close by, renders easy access to it. The wood is there very thick. It is composed of massive clumps of oak and beech trees, to which are added conifers, lightened up here and there by judicious openings. That part of the wood between Gravelle and the Donjon which bounds the railway has been cut off from the main park by the city of Paris having bought up the wood; and there establishments for entertainment have been constructed within the last few years.

At present we have only alluded to those parts of the wood penetrated by strategic roads, or by the great roads of communication which existed prior to the improvements, and which it was necessary to maintain. The landscape architects of the city of Paris (of whom I formed one at that period), under the direction of Messrs. Haussmann and Alphand, without altering the general design of the wood, could only enter into secondary modifications. So that, in a landscape point of view, the effects obtained have been but partial, and more than one defect may be noticed; but the difficulties and trammels imposed by its original situation must be taken into account.

It is not the same with the new portion of the wood, called the Plain of Charenton, which extends between the fortifications of Paris, that part comprised between the gates of Charenton, Ruelle, and Picpus, the base of St. Mandé, the Imperial Asylum, and the road from Paris to Charenton. It was, even in 1865, a sterile plain, where only thistles and nettles flourished. We must freely admit that now it is the most beautiful part of the wood. A lake, upwards of twenty-five acres in extent, with two large islands connected by two bridges, ornamented by a temple, rocks, and well-planned clumps of trees, occupy the central part. The area of this new park altogether is more than one hundred and eighty acres. It was finished in two years. The plan of it is extensive, well conceived, vastly developed, the views well preserved, and of sufficient extent. The works of the canal and rock construction, directed by M. Combaz, are remarkable in more ways than one. The great Avenue Dausmenil, which forms the principal route from Paris to the new park, and which stretches from the Place de la Bastille to the Picpus Gate, is truly majestic by its width of forty-four yards, its length of several miles, and its double row of beautiful plane trees.

Everybody admits the vastness of the landscape conception of this grand wood. If one, however, could be captiously critical it would be, in our opinion, upon the plantation. Large clumps of trees have been planted; and, in order to add to the grandeur which it was sought to attain, many trees of the same kind have been planted there, reckoning upon the effect of uniform colour to produce an harmonious result. The underwoods have been planted in the same manner—one or two kinds only in certain parts. However, we find that a contrary effect has been produced to what had been desired. A uniform clump of Austrian pines is very large when covering eleven hundred or twenty-two hundred square yards but trifling for an area of some thousand acres. In order to create perfect harmony it was essential to plant the Plain of Charenton with a depth of forest uniform in all its points, and which time alone can improve, and to work out this with five or six kinds of trees, equally mixed throughout, and to reserve only for the inner portion some rare groups of choice plants, which would, above all, throw out signs of vigour, and form a harmonious background.



Mètres
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PLAN OF THE PARK OF VINCENNES.

LAKE VIEW IN THE PARK OF VINCENNES.



THE HOUSEHOLD.

SALADS.

(Concluded from page 383.)

It is in the proportion of the ingredients which are used to make the dressing or sauce of the salad that lies the great difficulty. A Spanish proverb says that, to make a good salad, a miser should pour out the vinegar, a spendthrift the oil, a wise man the pepper and salt, and a madman should turn it—*travailler* is the technical expression. This may give some idea of the principle upon which one is to mix a salad; but oil, vinegar, pepper, and salt, are not the only things which are used to produce what I should call a good salad, and to make one such it will take not only a wise man, but a practical one as well, with plenty of experience in his business. What I have often said before of cooking apples applies still more forcibly to salad-making, for in this you have no action of the fire, which sometimes corrects the mistakes of the operator; it is like fresco-painting and oil-painting—once you have mixed your salad, there it is, for better or for worse. A sauce or a ragout you may modify, correct, and alter in many ways as you go on; a salad you cannot, without making a mess of the whole thing, once you have mixed the greenmeat with the dressing. Practice is the only master to learn salad-making of. I do not pretend to teach anyone to make salads. All I can do, is to point out to those who wish to become adepts in the art how to set about it.

Oil, which plays the most important part in the business, should be of the very finest quality, but it ought by no means to be the almost colourless and insipid liquid which is, I believe, called Jew's oil. There should be a taste of olive in it, but not so strong as to be disagreeable. It is a *quasi-nutty* flavour which it should have, and the colour should be golden.

The artistic salad maker could not be too particular in the choice of the vinegar to be used in his preparations. The British vinegar of commerce may be all very well for cooking purposes, pickling, &c.; but, for salads, vinegar made from wine should be used, and it should be clarified, so as to be almost as clear as water. The stronger the vinegar is, the better. At some first-class Italian warehouses good French vinegar is procurable for the asking; but it may not be out of place here if I describe the process by which a constant supply of wine vinegar, after the Gallic fashion, can be obtained:—Get a small cask made of oak which has contained wine. Heat to boiling point half a gallon of the best French vinegar, pour it into the cask, and roll it about in all directions, after which half fill it with some good white wine. Place your cask by the side of the kitchen fire, or, if in summer, in the open air, in a place well exposed to the sun. At the end of a week or so, throw in another half-gallon of boiling vinegar, and nearly fill up the cask with white wine. Leave the bung partially open, and in six weeks you can begin to draw as good vinegar as can be wished for. If every time any vinegar is drawn it is replaced by an equal quantity of white wine, the supply will never fail; and if at the outset a certain quantity of brandy be put into the cask, the quality and strength of the vinegar will be improved thereby. Vinegar greatly improves by age, especially when a vinegar plant—or “mother,” as we call it—forms in the cask; but this can be insured by procuring a vinegar plant, and putting it into the cask. None but wooden taps should be used to a vinegar cask, and the bung-hole should be covered with a piece of muslin—or the bung-hole may be stopped up, and an air-hole made in the head of the cask, and covered with muslin—for, in spite of the proverb, flies will be caught by vinegar.

When the acidification is complete and the vinegar ready for use, the cask can be removed from the side of the fire or exposure to the sun; but it should be kept ever after in a warm and dry spot, never in a cellar. To clarify vinegar, a wineglassful of milk should be mixed with a bottle of vinegar; then make a cone or filter of filtering paper, which you place in a glass funnel; pour the mixture into this very carefully, and in due course the vinegar may come out as clear as can be desired. For purposes of salad-making and cooking generally, vinegar is flavoured in a variety of ways. This is done by putting some good strong vinegar into a wide-mouthed bottle, and adding to it any of the following: 1. A couple of handfuls of tarragon leaves, gathered the day before. 2. Twenty or thirty green capsicums, previously bruised. 3. Four or five pods of garlic, also bruised. 4. A cupful or more of celery seed, well bruised in a mortar. 5. The same quantity of cress seed, similarly treated. The above proportions are for one quart of vinegar. The bottle should be corked up and exposed to the sun, or kept in a very warm place, for two or three weeks, when the vinegar should be strained and filtered, and it is ready for use. By a similar process vinegar is flavoured with mint, horseradish, cucumber, &c. The following are more elaborate forms of aromatised vinegar.

TARRAGON VINEGAR.—Fill up a stone jar or wide-mouthed glass

bottle with as many tarragon leaves, not newly gathered, as it will contain without pressing them down. Add a small quantity of cloves, and the rind of two or three lemons. Fill up with vinegar, cork well, and expose to the sun for a fortnight at least. At the end of that time, strain the vinegar, squeezing it well out of the leaves, filter, twice if necessary, through paper, and bottle up for use.

FINES HERBES VINEGAR.—Take equal parts of tarragon, garden cress, chervil, and burnet (all gathered the day before), one green chili, a couple of pods of garlic. Fill your bottle or jar with this, without pressure; cover up with vinegar, and treat as the above.

Another form of the above is this: Equal parts of tarragon, burnet, and chives, one or two lemon rinds, a few cloves. Proceed as above. Some people add to this a handful of fresh elder flowers. It is better, in making these vinegars, not to make too much of them, but just enough to last the season.

Although plain English mustard is often used in making salads, French mustard is undoubtedly better. The *moutarde de Maille à l'estragon* or *à la ravigote* is the best to use. The following recipe is the homely Gallic form of mixing mustard, which produces not a bad imitation of that of the celebrated *Maille*. Take about one quart of brown mustard seed, and mix with it the following ingredients: parsley, chervil, tarragon, burnet, about a handful of each finely minced; some celery seed, cloves, mace, nutmeg, garlic, and salt in such proportions as taste may suggest. Put the whole in a basin, with enough vinegar just to cover the mixture. In twenty-four hours' time proceed to pound it in a mortar, or, better still, grind it on a stone as colours are ground. When thoroughly ground or pounded pass through a fine hair sieve; add enough vinegar to make the mustard of the proper consistency; make a poker red-hot and stir your mustard with it; repeat this mysterious operation once or twice, and proceed to fill up your pots or bottles, cork and seal them. The pepper and the salt used for salad-making should be in the finest powder. Every kind of sauce, such as Worcester, Harvey, anchovy, ketchup, soy, &c., is used in salads, but they are dangerous things in the hands of novices.

Eggs, either raw or hard-boiled, should nearly always enter into the composition of a salad-dressing. In the former case the yolks alone are used; in the latter the yolks are applied to the same purpose, and the whites are put into the salad, or on the top of it, either chopped up small or cut in rounds. In some cases, besides the yolks which go in the dressing, whole hard-boiled eggs, cut into quarters or rounds, are used in the ornamentation of the salad. As a general rule I may say that the proportion of the oil to the vinegar should be, supposing the latter to be of average strength, as two to one; but due regard must also be given to the mustard and strong sauces, such as Worcester, which may be used. A couple of yolks of egg, either raw or hard-boiled, will be enough for an ordinary salad. The proportions of the other ingredients are a matter of taste, which cannot be defined.

Lastly, the proportion of the dressing to the salad must be such that when the two have been thoroughly mixed together no dressing shall remain at the bottom of the bowl. This will invariably not be the case when there is too much dressing in proportion to the salad, and also when the salad has not been properly freed from water, when too much vinegar has been put into the dressing, and when the ingredients have not been properly and artistically mixed. Therefore will it always be an indication of failure. It takes from forty to fifty minutes to mix a salad *secundum artem*; and although it is better to eat it as soon as the dressing and the greenmeat have been “worked” together, still it will keep good for an hour or so; after that it will rapidly deteriorate.—*The G. C. in “Queen.”*

POLISH MODE OF PRESERVING CUCUMBERS AND PICKLING MUSHROOMS.

In Poland cucumbers are preserved on a large scale, and constitute part of the winter provisions of the inhabitants. The following is the mode in which they are prepared:—They are gathered before they are too large (when scarcely one-third of their full size), carefully washed, well wiped, and placed, uncured, in layers in large earthenware pots, or in barrels, according to the quantity to be prepared. Each layer receives a suitable proportion of salt, and is then covered with a layer of cherry leaves mixed with fennel and a few oak leaves. The addition of vine leaves, in proportions of about one-half, produces a very good effect. The last layer is similarly covered with leaves, after which, the vessel being quite full, water (river water if possible) is poured in so as to cover the cucumbers completely (this is absolutely necessary). In about ten or fifteen days the cucumbers thus pickled may be used; before which they should be carefully washed, and then they may either be employed as pickles with other dishes, or eaten by themselves. As they do not keep long after they are taken out of the brine, not more than

the quantity required at the time should be removed. I make preserves of this kind every year, and use only the green Gherkin cucumber for the purpose, as I find the white kind does not keep so well.

Pickled mushrooms are also very much in use in Poland. Several kinds are thus preserved, but principally the sort called Rydzés (perhaps *Agaricus deliciosus*?). This mushroom, which grows in sandy districts in Fir woods, is excellent when fresh, and equally good when pickled. It is very abundant in Poland. Care should be taken to salt the mushrooms immediately after they are gathered. They should then be placed in earthenware pots, heaping them up as much as possible. Brine is then poured into the vessel, and the mushrooms are kept constantly covered with the pickle by placing over each pot a small board with a weight on the top. Before using the mushrooms thus pickled, they should be washed for some time in clean cold water, or even allowed to soak for a few hours in order to remove the salt. They may then be used in salad, and form a very agreeable dish.—*L. Paskiewicz, in "Revue Horticole."*

GREAT GARDENS OF EUROPE.

KEW.

THE SUCCULENTS.

The Succulent House, a fine span-roofed building, is two hundred feet long and thirty feet wide. The central bed is on a level with the walks, and a series of arches support the side shelves, which contain soil, covered with sand; a plan in all respects excellent, both for partially concealing the hot-water pipes and for the health of the plants. There is, moreover, a good depth of soil secured in this way for climbers. Though this arrangement for side shelves is not adopted in any of the other houses, I have no hesitation in saying that for all kinds of plants in pots it is the best I have yet seen, especially where climbers are employed for the decoration of the roof, it often being the case in small houses that the pipes run round the sides, making it difficult to plant there. Besides, the warmth excites them the most when they should be at rest. By the arrangement I allude to, as carried out at Kew, the plants are entirely under control, water being given or withheld at pleasure; and the surface affords a natural and good resting-place for plants in pots, much superior to stone, slate, or wood, which can never be kept in so regular a state as to moisture.

The contents of this house form one of the chief features of Kew. Here may be witnessed Nature in a grotesque and somewhat capricious mood, as well as sullen and fierce. Now a gigantic Cactus or Agave seems to say this spot of earth is mine; *Nemo me impune lacessit* says another; and then there are the deadly milk-yielding Euphorbias; all of which are wonders in their way to sight-seers. Entering from the north, are some large plants of these Euphorbias; *E. canariensis*, *neriifolia*, *abyssinica*, *Tirucallii*, and *grandidens*, indicate the large amount of variety which exists among the different members of this genus. They are natives of Africa, India, and Tropical America principally; but the genus is found all over the world. They are interesting as showing a gradual leaf development, which is nearly perfect in *E. nerifolia*, very rudimentary in *canariensis*, and absent altogether in *aphylla*.

Turning to the right we come upon the Opuntias (Prickly Pear, or Indian Fig), the large-growing species of which come from Mexico, but there are many dwarf kinds that come as far north as the Northern States. The Gibraltar Prickly Pears are produced by *monocantha* and *clatior*. Next is a group of tall *Cereus* or Torch Thistles, many of which have fine flowers, but the majority of them open only in the night. The most distinct are *C. Jamacaru*, *peruvianus*, *grandis*, and *glauca*; natives of Tropical America. Among the climbing species, in spite of the reputation possessed by *C. grandiflorus* for beauty and size of flower, *C. Macdonaldii*, *triangularis*, and *rostratus* are superior. These in their native countries climb the stems of trees; they therefore stand more shade than other sorts.

On the side shelves are arranged the dwarfer-growing species, many of which have fine flowers, and make good plants for rockwork in summer. On opposite shelves are

quantities of *Echinocactus*, *Echinopsis*, *Mammillaria*, and *Pilocereus*, or "Old Man" Cactus. Though some of the species, as *Echinocactus Stainesii* and *electracanthus* attain a height of from six to eight feet, the majority of the sorts here are of humble growth. They are mostly Mexican, though some of the *Echinopsis* and *Mammillaria* are found as far north as the Rocky Mountains, just below the snow line.

Though the Kew collection contains many large and striking plants, yet the number of species is much below that of some private collections. In the central bed are the African or true Aloes; Barbadoes Aloes being, anomalous as it may appear, also obtained from South African species. Many of these Aloes are noble plants, as, for example, *A. africana*, *arborescens*, *pluridens*, *ferox*, and *supralævis*. Those which furnish the Aloes of commerce are *A. soccotrina*, *A. vulgaris* (*Barbadensis*, or Barbadoes Aloes). What are termed Cape Aloes are the produce of *A. africana*, *arborescens*, and others. In books on medicine, *A. spicata* is said to be the plant that yields the Cape Aloes, but this is not to be found at the Cape, and is the scarcest of all the species of Aloes.

On the shelves are many small species, some of which are beautifully marbled. Gasterias and Haworthias are subdivisions of the Aloe tribe. Many of the Gasterias are remarkable on account of their distichous growth and exceedingly handsome foliage. Haworthias are a stemless class, growing in rosettes. They are very variable in form, but peculiar, inasmuch as their flowers are all alike; all of them are South African. Of Haworthias and Gasterias the collection is complete.

Opposite these are the Agaves (American Aloes), a group of noble plants from Mexico and Chili, where the natives call them "Karatto," and extract from them an intoxicating drink called "pulk." This is obtained by tapping the plant when the flower stem has grown a few feet, which happens when the plants are from seven to nine years old. It is a common belief that these plants flower only once in a hundred years, which is true in a certain sense of one section, the candelabra form, inasmuch as they die when they have flowered. To this section belongs the common American Aloe; the other section, of which *A. filifera* is a type, has a spicate inflorescence. Plants belonging to this class push a new centre and grow again after flowering. Amongst them is the nearly allied genus *Fourcroya*. When they flower they form numbers of young plants in the axils of the flower stalks, like small onions. These grow, and thus perpetuate the species. It is mentioned in the guide to Kew that two plants of *Fourcroya gigantea*, which flowered in 1844, pushed up flower stalks at the rate of ten feet in twenty-four hours! They certainly do grow very fast. I have myself known them make one foot in that time, but never so much as ten. The Agave collection here is very incomplete, many of the more recent introductions not being represented. We come now to some noble specimens of *Dasyliirions* and *Beaucarneas*. *D. longifolium*, especially, with gracefully drooping foliage from eight to ten feet long, is a noble plant for a cool conservatory, as is also *Beaucarnea glauca*, a plant peculiar on account of the large corrugated tuber to be found at its base. They are natives of Mexico, where they grow at high elevations, and will stand several degrees of frost with impunity. Mixed with these are some of the coarse Australian grasses, as *Arundo conspicua*, *Xerotes longifolia*, and the *Xanthorrhoea*; also the *Dianellas*, Liliaceous plants with beautiful blue flowers and berries. On the side shelf here is a grand collection of the arborescent *sempervivums* from the Canary Islands.

Passing the south door, we come to the *Crassulas*, *Cotyledons*, and *Kleinias*, South African plants. Among them are many useful subjects for ornamenting outdoor rockwork in summer. Next come the *Echeverias*, the Mexican type of *Crassulaceæ*. Though several of the genera in this house are not so well represented as they might be, still this is one of the most interesting houses in the garden, and it is also one of the best arranged for public inspection, the whole of the plants being easily seen from the walks, a point of much importance in a public garden.

In the north end of the new range of houses at Kew will be found the collection of *Mesembryanthemums*, which is

very extensive, containing no fewer than 212 species. They are natives of the Cape of Good Hope, where they grow on rocks, into the fissures of which they get their roots, a circumstance which enables them to stand severe droughts. Some found in Australia are evidently Cape species that have naturalized themselves there. *M. spectabile*, *polyanthum*, *retroflexum*, *roseum*, *formosum*, *blandum*, and *aureum*, together with several allied species, are all beautiful, and have a grand effect on rockwork. *M. felinum*, *tigrinum*, and *lupinum* are useful as margins to beds. The genus *Mesembryanthemum* may be said to be one of the most interesting and variable among Succulents, both on account of form of foliage and regularity in regard to the periods of opening and closing of the flowers.

The following summary will show what are at Kew, in the way of species belonging to certain genera, compared with what have been introduced into this country:—

<i>Cereus</i>	at Kew	...	87	Introduced	...	148
<i>Mammillaria</i>	do.	...	77	do.	...	174
<i>Echinocactus</i>	do.	...	44	do.	...	116
<i>Echinopsis</i>	do.	...	22	do.	...	22
<i>Opuntia</i>	do.	...	62	do.	...	91
<i>Agave</i>	do.	...	46	do.	...	140

Although there is room for improvement as regards the collection, this singular and wide-spread type of vegetation is nevertheless nobly represented at Kew, and the large Succulent House there, is, on the whole, as satisfactory from every point of view as any similar structure yet erected. J. CROUCHER.

(To be continued.)

NOTES.

Ipecacuanha Plants.—Those in the Neilgherries are reported to be flourishing. Two have blossomed, but have yielded no seed. Twelve plants in good condition were received at the Calcutta Botanic Gardens from England in August.

Daffodils.—In our report of the last meeting of the Royal Horticultural Society we accidentally omitted to allude to the fine collection of Daffodils shown thereat by Mr. Peter Barr, in whose experimental ground at Tooting there is now the most interesting collection of Daffodils we remember to have seen. Mr. Barr deserves great credit for the thorough and enthusiastic way he has taken up this fine family, which, considering its immense variety, its thorough hardness, and its flourishing on any soil, is second to none in its importance.

Caution to Eaters of Water-cress.—A correspondent of a Bristol contemporary writes:—"On Saturday last a man passed my house crying 'fine fresh water-cresses.' One of my boys ran after him and bought a pennyworth. Fortunately, before being placed on the table my attention was called to them, and I found that three-fourths of the lot were composed of water cowbane (*Cicuta virosa*), one of the most virulent of English vegetable poisons."

Australian Mahogany.—The Jarrah Jarrah, or western Australian mahogany, is becoming famous, and its value has been greatly enhanced by recent Government tests, showing that the durability of the wood is dependent not so much on its density as on a certain astringent vegetable acid, which appears to be so peculiarly disagreeable and even poisonous to insects that they avoid the timber.

Trees bad Dentists.—An economical Iowan, who had the tooth-ache, determined to remove his tooth in the Indian fashion. Accordingly he bent down a sapling in the woods, lay down himself, and attached a stout cord to his tooth and the sapling. Then he touched the spring, and the next thing he knew was that he had jumped over a grove of about forty small trees, and was trying to get out of a small pond into which he happened to alight.

Victoria Park Extension.—The Victoria Park Preservation Society have abandoned their intention to attempt the purchase of the nine or ten acres of building land which skirts Victoria Park, insurmountable difficulties having presented themselves; and they have decided to confine their attention to that portion consisting of about five acres, which is situated opposite the fountain erected by the Baroness Burdett-Coutts. The eastern portion of this strip of ground immediately adjoins Hackney Common, being only separated by a roadway. It has, therefore, been suggested that Hackney Common should be joined to Victoria Park, and the two spaces made into one large recreation-ground under one management. The secretaries of the Victoria Park Preservation Society have therefore again addressed Lady Burdett-Coutts on the subject, with the view of inducing her to purchase the small strip of land referred to.

Gardening in Elementary Schools.—A very important development in the organization of the teaching of agriculture and horticulture is to take place in France. It has just been decided that these studies, so useful for the populations of rural districts, will have a piece of ground devoted to them, in the vicinity of each school, which will be under the superintendence of the teachers. In this, the best systems of garden cultivation will be shown, and in particular those which relate to fruit culture and arboriculture. A circular is soon to be addressed to the communes, asking their active co-operation in this matter.

Parrots as Fruit Eaters.—Flocks of green parrots, says the *Kyneton Guardian*, are committing sad havoc in the fruit gardens and orchards around Kyneton. Nothing comes amiss to them so long as it is ripe. We know of one instance where gooseberries, from which it was calculated that three hundredweight of jam would be made, have been entirely destroyed. Plums and other descriptions of stone fruit are greedily devoured, and as soon as an apple or pear ripens it is seized upon by these ravenous fruit eaters. Quite recently thirty-eight parrots were shot on two or three trees, the birds particularly affecting a very choice jargonelle pear now ripening.

Presentation to the late Curator of the Liverpool Botanic Gardens.—On the occasion of Mr. Tyerman retiring from the curatorship of these gardens, which he has lately done, a number of his botanical colleagues determined to present him with a small expression of their personal esteem. A handsome silver centre piece, composed of the main stem of a vine, supporting a cut glass dish, with three branches, decorated with vine leaves and grapes beneath, was purchased by means of a liberal subscription list, and has been presented to Mr. Tyerman. It bears the following inscription:—"Presented to John S. Tyerman, Esq., on his resignation of the curatorship of the Botanic Gardens, Liverpool, by a few friends, to mark their high personal esteem, and in recognition of his scientific attainments, 1872."

A New Idea in Planting.—A great discoverer, whose name cannot be long concealed from a grateful world, has invented a plan of replanting the hair where it is lost. As plants grow so does the hair; it is rooted, and thrives like a vegetable. The operation of restoring hair is very simple; put healthy hairs into the eyes of needles and draw the needles through the upper skin, the epidermis; being drawn through, the hairs are left in the skin, as a thread, may be left in any material by a stitcher. The roots, which have been extracted with their bulbs complete, are brought under the epidermis. The surface so operated on is protected at first by a linen band, but the hairs soon take root, grow, and flourish. It is not stated whether having the skin punctured in this way is disagreeable, and how often it is fatal. If it is a success, the plan has many advantages: one can have any colour of hair he may select, and he can plant a variety of colours, and thus make his appearance striking and beautiful.—*American Paper*.

Botanical Ponies.—According to the *North Wales Chronicle* the quadrupeds in the neighbourhood of Snowdon are more highly educated than lots of bipeds we know. It says that an hotel-keeper in that district—

"Furnishes guides and ponies, who are perfectly acquainted with all the rare plants in the locality."

A pony that thoroughly understands botany is indeed a highly-trained steed, before which the gifted of the circus must bow.—*Fun*.

THE SEASON.

THE East wind blows cold, and Jack Frost lays his hold
On noses and fingers and toes;
In dull leaden grey scowls the sky all the day,
And at last weeps its sulks out in snows.

And the pretty pink blossoms of almond and peach,
And the apricot's petals so pale,
Of cruel Jack Frost vainly mercy beseech,
Or of crueller Easterly gale!

And they piteously cry with a shudder and sigh,
As they shrivel and shrink on the wall,
"Poor fools to be lured by a blink of blue sky,
But to flush, and to fade, and to fall!"

—Punch.

FLOWERS OF FASHION.

Lady.—"And why did you leave your last situation?"
Cookman.—"Well, ma'am, me and her ladyship 'ad a difference about a bokay. We was going to a Drawing-Room, and her ladyship wanted to put me off with a bokay made up in the 'ousekeeper's room! Well, I couldn't stand that, so I went and ordered a bokay at Covent Garden; and, would you believe it, ma'am, me and her ladyship 'ad a difference about the payment? so I give warning!"—*Punch*.

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

PRIVATE GARDENS.

Indoor Plant Department.—By way of compensation for the winterly weather which we are now experiencing out of doors, conservatories everywhere are being kept as attractive as possible. Cyclamens, those charming early flowers with which everybody is pleased, are now getting past their best; but, owing to the forwardness of the season, there is no lack of flowering plants to fill their place. Young and tender shoots, as well as blossoms, are carefully guarded from frosty winds. Camellias, Acacias, Rhododendrons, and other shrubs, with the exception of such as are in flower, are syringed every morning, the afternoon applications being for the present discontinued on account of the coldness of the weather. Camellias and Azaleas that have been headed back are placed in vineries, or other moist, warm houses, where they are breaking admirably; they are frequently syringed overhead, but water at the root is given but sparingly. Small-growing plants of these are not allowed to suffer from being pot-bound. Among Calceolarias, the most forward receive a little weak manure-water occasionally, which strengthens the flower-spikes, and improves the quality of the bloom. Balsams, Cockscombs, and similar plants, are regularly shifted, so as to obviate anything in the way of a check, and gentle bottom heat and plenty of air promote compact and stocky growth. Fuchsias, Aloysias, and Plumbago capensis are pruned back, potted, and started, to succeed those previously placed under growing circumstances. Hyacinths, Tulips, and other bulbous plants done flowering are being placed in cold frames, and kept rather dry. Zonal Pelargoniums intended for blooming indoors are shifted into two-sized pots larger than those in which they were wintered. Fancy and show Pelargoniums are neatly staked, and kept near the glass; air is freely admitted, except when the weather is frosty. Stoves are allowed a little extra heat and moisture, and care is taken to guard against undue ventilation whilst the weather continues so cold. Climbers, such as Allamandas, Bignonias, Clerodendrons, Dipladenias, Passifloras, Stephanotis, and Thunbergias, are now in full growth, and receive strict attention as to thinning, stopping, and tying. Russellias, old-fashioned plants not half so often met with as they should be, are being potted in light rich mould, and staked, allowing them to retain, to some extent, their natural pendent habit. Ixoras are pruned into shape, and are growing fast. Rivinas, well-known little berry-bearing plants, are pruned rather closely back, and are starting freely—others are raised from seed. *Æschynanthuses*, which are repotted, are, for the most part, grown in baskets. Gardenias receive a liberal supply of water, both at the root and overhead. The prunings of *Cissuses*, which are cut back, are being used for purposes of propagation. Begonias, charming winter and early spring-flowering stove plants, are now everywhere in great beauty. The old-fashioned red and white Vincas are cut back to good eyes, potted, and started. Orchids, especially those in flower, and such as are rapidly advancing in growth, receive a little shade during the brightest part of the day; a steady, moist, and warm temperature is maintained, and, to such as are in active growth, water is freely given.

Pits and Frames.—The propagation of bedding-plants is being pushed forward vigorously, cutting the shoots off at a joint, from which, in a short time, two other shoots push forth. There is thus no scarcity of cuttings, which as soon as rooted are potted off singly, and kept until established in warm quarters. As soon as they begin to emit fresh roots, they are transferred to a colder frame, where they are gradually hardened off. This treatment does not, however, do for *Alternantheras* and similar plants; for unless these are kept in heat, and well established before being placed in cold frames, which should not be done till the first of May, they will not make good plants. Stocks, Asters, and Marigolds are being sown in gentle heat, the seeds being shaded to prevent undue evaporation. Sweet Peas, favourites with everybody, are being sown in pots and boxes for filling up vacant spaces that may occur amongst those sown outside. Auriculas in frames are protected with mats, giving them free exposure during fine weather; their foliage is kept as dry as possible. Dahlias are being propagated in heat. Carnations and Pinks for flowering in pots are repotted, and those not required for pot culture are planted out, or are set for the present in some sheltered place and protected with mats. Heartsease are repotted and placed outside, protection being afforded them at night by means of hoops and mats.

Flower Garden and Shrubbery.—Notwithstanding the inclemency of the weather, well-managed flower gardens present just now a neat and attractive appearance. Among the more striking plants now to be seen in flower in them are Daisies, Heartsease of different sorts, Arabis, Violets, Squills, Anemones, and Daffodils.

The Golden Feverfew is also very pretty. Annuals required for early flowering, such as Mignonette, Nemophila, Saponaria, Collinsias, and Candytufts, &c., are being sown, and various hardy annuals, such as the Nemophilas and Candytufts, from late autumn sowings are being transplanted. Sweet Peas, sown where required, are sharply guarded from mice and wood pigeons. Auriculas, Pansies, Carnations, Pinks, and Picotees are being bedded out. Sweet Williams and Wallflowers from seed are also transplanted. Gladioli, if not grown in pots, are planted out where they are to bloom, placing a little sand around the bulbs; any of them in previous plantings likely to be pushing, have some litter laid over them to preserve them from frost. Hollyhocks are being transplanted to their blooming positions, using for them a rich compost. Pæonies, the young shoots of which are beginning to grow, are protected by having mats or straw laid over them at night. Rose pruning, in most cases, is now finished. Flower beds not planted with spring flowers, are pointed over and neatly raked. Edgings to beds and borders, such as *Cerastiums*, *Stachys*, variegated *Polemoniums*, *Arabis*, *Ivies*, and grass continue to be made. Lawns in which grass is deficient and moss prevalent, are top-dressed with rich, finely-sifted soil, raking off at the same time any rough material that may be disfiguring their appearance. They are then rolled. Conifers which seem inclined to produce contending leaders, have the worst of them rubbed off, leaving only the strongest and most promising. Evergreen shrubs are pruned into shape, using only the knife in the operation, except in the case of strong limbs, when the saw is employed.

Indoor Fruit Department.—To Pines a steady temperature is maintained, and they are never allowed to suffer from want of water. Those colouring fruit are kept rather dry, as are also those in flower. Suckers potted are plunged in tan beds. Succession plants are in some cases shifted into their fruiting pots, and plunged in brisk heat. Vines are thinned as they require it, at the same time pinching and tying the young shoots. Borders heated artificially are frequently examined so as to prevent their ever becoming too dry, and atmospheric humidity is maintained by frequently syringing the floor, walls, and stages; but it is not advisable to syringe vines after they show fruit, except for the purpose of keeping down red spider. Peaches and Nectarines while stoning are kept at about 60° at night. More fruit than enough for a crop is allowed to remain on the trees until after the stoning period has been passed, when they are thinned to the required distances apart. No more young wood is left than is absolutely necessary for next year's crop. Tying and thinning the shoots are attended to, and the syringe is used freely amongst the foliage to prevent red spider. Figs have plenty of moisture both at the root and overhead; attention is also paid to pinching the shoots at the fourth or fifth joint. Where Cucumbers have been grown throughout the winter and have become exhausted, the borders are partially renewed and young plants put in between the old ones. As soon as roots appear outside the soil, they are top-dressed with rich mould, and well watered both at the root and overhead. Melons are thinned and tied as they advance; they are not allowed to set fruit until the plants have attained sufficient strength to bear it, and all superfluous blooms and growths are removed. Vegetable Marrows and Gourds are being sown, and plants from some of the earlier sowings are potted off. Strawberries are now in full bearing, those ripening being kept rather dry and near the glass; successional plants are being introduced. Mushroom beds are at present kept moist enough by the straw with which they are covered, and attention is paid to prevent the attacks of mice, slugs, and earwigs. Fresh beds are being spawned. Of Chicory, Dandelions, and Endive a supply is taken into the mushroom-house to blanch and force. Mustard and Cress are still sown indoors. Nasturtiums for salading are sown in gentle heat for transplantation. Onions raised in heat are freely exposed whenever the weather is at all favourable. Celery is pricked out on a compost consisting of well decomposed manure two parts and light soil one part. This is placed about six inches deep on a hard bottom covered by a frame and sashes, over which are placed at night straw or mats. Capsicums are shifted and kept near the glass. Egg plants are trained to one stem, pinched, and well syringed, and kept near the light. Endive is sown in brisk heat. Kidney Beans are sown for succession. Potatoes requiring earthing up are well watered, after which, when the surface is dry, the earth is drawn to them.

Outdoor Fruit and Kitchen Garden Departments.—The sudden and winterly change which the weather has assumed has greatly altered the character of operations in this department at present. Fruit trees seem to have suffered considerably, especially the earlier kinds of Pears and Plums, whose blossoms had opened. The snowstorm which occurred on the 21st instant blackened those on standards at the base of the pistil; those on walls, though in some cases unprotected, are not so badly injured. Grafting for

the present is postponed, the frost causing the clay to expand and fall off. In the kitchen garden the transplanting of vegetables and sowing of seeds are also deferred till brighter days make their appearance, as it is considered nothing is gained by sowing seeds in cold wet soils. Crops that must be forwarded had better be sown under cover, and transferred, after having been properly hardened, to the open quarters, when the weather shall have become more favourable.

NURSERIES.

Indoor Department.—Propagating soft-wooded plants still occupies the chief attention in this department. Coleuses, especially the newer kinds, are being largely increased, potted, and grown on. *Amarantus salicifolius* appears to come freely from seeds; the young plants from these are pricked off into pans as soon as fit to handle. *Chironia frutescens* is being sown on rough peat in pans, covered with glass, and set in gentle heat. Plants of *Eucalyptus globulus* from seed are being potted off singly. *Mesembryanthemum linguiforme* is found to come true from seed, from which abundance of plants may be raised in a shorter time than from cuttings. *Musa Ensete* is also raised from seed, one of which is put into a small pot with a little silver sand around it, and the pots are plunged in gentle bottom heat. *Daturas* are propagated from portions of the old wood, each piece containing one or more eyes being placed in silver sand in heat. *Cestrum aurantiacum* is obtained from cuttings, as are also *Bouvardias*, which are easier to strike now than in autumn. *Cassias*, *Cytisus*, *Prunus*, and *Melanthus*, are likewise being raised from cuttings in heat, and those rooted are potted off singly. Seeds of hybridized *Begonias* are being sown in pans of light soil plunged in bottom heat. Variegated Maize is also sown thinly in pans, in heat. Ornamental grasses are sown in pots, and kept in cool pits or frames. *Primulas* are also being sown and kept in cold frames. *Tacsonias* raised from seed and now well established, are placed in cold frames, protected by extra coverings at night and during severe weather. *Hibiscus*, *Coronillas*, *Matricarias*, *Sedums*, *Solanums*, *Vines*, &c., that have been raised from seeds and from cuttings, and now pretty well established, are transferred to cold frames. *Cyclamens*, from December sowings, are being potted off singly into small sixty-sized pots, and kept in a gentle heat. Young *Camellias* are being pruned into shape, placed in a higher temperature, and frequently syringed. Grafting of young *Conifers*, *Ivies*, *Hollies*, *Roses*, and *Rhododendrons* is still proceeded with, keeping them closely shaded, and in gentle heat.

Outdoor Department.—Herbaceous plants have not been injured apparently by frost, but where the soil is heavy they seem to have suffered a little from damp. Such as are in pots are examined, divided, and re-potted, and kept in frames, or placed along the foot of walls or hedges, protecting them during severe weather by means of mats supported on stakes. *Nymphæas* and other water plants are being re-potted and placed in tanks out of doors, and some of them are beginning to grow freely. Preparation is being made for seed beds of hardy conifers, such as Scotch firs, larch, &c.; those in last year's seed beds are being loosened with a fork and transplanted in lines eight or ten inches apart. Two and three year old plants are also transplanted, the strongest being selected from amongst the others, and according to their strength the distances apart are determined. Three and four year old plants of these are those most in demand for permanent plantations. Seeds of deciduous trees are now being sown. All trees and shrubs remaining after the winter sales are now being transplanted and re-arranged.

MARKET GARDENS.

HERE the weather has also checked ordinary operations to some extent. Besides some injury done to fruit trees, little else however, has suffered, except perhaps the later planted Lettuces, some of which are a little browned. In many cases they are much eaten by slugs, which shows the necessity of sprinkling a little soot or lime over the ground. The crows are, however, safe. Radishes of first sowings are now pretty strong; the younger ones are still covered over with litter during the night and in severe weather. Litter is also placed over *Rhubarb* by way of protection. *Spinach*, *Onions*, and a few other crops coming up amongst bushes and under trees, are apparently unhurt. Over *Gooseberry* bushes, and amongst some of the other crops, is sprinkled a dusting of lime, to act as a preventive of insects. Beds are being made up for *Cucumbers*, by taking out a trench about 2½ feet deep, and filling it up with hot dung, over which is placed a few inches of soil. On this the frames are placed, and along the middle is put a ridge of prepared soil on which the *Cucumbers* are planted. Beds are also in course of construction for *Vegetable Marrows*, but to these not quite so great a depth of dung is given. Seeds of these are also being sown on a

little heat, and some of the further advanced are nearly ready for planting. *Tomatoes* are potted and kept in frames covered over at night with litter. In the open ground, besides collecting vegetables daily for market, manure is being carted on to vacant ground, which is also being dug.

HOW PLANTS ARE FERTILIZED.

A LECTURE on this subject was delivered at the London Institution, on March 21st, by Mr. Alfred W. Bennett, F.L.S. The lecturer commenced by stating that there are two modes in which plants may be propagated: the vegetative, in which a portion of the mother plant, containing a leaf-bud, is placed under suitable conditions to make it develop into an individual in every respect resembling the mother plant; and the reproductive, by the agency of seeds. The different organs of a perfect flower were then described; the non-essential whorls constituting the calyx and corolla, and the essential whorls formed of the stamens and pistil. The difference was then pointed out between the unfertilized ovule contained within the ovary, and the perfect seed containing a distinct embryo; the form of the embryo in different seeds being illustrated by drawings. After a more minute description of the structure of the ovule, and of the stamen and pollen grain, a detailed account was then given of the process of emission of pollen tubes, which results in the fertilization of the ovule. The lecturer then proceeded to explain that although a perfect flower contains both stamens and pistil, the male and female organs, yet this by no means necessarily occurs, the sexes being sometimes separated. When this is the case, the male and female flowers are sometimes similar in appearance, as in the cucumber tribe; sometimes entirely different, as in the hazel. When the sexes are thus separated, some foreign agent, as the wind or insects, is obviously necessary to insure fertilization; but ever in hermaphrodite flowers, the researches of Darwin and others have shown that self-fertilization is the exception rather than the rule. In many plants, self-fertilization is prevented by the fact that the anthers and the stigmatic surface of the pistil are not fully developed at the same time; but either the anthers have discharged their pollen and dropped before the stigma is ready to receive it, or the reverse. In other plants we find special contrivances for cross-fertilization by insect agency, the two which were specially dwelt upon being the cases of *Salvia* and *Orchidaceae* plants. The arrangement was described at length by which the pollinia of *Orchids* are removed by the proboscides of moths and butterflies, and contrived for the fertilization of the next plant visited. It was mentioned in this connection that the limit of latitude which annual plants attain in their native state is determined, not so much by the temperature which is required for their growth, as by the presence or absence of the insects which are necessary to their fertilization. The abnormal phenomena of parthenogenesis were referred to, and specimens shown of the *Zanthoxylon*, described by Mr. Hanbury, in the *Journal of the Linnean Society*, which bears only female flowers, and yet produces perfect seeds, one in five of which are found to germinate. In conclusion, the lecturer alluded to the practical importance of the subject, especially with reference to the "setting" of fruit, the failure of which in cold weather he believed to be due not so much to the actual injury to the flowers as to the destruction of the fertilizing insects. The lecture was copiously illustrated by diagrams as well as by living specimens.

ANSWERS TO CORRESPONDENTS.

NORTON (We shall shortly publish an article on the subject.)—E. F. W. (We have no personal experience of the working of the stove you name.)—M. (Next week.)—O. G. W. (We know nothing of the material mentioned in *Public Opinion*. Thin muslin bags will preserve grapes from wasps.)—W. J. C. (Ammoniacal liquor is a powerful fertilizer, but it needs diluting with at least six times its bulk of water. In this state it may be applied to most kinds of vegetables with advantage.)

NOTICE.—Country booksellers having reported some of the earlier numbers of "The Garden" to be out of print, we beg to state that every page has been stereotyped, and consequently "The Garden" can never run out of print.

Readers who may find it difficult to procure THE GARDEN regularly through the newsagents, may have the numbers sent direct from the office, at 19s. 6d. per annum 9s. 9d. for six months, or 5s. for a quarter, payable in advance. All the back numbers may be obtained through all newsagents, at the railway book-stalls, and from the office.

All communications for the Editorial Department should be addressed to WILLIAM ROBINSON, "THE GARDEN" OFFICE, 37, Southampton Street, Covent Garden, London, W.C. All letters referring to Subscriptions, Advertisements, and other business matters, should be addressed to THE PUBLISHER, at the same Address.



"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE HISTORY OF ROSE DEVONIENSIS.

I HAVE often intended to write the history of this well-known rose, and "D. T. F.'s" version of it in your columns, which is the only one I have seen, induces me to offer mine.

Mr. G. Forster, who was a retired clerk of the Devonport Dock-yard, and with whom I had a rather intimate horticultural acquaintanceship, had quite a passion for growing seedlings of all kinds, his chief hobbies being Dahlias and Pelargoniums. As all, or very nearly all, the care of rather large gardens and conservatories devolved upon him and his brother, "high" horticulture was not carried out, and I have seen fully one thousand seedling Pelargoniums spindling up in sixty-sized pots, ranged out against a wall, and afterwards running up on a single hard-wooded stem to three feet or more before they bloomed. The consequence of this hard treatment was, that whilst, undoubtedly, many good flowers were thrown away, those that turned out well generally proved gems.

One day I chanced to meet Mr. Forster near his house, when, in his usual quiet, dry manner, he said, "The next time you are at leisure to come to my garden, I hope to have something to show you." To this I replied, that if the something was then to be seen, I would go at once. Thinking that he referred to a Pelargonium or a Cineraria, I expected to see nothing until we reached the greenhouses, when, stopping at a frame, he lifted the light, from which rushed a gush of scent, and there was *Devoniensis*, a small plant with a solitary bloom, but which measured $5\frac{1}{2}$ inches in diameter, and I am not quite sure whether it was not a quarter of an inch more.

And here I may say of my old friend, that he was a man of considerable native intellect and force of character, and would probably have made his mark in the world if he had had the opportunity. Like most thoughtful men, he was very reserved, though in that respect he improved considerably on acquaintance; but he had the organ of "secretiveness" developed to an extent, which even all his natural amiability failed to counteract, and, kindly as he always received me, he never offered me a cutting of a plant, or even a specimen bloom. Knowing his ways so well, I was somewhat surprised at his exhibiting the infant prodigy, and felt somewhat vain in the thought that I had succeeded in getting into his confidence. But I was undeceived ere long, for I found out afterwards that the seedling was then two years old, had been propagated largely during the preceding summer on all sorts of stocks, and as they were near flowering, and the secret could not be kept much longer, I had been let into it.

All my attempts to urge him to advertise the plant appearing to be useless, I thought I would try the effect of sending a customer to him, and accordingly, when next in Exeter, I spoke to the late Mr. Pince on the subject, who said carelessly that what were swans in raisers' hands proved often to be geese in his. He so far, however, yielded to my representations as to say that he was going to send some plants to the autumn Horticultural Show at Plymouth, and he would tell his foreman to inquire about the matter. Shortly after the show just mentioned I called on Mr. Forster, when he told me that he had sold the plant, and that Mr. Pince's foreman had gone off with a faggot of boughs to bud from at once; and then for the first time did I learn how long the stock had been in the raiser's possession. And here I may observe that there is a slight difference between "D. T. F.'s" account and mine, for my version is that Mr. Forster got only £20, and when (as I believe) he told me so, I remember exclaiming that I would have either given it away or else had £100. I may also add, on Mr. Forster's authority, that Mr. Pince did not send out the rose till he had a thousand one guinea order for it.

I shall now proceed to give you the early history of the plant, which is a somewhat curious one, and I will do so as nearly as I can in Mr. Forster's own words:—

"The mother plant was a Smith's Noisette, which I was chiefly induced to buy because it had a pod of seed on it nearly ripe. I did not expect much from it, as I had heard that French rose-growers

had discarded it as a bad breeder, but I thought I would give it a trial. When I sowed the seed I did not think it would germinate the first year, and thought very little about it. But one day I observed traces of a slug over the mould, and suspecting that some mischief was afloat, I got a magnifying glass, and found that the seeds had germinated a year sooner than I had anticipated, and that all of them had been eaten off but two. Those two I saved; no others came up, and that is the history of *Devoniensis*."

I said at the outset that Mr. Forster's mode of gardening was rather rough, and I may also add that he did not grow seedlings for the market (though many of them ultimately found their way there), but purely for the pleasure of rearing novelties, which he was always reluctant to part with. To these two causes I attribute the fact which will, I suspect, be new to most of your readers, that there are two kinds of *Devoniensis*. Both of the surviving plants turned out gems, and having a general family likeness, have always passed as one. This to my mind accounts for the different characters given of the plant, some calling it very delicate, others reasonably hardy of its kind, whilst occasionally I have heard the difference in the growth or bloom attributed to soil or aspect.

The two plants may be thus described, if my memory serves me rightly:—

No. 1, which I call *the Devoniensis*, it being the one that I first saw, is the larger flower of the two, and is of a pale uniform colour throughout, whilst the petals have a much thicker substance, and the growth of the plant is weaker than that of the other.

No. 2 is hardier, strong growing, almost if not quite a climber; has somewhat smaller but more compact flowers, the centres of which are of a darker tint than the outer petals, being almost of a salmon colour, and the petals are slighter in substance.

Between the two there is not much to choose, but I should recommend the former for the greenhouse and the latter for the open wall, though I have seen No. 1 answer very well on a briar stock under the deep sheltering eaves of a low wall. I think it would be worth some nurseryman's while to procure the two sorts and keep them distinct.

I may add that the foliage of No. 1 is larger in its individual leaves than No. 2, but has not so many on a leaf stalk. The test, however, between the two kinds is the presence or absence of the salmon-tinted centre. S. P.

NOTES OF THE WEEK.

— A VAST amount of damage has been caused to the early potato crop in Jersey by reason of frosts suddenly succeeding fine open weather. The plants had grown strong and healthy, and gave promise of an early and abundant crop. The damage is estimated at many thousands of pounds.

— THE directors of the Alexandra Palace Company have appointed Mr. Gilbert R. Redgrave to be their manager. The railway into the building is nearly completed, and the works are in a very forward state. The palace and park, comprising nearly two hundred acres of land, will, it is said, very shortly be thrown open to the public.

— A MUSHROOM, measuring four and a half inches across, was found last week on the open downs, at Wiltshire Corner, on the Earl of Craven's estate at Ashdown. It is an unusual occurrence to find such a fine mushroom so early in the season, adding as it does, another testimony to the forward state of vegetation previous to the recent severe cold.—*Newbury News.*

— WE have all heard of poisoned sugar plums, but the German newspapers are now discussing the various cases of poisoning by Vanilla ices, which have occurred of late years in Paris, Altona, Munich, Vienna, and other places. According to one doctor the poison is in the Vanilla, and it is produced by the use of cashew-nut oil to besmear the Vanilla pods.—*Graphic.*

— IT is proposed to form a new road from Victoria Park to the East London Museum on Bethnal Green. The road would run from the south side of the museum in a north-easterly direction to a junction with the Approach Road at its south-western end, and thus a broad thoroughfare would extend from the museum to the gates of the park.

— THE urgent representations made respecting the foul condition of the bathing lake in Victoria Park have at length influenced the Office of Works to take remedial measures. With this object an artesian well is now being sunk near the lake, which will not only be ample enough for the supply of water for bathing purposes, but will also suffice for the other requirements of the park. As the foul state of the lake was due to the extremely meagre supply of water, it is anticipated that the steps which are being taken, together with

an efficient dredging of the bed, will restore the lake to a satisfactory condition.

— DR. M'NAB, Professor of Botany and Geology at the Royal Agricultural College, Cirencester, son of Mr. James M'Nab, of the Royal Botanic Garden, Edinburgh, has received the appointment of Professor of Botany to the Royal College of Science and Art, Dublin.

— MR. ALFRED SMEE, F.R.S., has in the press a volume entitled "My Garden," in which he gives a description of his garden in Surrey, and details the results of his experience in the culture of flowers and fruit; of these nearly seven hundred species and genera are described. The volume also treats generally of the natural history, geology, and antiquities of the neighbourhood.

— M. ALPHAND has retired from the superintendence of the Paris improvements. Appointed to his post in 1854, after a very successful career of engineering at Bordeaux, M. Alphand remained in office amid all prefectural changes, and was the virtual author of the rapid, costly, and beautiful transformation which will stand to the credit of the Second Empire so long as Parisians love bright streets, showy gardens, and fresh air.

— WHEN the Queen of Denmark paid a visit to the Pope the other day, she asked him, as a souvenir of her visit, for a flower from his own gardens, the only thing one could possibly ask from so poor a man as Pius IX. But Pius IX., perhaps to throw discredit on the assertion of the Archbishop of Paris that his Holiness possesses not so much as a stone on which to lay his head, sent the Queen of Denmark a most beautiful bouquet in a rich Sevres vase.

— SINCE the great snow blockade occurred on the Union Pacific Railroad, there appears to have been an increased interest awakened in regard to planting trees near the railroad lines that cross the great prairies. High board fences will never answer as obstructions to snow; in fact, they usually cause high drifts, and do more harm than good. What is wanted is something that will partially check the wind and break its full force. A wide belt of compact-growing evergreen trees and shrubs is the one thing required.

— THE game preservers in Kent and Surrey have determined for the future to exclude from the coverts, &c. a class of men who migrate from London during spring into the country districts under the pretence of collecting wild flower roots, moss, &c., but who are virtually in search of eggs of pheasants and partridges for sale. A general order has been given to gamekeepers to drive off all trespassers found in the woods, whether actually gathering or pretending to gather wild flowers, as the only means of checking the traffic in game eggs.

— A CORRESPONDENT of the *Times* says:—In the Dublin Botanic Gardens on the 24th of February last I took down the names of seventy-five different sorts of flowers in bloom. I have since that time seen cottagers' gardens in different parts of this country smiling with the bloom of beautiful, yet common hardy plants. To day (March 28th) passing along the Thames Embankment, and by the garden in the Westminster Palace Yard, and the neighbouring enclosure, I notice not one blooming plant. It may be that those who have control will be able and willing to arrange to have a different appearance by next March, and thereby gladden the hearts of many, to whom flowers in spring are even more than at other times pleasing.

The Professorship of Botany at Strasburg.—The new Imperial régime in Alsace has secured to the University of Strasburg an efficient Professor of Botany in the person of Count Solms-Laubach, the first Prussian *Kavalier* who has condescended to prefer the pursuit of science, with the view of making a living by it, to a career in the army.

Sea Pine Plantations in France.—We learn that extensive plantations of the Sea Pine (*Pinus maritima*) have been made on the peaty plains and sandy downs of the coast of Bordeaux; this has been effected for the purpose of supplying railway sleepers, pit-props for mines, smaller wood for fencing and firing, as well as for the resin furnished by these trees, all articles of value and in considerable demand.

Erection of the Kibble Conservatory in the Glasgow Botanic Garden.—This conservatory, we understand, is to be moved from Coulpport, and put up in the east end of this garden, where for the future it is to be called "The Kibble Crystal Art Palace and Conservatory." At Coulpport Mr. Kibble has a staff of workmen engaged in taking down the conservatory. The contents of the large dome are now being displaced, after which the removal of the structure itself will be proceeded with. When this has been accomplished, it is intended to go on at the Botanic Gardens with the erection of the two refreshment-rooms attached to the conserva-

tory, in which the statuary and plants will at first be placed after their removal from Coulpport. Then the large dome will be raised, and afterwards the smaller dome. Both will have a height of about forty feet; the large Dome will be 150 feet in diameter, and 450 feet in circumference, and is intended to accommodate from 6,000 to 8,000 persons. At the Gardens, the foundations of the conservatory have for some time been in course of construction, and will probably be completed in a fortnight or so. The conservatory is to be erected near the main entrance gate, and it is expected that it will be opened in time for the forthcoming international show of fruit and flowers to be held in it early in September next.

Garden Plans.—The Scarborough Cliff Bridge Company offer premiums for designs for laying out their recently-acquired property beyond the Spa, in connection with the existing grounds of the company. A hundred pounds are offered for the best, and fifty pounds for the second best design, to be determined by the committee of the company—the first premium to merge in the successful competitor's commission if his design is carried out.

Monsieur Goutier.—This excellent French gardener died the other day, at the age of seventy-two. It was he who first pointed out the use of sulphur as a remedy for grape mildew, a fact in itself sufficient to make his name remembered with gratitude; but that is not all, he also was the means of improving many of the garden implements employed in his time, as well as an inventor of heating apparatus.—*Revue Horticole.*

Simpson's "Wortley" Celery Collars.—These are designed as substitutes for the various unhandy contrivances in the shape of hay-ropes, moss, tiles, rags, &c., that are frequently resorted to for protecting Celery before earthing up; they are made of stout brown paper that will last for months in the ground, and which may be afterwards incorporated with the soil as manure. They are furnished with a hook at one end, and a row of holes into which it clasps at the other. When put on and hooked they prevent the Celery from coming in contact with the soil; keep it clean, greatly lessen its liability to rot, protect it from slugs, and secure a better blanched and more compact head, containing a much greater eatable bulk. They are easily and expeditiously fixed, and greatly facilitate the earthing-up process, but they will also blanch Celery effectually without earthing up; so that the earlier batches that are used before severe frost sets in need not be soiled up at all, unless desired. These collars will yield to the plant as it increases in thickness, by the hook pulling through into the next hole; but it will be found, in practice, that the paper resists considerable distension, keeps the leaf stalks firmly in their places, and secures a clean, compact, and well blanched sample, that more than repays the small outlay in collars. As regards application, while one man gathers the leaves up firmly in his hands another slips the collar on, taking care to slip the hook into the hole that secures the proper degree of tightness. A collar should be put on each time the plants are soiled up, and about half an inch should be left above the soil for the next collar to lap over. It is recommended to use the narrow-sized collars for the first earthing, and not to hook them so tightly as those put on later in the season. The first size measures $3\frac{1}{2}$ by 9 inches, the second, $4\frac{1}{2}$ by 9 inches, and the third $5\frac{1}{2}$ by 9 inches; the low price at which they can be sold brings them within the reach of everybody.

LAW NOTE.

Hemsworth v. Mann.—This suit was instituted by a gentleman who was lessee of the right of shooting over a farm in Suffolk, containing about forty acres, of which the defendants were tenants. The tenants had entered into a covenant by which they undertook to preserve the game, and had raised a bank three feet high around a considerable portion of the farm. On the bank they had put up a wire fence, two feet high, on every part of which they had twisted a quantity of fern and cuttings of fir, so as to make it impossible for any running game to jump over it. In the bank they had dug burrows in which they had set up traps. The plaintiff alleged that the raising of this bank, &c., was a violation of the covenants into which the tenants had entered. Lord Romilly was of opinion that in respect of the raising of this bank, &c., the tenants had not violated their covenants. The court saw nothing whatever in the lease granted to the tenants to deprive them of the right of putting up a species of fence, which they said was put up to protect their crops, and not at all with the view of injuring the game. The court was of opinion that under these circumstances this was a suit which ought not to have been instituted, and the bill must be dismissed with costs.

FAMOUS TREES.

THE PAGODA FIG OF INDIA.

(FICUS RELIGIOSA.)



BEFORE—very long before modern botanists had classed the vegetable productions of India—separating them into genera and species, according to our present scientific methods—the ancient priests of the land had given native names and attached popular legends to many of the more remarkable trees of that teeming soil. The *Ficus religiosa*, whose vast and far-spreading limbs put forth subsidiary branches which descend to the earth, and form additional trunks for their support, often assumes the aspect of a vegetable temple, formed by a roof of dense foliage, supported by countless columns; producing a far extending and grateful shade, which, in a tropical climate, is so desirable, and so greedily sought

fittingly designated as that of the earthly birth of their pagod Vishnu, than one situated beneath the shades of the columned fig tree? It was, in fact, beneath the green roof of the *Ficus religiosa*, as carefully recorded in the sacred books, that the birth of Vishnu was made to take place; the tree itself being pronounced holy, and the breaking of a branch, or the plucking of a single leaf, declared a sacrilegious act of the most heinous character. Hence it was called Pippul, or the Pagoda tree. This sacred legend was well-known at a very early period, even to Western nations, and is mentioned by Herodotus; to whose industrious researches, more than four hundred years before the Christian era, we are indebted for so many interesting facts connected with the history, the arts, and religious institutions of the early races of man. It is also referred to by Pliny and Strabo.

The trunks of the Sacred Fig, when young, are round and smooth, but in age they exhibit perpendicular ridges and hollows alternately, presenting the appearance of the clustered columns of Gothic cathedrals; the ashy colour of the bark tending to favour the illusion, as resembling that of grey stone. The leaves are about six inches in length, and of a dark shining green; their stalks being long and slender, cause them to have a tremulous motion with the slightest breeze, like those of the Aspen—the rustling sound thus created adding to the impressive effect produced by the aspect of the columned shades of these tree-cathedrals.



The Pagoda Fig.

by the wayworn traveller. An imaginative priesthood, with the lively perceptions of an Eastern race, was not slow to perceive the singular and impressive aspect of this many-stemmed tree, in the deep shadow of which the camel driver rested with his beast during the burning heat of the midday sun. Beneath which, in fact, a whole caravan might repose, and enjoy the refreshing coolness afforded by the natural canopy formed by the foliage of its matted branches; for thousands of yards are covered by some of the larger specimens of this giant tree. What spot could they have more

The fruit is not larger than a cherry, and of a purple colour when ripe. But, though not unwholesome, it is not esteemed edible. Roxburgh, in his "*Flora Indica*," speaks in terms of wonder of the great size of the *Ficus religiosa*, stating in the same place that it is found all over India, even on the mountains; but that it is most common near houses, where it is systematically planted for the sake of the deep and grateful shade which it yields.

The Pippul, or Sacred Fig, may be easily distinguished from the Banyan, which it resembles in general aspect, by the

manner in which the new trunks are formed. In the Banyan, slender roots are shot down from the horizontal branches, which do not become branch-like or tree-like till after having struck into the earth; while the Pippul sends down true branches earthward, the rounded ends of which are furnished with a large spongiol, which becomes the nucleus of a new set of roots as soon as, by the continued downward growth of the descending branch, it reaches the ground. Blume describes a gigantic specimen of *Ficus religiosa* in Java, near a place called Bata Tulies, from the branches of which he gathered thirty-four species of parasites and epiphytes—stating that he might easily have collected full as many more.

Some of the trees belonging to the species *Ficus*, especially the Pippul and the Banyan, furnish (with the sole exception of the Palms) the most characteristic features of tropical scenery. Their complex appearance—with their far-stretching horizontal branches supported by additional trunks in every stage of growth, from the slender proportions of a Byzantine column to the massive proportions of the imposing Doric, at once arrests the attention of the spectator; while embryo columns, still pendent from the parent branch, furnished with their enormous spongiol, ready to fix themselves in the solid earth and secure a permanent foundation, are very remarkable, and never fail to produce a striking impression upon travellers who witness their aspect for the first time.

The milky juice of many of the fig family has caused the name of Cowtree to be given to some species, especially the *Ficus elastica*, the coagulated "milk" of which forms the india rubber of commerce.

The *Ficus religiosa* has been cited as an emblem of the vastness and unchanging character of India. Its extreme longevity is extended *ad infinitum* by the continuously created new stems as sources of fresh and additional vigour, rendering its destruction by age seemingly impossible. The duration of the Oak, and of other "long-lived" forest trees is, in fact, but a span compared with the perennial life of the Sacred Fig; several well-known specimens of which are calculated to have endured for at least three thousand years. It may, indeed, be considered to rank among the foremost marvels of vegetable creation.

H. N. H.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Coning of the Umbrella Pine.—It may interest your readers to know that the *Sciadopitys verticillata* (Umbrella Pine) has cones upon it in the Knap Hill Nursery, Woking. They are produced singly at the points of the shoots. Have any of your correspondents heard of its coning in other parts of the country?—G. T.

Absence of Mistletoe in Devonshire.—Would Mr. Gordon have the kindness to state whether he can assign any reason for the remarkable absence of *Viscum album* from the orchards of Devonshire? From my own personal observation, as well as statements of others, it seems to be almost unknown, whereas the parasite can be seen in countless numbers upon the apple trees of Worcestershire and Herefordshire. I have before drawn the attention of naturalists to this subject, but they could throw no light upon the matter. I suppose the geological conditions of these three counties are pretty similar as far as regards the red or Devonian sandstone.—C.

Remarkable Yew Tree.—The following are the dimensions of a grand old Yew tree growing on the Marquess of Bath's estate in Wiltshire:—Height, 50 feet; circumference of branches, 164 feet; spread of branches from north to south, 53 feet; and from east to west, 60 feet; girth of stem at one foot from the ground, 32 feet; smallest girth of stem, 24 feet 6 inches; length of stem, 7 feet. Under ordinary circumstances the age of Yew trees may be approximately guessed at, by allowing a century for every foot in diameter of stem, thus this famous old tree may safely be calculated at from 1,100 to 1,200 years old. It is a growing healthy tree, rather cone-shaped, and is very dense in foliage. I should be glad to learn through your columns whether any of your correspondents know of a larger Yew tree than the one I have just recorded.—GEORGE BERRY, *Longleat*.

Planting in the Yorkshire Moorlands.—Will you kindly furnish a list of the better sorts of forest trees for planting in a park, with a view to the improvement of the landscape? I want really hardy trees, and not those so called, as half the kinds named hardy in "London" fail here in the wilds of Yorkshire, on the limestone soil. Of course, I know the commoner sorts, such as purple Beech, variegated Sycamore, *Acer Negundo* variegatum, red Horse Chestnut, but what I want are the more rare sorts which have been proved hardy.—CRAVEN.—[We presume you are located in close proximity to some of the high Yorkshire moorlands; and, judging from your inquiry, it would appear that your endeavours towards landscape effect have hitherto been somewhat unsuccessful. Perhaps, however, your want of success should not in all cases

be attributed to the tenderness of the plants selected; there are various other causes which possibly may have had a share in the matter. In offering the appended selection—which we do from a pretty extensive Yorkshire experience—we would venture to offer a word of advice, namely, prepare the ground well—do not starve your plantations. Trees like a liberal diet as well as other plants. Plant small material, rather than aim at effect at once—have faith in nature's power to adapt the growth of a young plant to its new locality, mind we do not say acclimatise; and when you do plant, select nice damp autumnal days for the operation; see that your men know how to plant, not to "stick them in" at so much a thousand. Care and dispatch in this process are not inimical to one another; finally, remember that weeds grow during summer, and that they may, under the name of protecting, be really smothering the young growth; also that good stirrings to the surface of the soil three or four times during summer do good. The trees we would recommend you to plant are:—

<i>Acer Pseudo-Platanus</i>	<i>C. tanacetifolia</i>	<i>P. aucuparia</i>
<i>A. P.-P. variegatum</i>	<i>C. coccinea</i>	<i>P. pinnatifida</i>
<i>A. platanoides</i>	<i>C. Aronia</i>	<i>P. salicifolia</i>
<i>A. Wagneri</i>	<i>C. glandulosa</i>	<i>Populus alba</i>
<i>A. striatum</i>	<i>C. double scarlet</i>	<i>P. argentea</i>
<i>A. rubrum</i>	<i>C. single scarlet</i>	<i>P. canadensis</i>
<i>Fraxinus lentiscifolia</i>	<i>C. Paul's crimson</i>	<i>Aucelanchier Botryapium</i>
<i>F. aucubafolia</i>	<i>Ulmus monumentalis</i>	<i>Cornus mascula</i>
<i>Fagus, fernleaved</i>	<i>U. siberian</i>	<i>C. sanguinea</i>
<i>Betula alba</i>	<i>Cytisus Laburnum</i>	<i>Daphne Laureola</i>
<i>B. nigra</i>	<i>C. alpinus</i>	<i>Prunus Padus</i>
<i>B. lenta</i>	<i>Tilia alba</i>	<i>Enonymus europæus</i>
<i>B. laciniata</i>	<i>T. sanguinea</i>	<i>Cedrus atlantica</i>
<i>Cherry, double blossomed</i>	<i>T. pyramidalis</i>	<i>Pinus austriaca</i>
<i>C. Mahaleb variegata</i>	<i>Quercus coccinea</i>	<i>P. Cembra</i>
<i>Æsculus (Pavia) flava</i>	<i>Q. Cerris</i>	<i>P. pumila</i>
<i>Æ. carnea</i>	<i>Q. Lucombeana</i>	<i>Picea Nordmanniana</i>
<i>Æ. macrostachya</i>	<i>Q. Ilex</i>	<i>Thuja gigantea</i>
<i>Cratægus Crus-galli</i>	<i>Q. laurifolia</i>	<i>Thujopsis borealis</i>
<i>C. pyracanthæfolia</i>	<i>Pyrus (Sorbus) aria</i>	

N.1

THE KITCHEN GARDEN.

THE CUCUMBER—ITS CULTIVATION AND USES.

(Continued from page 425.)

PRINCIPLES OF CULTIVATION.

THE principles concerned in the cultivation of the *Cucumber* are such as are involved in the cultivation of all other plants, namely, light, heat, air, and moisture. Light is certainly the most essential element of success, for without it all other aids to cultivation are of no avail, and the plant soon perishes. "It is," says Lindley, "to the action of leaves, to the decomposition of the carbonic acid and of their water; to the separation of the aqueous particles of the sap from the solid parts that were dissolved in it; to the deposition thus effected of various earthy and other substances, either introduced into plants as silex or metallic salts, or formed there as the vegetable alkaloids; to the extinction of nitrogen; and probably to other causes as yet unknown;—that the formation of the peculiar secretions of plants of whatever kind is owing. And this is brought about principally, if not exclusively, by the agency of light—their green colour becomes intense in proportion to their exposure to light within certain limits, and feeble in proportion to their removal from it, till, in total and continued darkness, they are entirely destitute of green secretion, and become blanched and etiolated." This explains the difference in the growth in the subject of these remarks, especially between midsummer and midwinter. At the former season, in our gloomy atmosphere, the only danger is that of the light at times being in excess of the resistive power of the tender foliage, and hence it may get scorched; but in midwinter the light at times is insufficient to promote the necessary deposition of substance, and, consequently, the growth is weak and etiolated. It may be regarded as an axiom in horticulture that the health of other parts of a plant is in proportion to the health of the leaves; and hence without healthy leaves we cannot have healthy fruit. There is no exception to this rule, and the neglect of it is the constant and fruitful parent of failure. From this will be perceived the immense importance of keeping the glass of a cucumber-house as clean as possible during the winter season, and to insure perfect fruitfulness through the winter the plants must be thoroughly established before the dull weather of November sets in, every leaf upon them at that season being exposed to as much light as possible. Much, however, as the *Cucumber* requires light in the winter season, to enable it to bring its growth to maturity, it is a question whether in the early spring and summer months an excess of it is not the

cause of one of the diseases from which the plants suffer, viz., "chlorosis," or a shrivelling up of the leaves without any apparent cause. Be that as it may, experiment has demonstrated that if we darken the house by shading the glass with a fine net, or coating it with a thin wash of size with a little whiting in it, the virulence of the disease is abated; but expose the leaves to the power of the sun for only one hour and it is more than probable a large portion of them will be destroyed. We hope we have said sufficient to show the indispensability of light to the successful growth of the Cucumber in the winter season, and the wisdom of its modification in the summer.

HEAT.

As the Cucumber is a native of a tropical climate it necessarily requires the protection of glass, except in the very height of the summer. The earth heat, to secure the best results, should not be less than from 75° to 85°, but beyond the latter temperature it is not wise to go, as a greater temperature only tends to etiolation—a lengthening of the parts of the plant without adding much to the substance. The day atmospheric temperature without sun should not exceed the terrestrial heat, but when the sun is shining it may rise to even 90° or 100° with the best results. Temperature, however, must be to some extent modified by the state of the atmosphere. When the weather is dull the temperature must be lowered, but when it is bright and clear take advantage of it to promote growth as much as possible. Heat, without light, is comparatively useless; but heat, with light, is the condition which insures perfect success. The reason why heat is necessary to plants in a growing state is, that warmth acts as a stimulus to the vital forces, and its operation is in proportion, within certain limits, to its amount. Warmth, remarks a German writer, is not really a stimulus to vegetation, but it is extremely necessary for the solution of various substances with which the water comes in contact. It also sets free certain gases which the leaves take up, and through these sources of nourishment promotes the growth of plants. Such being the fact it is obvious that the cultivator's first care should be to secure the means of insuring a proper temperature to the soil in which his plants grow, and the atmospheric temperature should be in a proportionate ratio. A.

(To be continued.)

SEAKALE IN MARKET GARDENS.

SEAKALE is now (March 16) obtained abundantly from the open ground. In market gardens the seed is sown thickly on four-foot beds in March, and throughout the rest of the year the young plants are allowed to remain in the seed bed without thinning until the following spring.

Though their thickness in the seed beds renders them weak, yet they are preferred, as they are not so liable to run to seed throughout the summer. These seedlings are now being lifted, their roots shortened a little, and planted with a dibber in well-prepared ground, one foot apart each way. Here they are allowed to remain until winter, and every encouragement is given to them, by keeping the ground free from weeds, and frequently stirring the surface.

In winter, or as soon as forcing begins, every second two lines are taken up for that purpose, and the two remaining ones are earthed up from the spaces now vacant, placing about six or eight inches of soil over the surface, much in the same manner as Asparagus beds are done. As soon as the shoots appear above this ridge, the soil is forked aside, and the shoots are cut clean off, taking with them the top of the crown. After cutting, the crowns are not covered again that season, but a great many young shoots soon spring up all round the crown; these are all removed, except two or three at the most, which are allowed to remain. Under this treatment they afford good produce for several years, and the greatest care should be taken to guard against ruining the strength of the crowns, by leaving too many young shoots. The second and third years of earthing up afford the strongest and best produce. W. F.

I SMOKED my lettuce-plants at morn,

At fervid noon, and dowy eve;

Not as Tobacco—that I'd scorn!

But to make creeping creatures leave.

Taking my leaves, and not their own,

Two fat old grubs appear'd to say,

Whilst prying on my lettuce prone.

Grace over meat—thus, "Lettuce prey!"

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Tan.—To what uses can tan be put in a garden?—J. K.—[Fresh tan is a good material for supplying bottom heat to plants in pots plunged in it. Spent tan is almost worthless in a garden. We know of no good use to which it can be put, except, perhaps, to mix in heavy clay lands.]

Mushrooms in Pots.—I am acquainted with a gardener who grew not long ago some beautiful mushrooms in pots, by accident as it were. In the spring of last year, after removing his old beds, he selected some comparatively spent spawn, and placed it in large pots, which held a bushel or so, setting them, or rather storing them, away in a dry shed. During the summer-time, having occasion to look after them, to his surprise he found the pots plentifully supplied with beautiful mushrooms. —JABEZ JAY CHAYER.

Use of Gas Lime as a Manure.—Is lime used in purifying gas of value as a manure for an old garden, or an old lawn? If so, how should it be applied?—D. F.—[The lime used in purifying gas is used as a manure. It is considered good for cold, heavy land, and has the effect of killing wireworm and obnoxious insects. Four tons to the acre is the quantity usually applied. In some cases it is dug in as soon as it is put on the land; in others, left during the winter. It is so far powerful that, if allowed to remain in heaps, nothing will grow where they have been for some time. It cannot be used with safety as a surface dressing; it would certainly be unadvisable to employ it on a lawn. It might be used in old garden ground; but it must not be put near the roots of fruit trees in its fresh state.]

THE FRUIT GARDEN.

PRUNING NEWLY-PLANTED TREES.

In the case of most fruit trees, excepting maiden trees—i. e., young untrained ones—a prior question might often be asked, viz., is it necessary to prune the top at all? Certainly it does not seem a very philosophical practice to plant a nice tree with a view to covering a given space with fruit, and then immediately proceed, as is often done, to cut it all to pieces. Such treatment might be useful for forest trees, but is certainly worse than useless for fruit trees. It can only tend to the production of gross wood, and is certainly antagonistic to fertility. Still maiden trees must be pruned or cut back, and in doing so there are three things to be borne in mind. The first is that the tree should be pruned to grow; the next that it should be made to grow in a right direction; and the last that it should grow to a useful purpose: in other words, the tree must make wood, acquire shape, and become fruitful. Another preliminary is, where and what shall we prune—the top or the root? Our answer is, both—the former chiefly as a means of forming the tree into shape, the latter mainly as a certain mode of throwing it into fruit. Transplantation is the most radical mode of root pruning, and consequently the most potent means of inducing fertility, provided always that the top is not too much reduced at the same time. Some planters contend for a reciprocity of mutilation of root and branch. Were wood only our object, this would be a safe rule; or rather the head of the tree might be reduced more than the roots. But as the production of wood in fruit culture is only a means to the chief end—the insuring of fruit—so the reduction of head should be less than the deprivation of roots. Only practical experience can determine how much top the partially mutilated roots of any given tree can healthily sustain. Very much depends not only on the number, but also on the condition of the roots. If the trees are moved at home, and planted immediately, little if any reduction of top will be needed; whereas if the trees have travelled far, or grown very closely together in a nursery, or been carelessly taken up, a greater reduction of head will be desirable. Much will also depend upon the future care of the roots. It is of the highest import that these should be protected from frost, drought, and rupture. With such care they will support double or treble the area of top which they could nourish under other conditions. And the larger the top the newly moved roots can support, the sooner a fertile habit will be induced, and the more certainly will this fertility be perpetuated.

Another consideration will, however, influence the extent of this cutting in or pruning of young trees—they must be made to grow into the desired form. Now the first towards a perfect shape is the furnishing of the base of the tree with wood. It is a common saying with fruit-tree trainers: Take care of the bottom and the top will take care of itself. This is perfectly true, and originates in the fact that nature is bent

upon raising the tree straight up into the air rather than spreading it horizontally abroad over the earth. But on garden walls and such surfaces, whether tall or dwarf, the first branch is wanted to run parallel with the surface of the earth at a distance of only six inches or a foot from it. This fact, then, must control the nature and extent of the cutting back. The entire shoot of the young tree is furnished with living buds; but if allowed to remain throughout its whole length, only the highest buds on the branch will break or grow into other branches. Left to itself, the buds on the stem lower down would continue dormant for ever. They would not, could not, break into shoots, and therefore the tree would have no base. To make the bottom buds break the top must be removed. This operation is termed cutting-in the young tree. The severity or otherwise of the process should be controlled by the height of the space to be covered, the character of the trees, and the distance they are planted from each other.

The character of the tree is the most important consideration, as it determines both height and distance, and should be settled in the mind's eye before a knife is allowed to touch the tree. Is it to be a rider or a dwarf, a bush, a horizontal, a fan, a pyramid, or a common orchard tree? In some cases we require a long, straight, naked stem; in others the shoots to break forth from quite near the surface of the earth. Frequently, in case of wall trees, the first thing we have to do is to lay a young shoot along the lower part of a wall; and to make it break regularly is an important consideration. This we may often manage, by bending the shoot or shoots downwards. Thus, for instance, if the young shoot is laid along the wall in the position it is eventually to occupy, it will probably fail to break in some parts of its length, and grow freely in others. This is objectionable. Suppose the buds near the base of the shoots will not break, we may force them to do so by bending down the point of the shoot, so that the eyes that refused to bud forth are left more elevated than the parts which were growing freely. This forces the dormant eyes to open, and then, after a while, we may raise the shoot to its allotted position. Paradoxical as it may appear, the smaller the tree the less severely it should be cut back; consequently, fan, vase, or bush-shaped trees, with many shoots, must be more severely cut back than cordons or dwarf espaliers, with only a few.

What are termed riders are introduced to fill up vacancies on the higher parts of walls or fences, and hardly require a base. Their mission is temporary, and their upper portions alone are valuable. This fact, of course, will determine the character of their pruning. They will often need little or none. In vase or bush formed trees, again, the length of the stem will influence the extent of the cutting back; some may prefer a stem a foot, others two or three feet, high. It is also important, in forming such trees, to secure, if possible, enough shoots at once to form their entire framework; from four to eight shoots will generally suffice. It is well to twist or bend the leading shoots, to obtain these branches of nearly equal strength. Their leading shoots should also be bent outwards and downwards, to impart the proper form, develop the buds at their base, and to prevent overcrowding. This bending will reduce to a minimum the amount of cutting back the second season. The pruning of pyramids, again, differs from any of these. The form ever modifies the nature and extent of the cutting. A well-developed straight central stem, with a regular succession of nicely-balanced fruitful side branches, is the *beau idéal* of a perfect pyramid. Width of base must be secured at starting; no after pruning can give it if not secured at first. This, with a healthy leader cut fearlessly in to furnish sufficient side branches, is all that is required to obtain good pyramids. When the trees are in vigorous growth, this leader should be stopped at least twice during the summer. Such stoppings will each produce crops of side branches; and then at the winter pruning, five or six inches or a foot of the leader may be left to produce another tier or two in the spring, and so on in continuity until the desired height and size are reached.

The most severe pruning should be reserved for the common fruit trees for orchards. The larger a tree is ultimately to become, the harder it must be cut back at starting. Such practice concentrates vital force, collects the entire energy of

the plant into a focus of growing power; and for such trees strong vigorous growth is the first point. This lays a broad, healthy, solid foundation for quantity and quality of fruit in the future; it gives the trees a firm grip of the earth, and imparts stamina and constitution to the entire plant. This growth may readily be moulded into shape, and diverted into a fruitful channel—not, however, by the direct application of the knife after it is perfected. Summer toppings, mechanical twistings or bendings, and root pruning, are the grand panaceas for barrenness, and the direct promoters of fertility. Growth and the form of it are amenable to the laws of the knife and the rules of training; but fruitfulness cannot be thus directly summoned forth at our bidding. To insure fruit, we must go deeper, and aim at the roots; a wise application of the knife among these never fails to turn the entire energies of the tree into a fruitful channel. F.

A GERMAN SCHOOL OF GARDENING.

BY T. SCHWANN.

"IN science the German gardener is decidedly in advance of any other in Europe; and in the routine of practice he is surpassed by none in steadiness, or, where he has leisure and is properly encouraged, in order and neatness." So wrote Loudon, some twenty years ago. Foremost among Government schools for gardeners and fruit-growers on the Continent may be named the Pomological School of Proskau, in Prussian Silesia, represented by the sketch on next page. It is connected with the well-known Agricultural College of the same place, and affords accommodation for a staff of teachers and thirty-six resident students. As it is the object of the school to provide suitable education for all classes of cultivators, for convenience of study it has been divided into the three following departments:—1. School for gardeners (market gardeners, nurserymen, fruit-growers, &c.); 2. Superior school of horticulture and pomology; 3. Section for teachers, so called "superintendents of trees," and their assistants.

To enter the first division, the applicant must be over seventeen years of age, and bring with him proofs of having attended for at least half a year some school. If not provided with the needful certificate, he must be tested by an examination as to the amount of elementary and general knowledge he possesses, and in case of non-proficiency, takes his place for six or twelve months in a preparatory class. In the latter, the instruction includes, in addition to the "three R's," and a little Latin and French, demonstrations in vegetable, vine, and fruit-tree culture, practice in distinguishing different varieties of fruit, &c. It is, of course, an advantage when the pupil has had some previous experience in practical gardening, but this is not made a *sine quâ non* of admission to the institution.

The programme of the School for Gardeners embraces, (1) as preliminary and fundamental branches of study:—Botany, chemistry, geology, physics, mineralogy, zoology, arithmetic, and mathematics; (2) as chief or special branches:—Culture of plants with reference more especially to the raising of garden and orchard produce; knowledge and nomenclature of fruits; choice of the most useful varieties of fruit, their requirements as to climate, situation, and soil; raising, planting, pruning, training, and general management of fruit trees on the roadside, and in the nursery, orchard, garden, orchard house, hedgerow, and open field (under grass or tillage); knowledge of the diseases and noxious insects affecting fruit trees and vegetables, and of remedies against the attacks of the same; forcing of fruit; gathering, storing, drying, preserving, packing, and transport of different kinds; culture of the grape vine and smaller garden fruits; profits derived from fruit culture; manufacture of cider, perry, and various wines; vegetable culture, including forcing; floriculture; growth of industrial crops; arboriculture; landscape gardening; laying out of vegetable gardens and nurseries for fruit trees; plan-drawing, surveying, and levelling; (3) as auxiliary branches:—Book-keeping, apiculture, and the rearing of silk-worms, the latter accompanied by demonstrations.

Students of the second division, or superior school of horticulture, do not attend lectures on general fundamental subjects at the institution, but merely those on the special branches of the curriculum. The general preliminary subjects may be studied by those young men who have not passed through the first section of the school at the adjoining agricultural college.

The complete course extends over four years, two of which are spent in the lower, and two in the upper, division, and, previous to leaving the establishment, each student is admitted to a final examination, and receives a certificate testifying to the degree of proficiency he has attained.

The instruction given in the third section is chiefly of a practical

character, and relates more particularly to operations connected with the raising and improvement of fruit trees, and the management of coppice woods, plantations, orchards, &c.

It is divided into two courses—a spring and summer one for the superintendents of trees above alluded to and their assistants; and an autumn one, for schoolmasters and pupils of training establishments for teachers.

In explanation of the fact that these classes of students—the superintendents and teachers—attend the institution in sufficient numbers to induce the authorities to form of them a division apart, it should here be mentioned that many parishes in Germany possess woods and orchards of considerable extent, and requiring for their management competent fruit-growers and arboriculturists, give the preference to young men who have distinguished themselves at well-known pomological schools. The salary of the superintendents of trees ("Bäumwärter," as those appointed are called) amounts usually to about £30 per annum, and they are expected, when remunerated for their services at a certain fixed rate, to undertake the care, not only of the parish nurseries, plantations, &c., but also of those belonging to private individuals resident in the parish. It often happens that several parishes agree to appoint one superintendent among them, he entering into a contract to find his own tools and assistants.

As regards the charge for instruction, for pupils of the preparatory class it is £3. 5s. per session, and for students of the School of Gardeners, £4. 10s. for the first and second, and £3 for the third and fourth sessions. Resident students being expected to take part in the operations of the garden-farm, pay nothing for their board, and the fee for lodging, fire, gas, washing, and all other etceteras together, only amounts to £2. 6s. per annum. The terms of admission to the second section are £6 for the first, £4 for the second, and £3 for the third and fourth semesters; whilst, on the other hand, the courses of the third division, those instituted for schoolmasters and superintendents of trees, are entirely gratuitous. In the case of "hospitants," practical working gardeners, amateurs, garden proprietors, and others desirous of attending only one particular course, the fee varies with the position of the individual, and is fixed by the director.

The farm attached to the institution covers about sixty acres, and affords the student, in its nurseries, orchards, plantations, fruit and kitchen gardens, shrubberies, stoves, orchard and greenhouses, &c., ample opportunity of familiarizing himself practically with the operations and modes of culture described in the lecture-room. Although not conducted with a view to profit, the produce raised on it is disposed of at the market price.

The facility with which young men on leaving horticultural and



A German School of Gardening.

The attendance at Proskau of students intending to become schoolmasters is accounted for, on the other hand, by the necessity the latter are under—if they desire an appointment in any Government parochial school—of being able to give elementary instruction in field, garden, and orchard culture.

The rural preparatory schools, as is the case with some of the *écoles normales* and *primaires* in France and Switzerland, have an orchard ground or garden attached to them, and the district school inspector must report periodically whether the same are properly utilized for educational purposes.

Of the two buildings which the above sketch represents as connected by a miniature colonnade, and surrounded by tastefully laid out grounds, that to the right is occupied by the resident teachers and pupils; the other contains the private apartments of the director, and the lecture hall, library, cabinet of natural history, and collections of different kinds belonging to the institution. On the director devolves not only the duty of controlling and superintending every department of the school, but also that of assisting in the work of tuition. Instruction is also imparted by professors of the Agricultural College, as well as, of course, by the resident staff of teachers, who have under them a number of skilful practical gardeners.

pomological schools, such as those of Proskau, Carlsruhe, Reutlingen, Potsdam, and Klosterneuburg, obtain remunerative appointments in all parts of the Continent, testifies to the high estimation in which the above institutions are held, not merely as places of scientific and theoretical study, but also as practical training establishments.

[When shall we have Government institutions of this kind in England?]

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Fruit Tree Suckers.—Can I bud or graft on these choice sorts of fruit?—W.—Suckers are sometimes used as stocks for budding or grafting upon; but they are inferior to seedlings for that purpose, as they are always more liable to reproduce suckers, and they have not the thrifty vigorous habit and the same power of forming as good roots as seedlings.

Wash for Old Fruit Walls.—The walls in our old garden have become so full of nail-holes from long use that they harbour insects, I am afraid, to a great extent. How can I improve them without much expense?—SOUTH HAVES.—Wash them with a mixture of Portland cement, grey lime, and copperas, which will not only fill up the nail-holes to some extent, but will also help to eradicate the insects. The mixture can be made of a lighter or darker tint, according to taste, by adding to it a little more or less yellow ochre.

Seedling Fruits.—Why do not our different varieties of fruit reproduce the same from seed? Why, if we plant the stone of a greengage plum, will it not always produce a greengage plum?—**FRUCTUS.**—[Because of the principle of variation that exists in nearly all living things. But we cannot tell why the product of the stones of the same plum tree should differ from each other, any more than we can tell why puppies of the same litter differ from each other. We can see, however, that the principle of variation is often stronger than that of inheritance of common features.]

Cranberries.—I want to form a bed of these. Which sort is best, the European or American? and in what soil do they best succeed?—**HEDZOR.**—[The European Cranberry is in every way inferior to that which is so common in the swamps of New England and on the borders of American inland lakes; what is called there the "bell-shaped," which is a variety of *Oxycoccus macrocarpus*, is the largest. For tarts and preserves this kind is much esteemed. Although naturally it grows mostly in mossy, wet land, yet it may be easily grown in beds of peat made in any rather moist situations, and the berries will be increased in size if a little thoroughly rotted manure is added, and well incorporated with the soil. A small bed will supply as much fruit as an ordinary family is likely to want. In the kitchen garden at Heckfield is a bed near a cistern, from which it can be flooded. It consists of peat, and produces fruit in abundance. It is thought the plants bear all the better for being well watered when the fruit is setting.]

THE FLOWER GARDEN.

FLOWER GARDENING OF THE PRESENT DAY.

BY T. BAINES.

THE arrangement of flower gardens upon what is popularly known as the "bedding system" has of late years met with almost general adoption. Every quarter of the globe has been placed under contribution to furnish something to work out the present elaborate arrangement. It would be difficult to point to a single plant, grave or gay, old or new, that showed any disposition to submit to the necessary manipulation that has not been pressed into the service. It is true that from the first some, attached to old-fashioned flowers, unwillingly banished them to make way for the modern system; and even when some of their cherished friends were retained amongst the host of novelties that soon presented themselves, they could not enjoy their company, or look upon them with so much satisfaction as when seen under more natural conditions. Lately, too, we have heard numbers admit that they have been too much influenced by that most despotic of tyrants, Fashion. Let us ask the question: Is the present system sound in practice, or in accordance with refined taste? Does it agree with the teachings of those admitted authorities, the Reptons, the Browns, the Loudons, and others, who made British gardening a life study? or is it merely the offspring of that love of change which, alike regardless of the ruling principles of true art and correct taste, has impelled us to adopt a system diametrically opposed to both? The subject is important. Let us view it dispassionately. From the broad landscape of a thousand acres down to the smallest *parterre* the arrangement should be in accordance with the teachings of that unerring guide, Nature. As applied to the general principles of culture, this is an axiom that meets with general assent; the same rule is applicable to the arrangement of every plant, individually and correlatively, with the whole of the different subjects that go to make up the picture which, let it be large or small, ought to be governed by the same law. Is such the principle upon which the flower gardening of the present day is carried out? Nay, rather are not all the teachings of nature often in the arrangement of colour, and more generally in the disposition of form, ignored to an extent that would imply that all our preconceived notions of gardening were grounded on a wrong basis? Nature abhors straight lines, geometrical formality, and those unnatural combinations of colour which are the most prominent features in the bedding system; and the last phase of carpet-like planting is vastly more objectionable than anything that was attempted on the first introduction of the system. We don't tattoo our faces, simply, I suppose, because it is not fashionable; but we tattoo our gardens with a vengeance. And what advantage does the arrangement of the present day hold over that which existed before? The advocates of the system tell us that the picture is so far perfect, that when once the plants employed have donned their summer garb there is no flaw—nothing on the wane, nothing approaching the sere and yellow leaf, such as is always to be seen amongst herbaceous plants. This I grant; and it is the one solitary short-lived advantage, which leaves us for eight months out of twelve at our wit's ends to make all sorts of shifts to cover bare beds with little nursery-like shrubs, or procure quantities of costly bulbs to be arranged in the same formal fashion as the summer occupants. We have so far viewed the system simply as an objectionable innovation, that has supplanted a better, because a more natural, a more refined, arrangement of the flower garden, that, with a great deal less labour,

affords a seasonable charm of something whose beauties we at present realize, while others continually progressing will, in their season, play their part to encircle the year, and so give us a continuous sufficiency in place of the present short-lived satiety.

There is yet another and a most important consideration in relation to the subject—namely, the great increase of labour which the bedding system involves; and in far the greater number of places there is no provision made to meet this additional labour; consequently, it is no uncommon occurrence to see places where all the more useful departments are left in comparative neglect. I recollect once going to see one of the largest bedding places in the kingdom—a place that could count its acres of flower garden and ribbon borders, all one gaudy mass of colour. In front of the mansion, one of the finest landscapes in the country was completely spoiled by the blaze of colour in the foreground, heightened by the glare of coloured gravel paths. In the kitchen garden the walks were bounded by the usual borders, where once had stood numbers of fruitful dwarf apple trees that I had frequently seen in years gone by laden with fruit. These had been moved, to make room for the ribbons, scrupulously exact in every line. The gardener asked me what I thought of it. I said, "Which do you mean—the cultivated crop or the natural one? the ribbons, or the quarters inside?" "Oh, the weeds you allude to," said he; "we have no time to remove them." I made no reply. I had frequently seen the place before the bedding system was introduced, when every department was well carried out. Now, the rows of vegetables could not be seen for weeds, and the gooseberry and currant bushes were grown through and through with thistles. There were fruit and plant houses by the dozen, the latter almost empty, their occupants, the bedding plants, being outside. The grapes, pines, peaches, &c., gave unmistakable evidence that their turn for attention did not come on until after the bedding plants were seen to—in fact, the whole of the place was sacrificed to the bedding plants; and there are very great numbers of places where the same thing exists, only in a somewhat less degree. Yet, amongst the different plants that are used in this style of gardening there are many that are individually beautiful, and it would be a mistake to discontinue their use in moderate quantities, artistically arranged for summer decoration. It is the absence of such arrangement, coupled with a general crowding and an undue breadth of colour, that gives no repose. What do we generally find? A piece of ground, on which are arranged a number of beds edged with box or stone, real or imitation, intersected by narrow gravel paths; or we find a similar arrangement upon grass, the collective mass of colour occupying the whole space, except the strips of turf betwixt the beds; instead of the beds and their occupants being confined to something like one fourth, or at most, a third of the whole space, leaving a broad margin of grass so necessary to repose. Far the greater number of modern flower gardens are similar to what a landscape painting would be without sky. In place of straight lines of colour, panels, or chains, in the different beds, an irregular admixture in each bed of several plants, different in form and colour, are infinitely more effective to the well-trained eye.

I have frequently noticed that at the end of the planting season, when the odds and ends of the whole family of bedding plants employed are planted on a piece of ground, as they sometimes are, without any formal arrangement—something like what the late Donald Beaton used to call his "shot silk bed"—that they looked better than those in the flower garden. If my memory serves me right, Mr. Beaton's bed was an admixture of Mangles' variegated Geranium, and Purple King Verbena, planted in irregular patches, so as to cover the allotted space, and allowed to run one into the other, without any attempt at training. So far as my own taste goes, I look upon this as the most pleasing combination in the shape of blooming bedding plants.

Oh, yes! I think I hear some one saying; but the difficulty of avoiding the bare beds during winter and spring can be got over without resorting to shrubs or bulbs, by employing some of the numerous hardy herbaceous spring-blooming plants. I answer simply, that when hardy spring-flowering plants are used after the same fashion as the summer bedders, the arrangement is just as objectionable as is the summer bedding system. We sometimes hear gardeners say that the fault of the present system rests with the ladies, who are so much enamoured with it that nothing else will please. To some extent, this may possibly be true; but I am certain of one thing, that twenty years ago there used to be a general striving amongst gardeners as to who should be able to say that he bedded out more plants than his neighbours. If A had fifty thousand, B was not content until he had a hundred thousand; C would out-do both, by using double that number. There is one certainty in the matter, that if gardeners have, in a great measure, brought the system upon themselves, they have had ample atonement to make for so doing. The extra labour it has thrown upon them they alone know.

of losing old favourites, which will be smothered out, or space will be overrun which may be more profitably occupied. These remarks apply especially to small places, where all waste ground should be beautified by the establishment of hardy free-flowering plants. However attractive many flowers are when occurring at intervals in woodland glades and walks, there are comparatively few of the rampant kinds which can be tolerated in profusion, to the exclusion of the more delicate and precious brethren. I speak feelingly. The Pyrenean Valerian is an attractive flower when it raises its lively green foliage and rosy-lilac umbels of flowers singly or in groups in the shady parts of wild woods, but it becomes a nuisance if allowed to spread to the extent it will if undisturbed, as it has in a small wood under my house. There are several other plants of like habit which are recommended somewhat indiscriminately by enthusiasts in wild gardening, but there are others of which it is impossible to have too many. Wandering one day in the neighbourhood of "Gruiſſot," a queer-shaped hill in Linnithgowshire, my eye was attracted by a small burn whose banks were literally jewelled throughout its visible course with an unfamiliar yellow flower. A nearer approach showed me that it was the garden Mimulus (Monkey Flower), the seed of which must have escaped from some neighbouring cottage garden, and established itself here, in the coldest part of the British Isles. I took the hint, and have naturalized it by the banks of a small stream which runs at the foot of my garden, and I strongly recommend your readers to do the same. It mingles charmingly with the blue Forget-me-Not, and is equally hardy.

SALMONICEPS.

THE HARDY PALM.

WERE we to ask botanists—those manufacturers of species—to be so good as to point out the differences which exist between *Chamaerops excelsa* (Thunb.), *C. Fortunei* (Hook), *C. sinensis* (Hort.), and *C. japonica* (Hort.), they would, we imagine, be for once puzzled. Gardeners would be less so; they would solve the question in these few words: "They are all the same species;" and they would be right. Accordingly, we believe the true synonymy of this species should be tabulated as follows:—*Chamaerops excelsa* (Thunb.), *C. Fortunei* (Hook), *C. sinensis* (Hort.), *C. japonica* (Hort.), *Trachicarpus excelsa* (Wendl.). Following the rule established by botanists, we support the authority of the earliest nomenclature, and we also invite our colleagues to imitate our example and adopt the specific name *excelsa*, in honour of the celebrated traveller Thunberg, who was the first to make us acquainted with this fine species. This would be an act, not merely of gratitude, but of justice.—*Revue Horticole*.

SOLANUM ROBUSTUM.

As a flower garden foliage-plant this is a subject of considerable merit, and one of those most suitable for the climate of our southern counties. It requires a warm sunny aspect in a position which will be at the same time airy and sheltered from strong winds. It is a Brazilian species with a vigorous much-branching stem more than three feet high, and furnished with very sharp and strong spines and densely-set, long, reddish, viscous hairs. The leaves, which are very large, are of a



Solanum robustum.

rich brown colour on the upper surface and oval-elliptical in form, with eight or nine oval-acute lobes, the upper ones nearly triangular; and the midrib and principal veins, which are of a brown colour, are closely set with spines similar to those on the stem. The flowers are white, with orange stamens, and are borne in unilateral clusters. The berries are round, of a brown colour, and the size of a small cherry.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Worms on Lawns.—In order to get rid of these take up the turf and relay it on an inch of fine coal ashes; if the grass is weakly, spread a thin coating of good fine soil on the ashes before laying the turf down. There will be no fear of the grass burning in dry weather; the wet soil, which induces the worms to make their appearance, will keep the ashes moist and cool. Thorough draining would also remedy the evil, but as the turf would sink over the drains, it would involve as much trouble as relaying. I have several times used ashes for this purpose, and always with success.—JAMES TAPLIN, *South Amboy, New Jersey, United States.*

Yucca recurva as a Town Plant.—Holly, Box, Aucuba, and the hardier and more vigorous kinds of Rhododendrons are generally considered to be the best of all evergreens for cities. We are strongly inclined to think this better than any of them. We have observed it in all stages of growth in London and its suburbs, and everywhere doing well, when well planted in good, deep, and well drained loam. The fact that it is so totally distinct from our ordinary types of garden vegetation of course enhances its value greatly. At first sight one would hardly expect this native of plains bathed always in a golden sun, to prove such a noble plant in our great fog-pested, sunless London.

Cotoneaster for Walls.—Among the plants seldom used for this purpose is the *Cotoneaster microphylla*, a plant second to few as an evergreen climber for walls and fences of moderate height. We saw it not long ago covering almost the entire front of a porter's rustic lodge, on which it had been trained. The shoots were trained vertically, about four inches apart, and perfectly straight, to a height of ten or twelve feet; while the side shoots having been carefully pinched, looked the neatest of cordons. This is by far the best and most convenient plan of training this plant. The *Cotoneaster* is generally plentiful about most gardens as a low, semi-trailing shrub, and those who think of using it as a climber may soon make a good start, by taking up as long pieces as they can find, with a bit of root to each; cut in the straggling side shoots, and plant the pieces close together against the wall, and nail up perpendicularly. In this way we have covered six feet of the wall at once.—J. S. W.

Marechal Niel Rose as a Weeper.—I have a magnificent specimen of this budded on the Dog Rose and trained as a "weeper." It is planted in the open air, and protected from the north and east winds by matting. It has now more than twenty bloom buds, but little foliage. Can you advise me as to the best treatment? I fear none of the buds will come to anything, and the whole strength of the plant seems concentrated in them, and not in making foliage or wood. I have little or no soft water. Is hard water injurious to plants? and, if so, are there any means whereby its hardness may be tempered?—HERBERT MILLINGTON.—[Mr. George Paul, of Cheshunt, to whom your query has been sent, says:—If there are plenty of unbroken eyes left in the shoots upon which the bloom buds are, the better way would be to prune back to one, and let the plant break afresh from the dormant or unshot eyes. Hard water should be exposed twenty-four hours to the atmosphere before it is used. Have two large tubs filled on alternate days, and always use that filled the day previously.]

THE TOWN FLOWERS' PETITION.

WE flowers and shrubs in cities pent,
From fields and country places rent
(Without our own or friend's consent),
In desperate condition,
Yet on no wilful outrage bent,
Do humbly here petition.

Whereas, against our silent wills,
With loss of sun and purring rills,
Cooped up in pots, on window sills,
In rickety old boxes,
The cities' breath our beauty kills,
And makes us grey as foxes.

Condemn'd in walls of brick and lime,
In narrow beds of clay and slime,
To ope our buds and shed our prime,
We need some kind defender;
We pray, oh, let us live our time!
And we are very tender!

Oh, cheat us not of Heaven's dews!
Nor air (however stale) refuse;
God knows 'tis little we can use,
So choked are all our vitals,
No slightest care will we abuse,
Nor fail in fond requitals.

We'll breathe you delicate perfumes,
We'll glad your eyes with choicest blooms,
But do not shut us up in rooms
Or stifling crowded places;
The sky, in clouds, a light assumes
To us far lovelier faces.

Our sooty and bedraggled fate
(Our ever-greens turn chocolate),
Do you ascribe to spite or hate?
No; we are sure you love us;
Yet, half ashamed, we beg to state,
We love the sun above us.

Then treat us in your gentlest ways,
And next unto the sun's own rays,
With beauty's homage, incense-praise,
We ever will caress you,
And to the ending of our days
In grateful silence bless you.

—All the Year Round.

THE LIBRARY.

"THE MOUNTAIN."*

"THE Mountain!" How suggestive the word to all who have any experience of travel in an elevated region! It is true there are mountain tracts, like an enormous region of the Rocky Mountains for example, which are as arid as a limekiln; but happily in northern and in temperate countries this is an exception. We know but little of mountains in this country. They are so few and such dwarfs that they give us no more idea of the nobler mountain chains than babies do of men. It is where a whole country is lifted up on the shoulders of a range that one really sees mountain beauty. To grasp and describe such scenes in all their breadth and significance is work for a Ruskin; for us the vegetation is the all-absorbing theme, and it is on the mountain in which the spirit of vegetation has produced the most lovely results. Hot eastern isle, with its Palms and gorgeous Orchids; Brazilian forest, famed everywhere for luxuriant beauty; gorgeous meadows of bulbs at the Cape, or fairest scenes of our gardens, are as nothing compared with the loveliness one sees on many parts of the Alps. The scenes on the flanks of many a great alp have been aptly described as affording the best pictures of Paradise which this earth contains; and the great mountain is not only a home for the lovely alpine flowers, or the thousands of herbaceous plants that blossom on its side, but nearly all the great trees of the earth are mountaineers. The giant trees of California are almost without exception mountaineers. It is the same away in the southern hemisphere. Mr. Henry Kingsley has lately shown us some of his sketches of various kinds of trees two hundred feet high, growing on the lofty mountains of South Australia, and between these giants and the brilliant gems we call "alpines" what a vast variety of lovely plants scramble over all the vast mountain chains of this mite of a globe of ours! This is another of the remarkable books written by M.

*The Mountain. From the French of Michelet. By the Translator of "The Red." With 54 illustrations from designs by Percival Skelton. London and Edinburgh: T. Nelson & Sons.

Michelet, and published by Messrs. Nelson, beautifully printed, and illustrated in a superb manner. The following on the mountain forests of Europe will sufficiently indicate M. Michelet's mode of dealing with his subject:—

"On the lowermost terrace of the grand amphitheatre of the mountains, bloom the lofty Chestnuts, forming a venerable vestibule to the forest itself. Patriarchs are these, and animated by a strong spirit of kinship. Less ambitious than fertile, the central tree is wide of girth, and though it does not lift its head to any towering height, it flings off, in every direction, five or six sturdy saplings, the happy progeny which compensates it for the wounds it suffers and for the losses it undergoes. Wrinkled and aged as it may be, this parent trunk still flourishes greenly, and rejoices at the sight of its children. The latter cling to it strongly; yea, so strongly that frequently they are soldered to its trunk, and parent and offspring grow strangely intermingled. The Chestnut loves a soil of granite, or of calcareous sand, whose warm radiation it can feel with far extending roots. It does not dread a lava soil, to which it takes while it is still heated, penetrating into its black entrails. On the extinct volcanoes of Auvergne it lodges in the very craters, and even in their yawning mouths, embellishing them with its verdurous youth.

"The real dense forest commences, at a higher level, with the Beech. If the shade cast by its thick foliage is too gloomy, in compensation its aspect is gay and laughing, and bids you trust yourself to its care, penetrate beneath its lofty vault, and ascend with it the mighty mountains. You find it everywhere, from the Apennines to Norway. You meet with this *Fagus* of Virgil, which sheltered Tityrus, in the lands of the North. The vigorous life of the mountain, the healthy existence of its broad cinctures, maintains in friendship two trees of great sociality but widely different character—the

Green Beech and the Black Fir. The beech laughs, the fir weeps: it matters not. They come together on the same heights. Sometimes they are found intermingled, but more generally as neighbours. They share the domain between them. The beech grows on the southern side, the fir on the northern, on the sunless slopes, plunging down even into the low damp valley, gloomy with its shroud of mist. It is the great white fir (*Abies pectinata*) I speak of. A giant, attired in two-fold livery of woe, white within and black without. The snow rests on the long sombre wings of its far-stretching and vigorous branches; and if they bend beneath



The Lake of Geneva and surrounding mountains.

the weight, and groan in their double grief, it does but increase the solemn character of the tree. Is it an immense phantom? There are moments when one would think so. Bristling at times with icy crystals, it resembles a formidable bird expanding its wings of menace. In the countries of the South men look upon it as funereal, but in the North they love it. On the shores of the Baltic, from the sands of Prussia to the Siberian deserts, it affords a lasting refuge and an enduring consolation. Here it is the saviour and true guardian of the mountain, in whose protection the two great labourers, the fir and the beech, both unite. It is there they achieve their splendid mission, the real and proper function of the forest. You must remember that at great elevations, and in the narrow table-lands, the forest dwindles almost to nothingness; but that at our present stand-point, at the mountain base, or midway up its slopes, it is still of immense extent, and its labour prodigious. This labour is two-fold. First, it receives, arrests, and breaks up the floods from the upper peaks, which would otherwise devastate the mountain. On the other hand, it incessantly enriches its soil and repairs its losses. It accumulates its wealth of dead leaves upon its surface. It fixes its masses of floating matter. Like a powerful organ of aspiration, it arrests on their passage the fogs and the dense mists, and all that in conjunction with them circulates in the thick atmospheric medium. How pleasant it is to walk in the shade of the firs! Always clean and free from obstacle, the ground underneath them affords a noble idea of purity. What can be purer than the air, with its healthful odours? How soothing a sense of tranquillity gradually steals upon you!

"I know not how to define the lively energy which takes possession of us in these higher regions. We lose sight of the great melancholy fir; for the air becomes too cold, its long arms are too great to battle with the convulsions of the upper air. A more robust tree is needed, with short branches, which will not require to bear so heavy a mass of snow—a courageous tree, a mountaineer, gorged with resin, completely penetrated and protected by it! Such is the Picea, that hardy alpine athlete, which struggles upwards to the most inaccessible steep, and clings to the very edge of the precipices. It dreads nothing but the mists and humidity of the lower grounds. It will face the cold, but it seeks a wholesome air. With its four rows of stomata it greedily absorbs the sunshine. By climbing upwards, it gets rid of the strong stimulating food of the inferior levels, the exciting influences of the fermented life. It enjoys a purer and loftier stimulus—that of the atmosphere and the light, and, at times, the summons of the Föhn and the electricity of the storm. The Picea does not own the extended wings of the white fir. It sacrifices all extraneous branches, and enriches itself with foliage, which it wraps around every bough, darting and aspiring in every direction, and feeding it with nourishment and strength. All its thought is to rear itself aloft like a pillar, or like the tall mast of a vessel, which, braving to-day the mountain gale, to-morrow shall brave the ocean. These courageous trees lavish no outlay upon themselves—no luxury, no ornament. They have far different cares on the perilous declivities where they climb to the assault. The wind is icy cold, the rock is bare; but still they mount. They stretch abroad, and attach, as best they may, their meagre roots, and with difficulty attain a footing. It is by pressing closely to one another, by drawing up their serried ranks and legions, that they support themselves, and, at the same time, support the mountain. In the crises of great inundations the mountain, without their assistance, would be lost. It bursts open—it yawns apart; and the furious waters, profiting by these clefts, and enlarging them, ruining and demolishing, pour headlong on their desperate path towards the valley, where the Piceas stand forward to arrest them.

"You might imagine that you heard the mountain exclaiming, 'My children, be firm.' But, lo! from above, a monster avalanche of snow, and ice, and rock, pell mell, starts forward with a frightful shock, and comes leaping from point to point. Woe to the Piceas! It is upon them the first fury of this awful tempest falls. They shriek, they crack. One moment engulfed, they have disappeared. Good Heaven, in what condition shall we see them again? Overturned, with their roots in the air, and miserably shattered! Oh, lamentable ruin! However, with their pointed tops they have broken the force of the blow, as was recently remarked in the Pyrenees, near Barèges, where, indeed, the avalanche was something more than a mass of snow. It was a downfall of ice-blocks, which swept away everything. All the Piceas perished, but they saved the valley."

(To be continued).

Ivies.—Mr. Shirley Hibberd, who for some years past has devoted much attention to these, has in the press a volume upon the subject entitled "The Ivy: a Monograph," which, we understand, will be published shortly.

BOOKS RECEIVED.

The Fortnightly Review (Chapman & Hall, London);—*Agricultural Returns of Great Britain* (Eyre & Spottiswoode, London);—*Plants, the Earth, and Minerals*, by George Beker (W. Macintosh, Paternoster Row);—*Facts about Flowers*, by "H. W." (Hamilton & Co., and Simpkin & Co., London);—*La Culture du Raisin*, by Charles Baltet (Dufour-Bouquet, Troyes);—*Italy in England: a Practical Treatise on the Cultivation of Choice Fruits, Flowers, &c.* (Houlston & Sons, London);—*The Illustrated Book of Poultry*, by L. Wright (Cassell, Petter, & Galpin, London);—*The Fairfield Orchids* (Bradbury, Evans, & Co, London).

GARDEN DESTROYERS.

BIRDS IN GARDENS.

I HAVE read the sixth chapter of Mr. Reynolds Hole's tale, "The Six of Spades," but, notwithstanding Miss Susan's special pleading for the birds, I still contend that, where woods and shrubberies abound, some must be killed if any fruits are to be eaten. Bullfinches, for instance, sing divinely, but in many gardens they clear trees and bushes of buds as the sun melts snow. They eat many, and strew the ground broadcast with hundreds more, as if in sheer wantonness. The gardener who is held responsible for the dessert, cannot afford to accept their full complement of song as a recompense for a poor dessert. It is easy to write, bar out the birds with nets, but almost impossible to do it. I have counted five hundred birds in a garden on a summer morning. Let a hard drought send these perforce to live on fruit, and have it they will by hook or by crook. There is no help for it. They rush headlong at the nets, using their heads as battering rams, and their open mouths as breach-cutters; and in they go. All of us are familiar with their doings inside. They not only eat, they feast and destroy. Unless nets can indeed be made invulnerable, which they seldom are, it is better to dispense with them altogether. Even the presence of nets seems to excite their appetites, and in very spite, if you save your strawberries, the birds will often riddle your green apples, pears, and peaches. No; where birds are in excess, we cannot save our fruit unless we convert our gardens into huge iron cages by covering the fruit with wire netting from wall to wall. Either this, or pop off a few of them with trap or gun, or destroy their eggs. I know this is a sore point in many establishments, and hence I have adverted to it. My sentiment is wholly with Mr. Hole—or rather his admirable creation, Miss Susan; but my sense is with Joseph Grundy; and yet I love the music of the groves.

But the orchestra may be too large for our means. It needs an enormous garden and an exorbitant outlay for netting to keep up a choir of five hundred songsters. And is there no cruelty in barring the birds out from their food with nets? I should like to ask Miss Susan this question: Which is worst for the birds—a sudden passage from song to silence at the end of Joseph Grundy's gun; or the lingering wail of slow and sure starvation within sight and smell of plenty just outside her fruit protectors? Were I a bird, I know which death I should choose. I suppose no one will contend that there is any more harm in killing birds than in destroying an ant or an aphid? In the fostering and perfecting of vegetable life and its produce, we have to deal destruction to many forms of animal life; and when birds threaten to mar or eat up the works of our hands, we are compelled to restrain their mischief and reduce their numbers. I never, however, met a true gardener who had much pleasure in this work, and the birds are tolerably safe in their hands. But for the inordinate care in the preservation of game, and consequent destruction of hawks and all other birds of prey, we should probably never had to interfere to regulate and reduce the number of fruit and seed eating birds, and so rectify the balance of feathered life as to ensure a crop of fruit.

D. T. FISH.

BULLFINCHES.

MR. INGRAM's remarks on bullfinches (see p. 357) exactly accord with my experience in regard to these little depredators, which attack plum and cherry trees just when their buds are expanding. Bullfinches are, however, never plentiful in this locality, some years being quite free from them, and when they do appear, they are only in small families or pairs; but they can do much mischief in a short time amongst buds. A small cultivator in this neighbourhood, who has an orchard of young plum trees, told me that one day, when he was away from home, a little colony of bullfinches nearly destroyed all the blossom-buds on his trees; and, of course, there was an end of the crop for that year. He has since placed a stuffed cat on a tree in the centre of his orchard when the trees are coming into bud, and has thus saved them ever since from injury.

The plague of small birds in gardens when they are numerous is very disheartening; for netting all the fruit that are subject to

their depredations is expensive, much more so than the gun tax. Many kinds of small birds, such as the finches and others, earn their salt by destroying insects and the seeds of noxious weeds; but others, as sparrows, blackbirds, and thrushes, require keeping within bounds, when too numerous. Every year we are told by small-bird protectors that if we destroy our small birds too much, our crops will be eaten up by insects, as they are in France. Our British small birds, however, seem to be different in their habits, especially sparrows; for they care very little about insects if they can get anything else in the shape of grain, buds of trees, and young peas to eat.

WILLIAM TILLERY.

WAR WITH INSECTS ON PEACH TREES.

ALL the time I can spare is, at present, spent at the peach wall. I do not believe in being too early at disbudding if insects are plentiful. One can in a few minutes take off buds—useless buds—which if left a day or two longer, would have sheltered thousands of aphides. The tree is not checked to the extent imagined by some; not so much, in fact, as when the leaves get more developed. Shoots which are close to the wall or the old wood, and consequently sheltered, are those chosen by the insects. Most of these shoots are not wanted; why then leave them for the increase of insects? In going over the trees every day, many of the full-grown winged aphides fall victims to squeezes of the finger and thumb. I have, on a fine day, when numbers of these have been darting in and out, taken a fresh painted board, just the length of the width of the wall, and carried it along as close as possible to the trees. The shade of it causes these winged gentlemen to dart out, and they are caught in the paint. Thousands of little snails, not much bigger than a pin's head, yet having voracious appetites, are also caught. They begin to peel the young fruit as soon as the bloom is detached. If these are not killed now, the leaves will soon cover them, and they will escape the eye and continue to disfigure the fruit all the season. The labour of close and frequent inspection of our peach trees at this time is, therefore, not without its reward.—HENRY MILLER, *Kings.*

THE WEATHER, BUDS, AND BIRDS.

Thus far the weather, with a trifling exception, has been wonderfully fine; yet, singularly enough, as Mr. Ingram points out (p. 357), the buds are not forward. The sun has been, with some few exceptions, conspicuous by his absence. Hence the buds have rested safely inside their thin shells. There is also another reason: the enormous evaporation from wet surfaces has kept the buds cooler than could have been expected; and thus, though the air, upon the whole, has been mild, the buds have grown but little. But the buds of apricots especially, and peaches, though not in the same degree, look thinner than usual, and the birds, singularly enough, seem more ravenous. We generally suppose that birds' food is more plentiful in mild springs than in cold ones, and, consequently, that the buds suffer less from the attacks of birds. But mild winters and springs cut both ways in regard to the ravages of birds. Doubtless, there may be more food, but there are likewise more birds by far to eat it. Severe winters starve bullfinches, chaffinches, and other bud and seed eating birds; but such a one as we have just had kills none, and hence their terrible raids at this season. A short time ago they set upon plum trees, and peaches, and nectarines, on glass walls. Singularly enough, those on both the north and south side of the glass were more forward than any on brick walls. This singled them out for attack, and in a few hours they were well-nigh cleared. These eaten, they attacked the brick walls, and sprinkled the ground with showers of buds, as well as the blossoms of Ribes in the pleasure-grounds.

We have but two remedies, or expedients rather: Pickle the buds with soot, and catch and kill the birds. We do both to a considerable extent, and the battle rages between some thousands of birds on the one side, and angry gardeners, robbed of their fruit in all stages, from the bud to the table, on the other. To those who, like us, are surrounded with woods, and who would like a full basket of fruit in the autumn, I would say, up and at the birds, and dress the buds at once.

D.

HEMP & CATERPILLARS.

M. AN. STEY, in a letter to the *Révue Horticole*, recommends the use of hemp for the purpose of destroying caterpillars. He says:—"Many years ago I saw an individual sowing, broadcast, a coarse grey powder on beds of cabbages, which were almost devoured by legions of caterpillars. On inquiry, I found that this was nothing else than the refuse of beaten hemp, and consisted of fragments of the dried and broken leaves, and particularly of the

crushed seed vessels. In half-an-hour all the caterpillars had fallen down dead, as if suffocated." He then goes on to suggest the sowing of rows of hemp in beds of cabbages, caniflowers, &c., stating his impression that the odour of the hemp plants would exercise a sufficiently repulsive influence to protect the vegetables from the attacks of the caterpillars, and concludes his letter, by expressing his opinion that watering cabbages, &c., with water in which hemp had been steeped would be attended with equally beneficial results. The subject is deserving of notice, and seems worthy of experiment.

W. M.

THE GARDEN IN THE HOUSE.

CULTURE OF PLANTS IN ROOMS.

(Continued from page 362.)

ON WATERING AND SPRINKLING.

THE questions most frequently asked by the amateur, when commencing to cultivate plants in pots, are these—"How often should these plants be watered?—Every day, or every two or three days?"

These are questions which can only be answered with some approach to truth when the particular circumstances of culture, position, &c., are fully known, and even then many other influences may have to be taken into account. The necessity for watering a plant depends very much on the quantity of moisture which is evaporated from the plant itself, and from the soil in which it grows. This varies according to the kind of soil, the size and shape of the vessel in which the plant grows, the special organisation of the plant, its state of health and growth, its position, the season of the year, &c. Taking all these circumstances into consideration, we shall discuss at length the subject of watering, as this is the part of room-culture on which the health of the plants chiefly depends.

River water, free from lime, is the best; where this cannot be had, rain water should be used; or the lime-impregnated river water, or spring water may be placed in an open vessel for some time before it is used, so as to be brought into contact with the air, and some potash may be thrown into it from time to time. One point about which a mistake is often made is the temperature of the water. Usually people employ that which is nearest to hand; but it is a matter of experience that it is injurious to plants to water them with any water the temperature of which is below that of the room in which the plants are cultivated. It is a fact that when cold water is used, the temperature of the earth about the roots is lowered, and this is more hurtful when the plant is in full vegetation. In open-air culture, or in nature, the soil possesses a somewhat higher and more equable temperature than the air, being much less exposed to changes. Hence it is evident that a higher degree of temperature in the soil than that of the surrounding air, is one of the chief conditions for forcing an early growth. It follows from this that plants should never receive water the temperature of which is below that of the room, and if it is somewhat above it it will do no harm. In fact, where the object is to produce an early bloom and a new growth, tepid water should be used several degrees above the temperature of the room.

The quantity of water which plants require varies considerably, according to their nature, as water plants, bog plants, and land plants. Water plants live entirely in the water, rooting at the bottom of standing or flowing water, or floating free on the surface. Bog plants may be divided into those which grow on the margins of water and which are at times submerged, such as Rushes, Calla, Sagittaria, Butomus, &c.; and, next, the bog or moor plants proper, which grow on the turf overlying watery places, and whose crowns are usually dry, while their roots descend into the underlying water (to this class belong *Drosera*, *Pinguicula*, &c.); and, lastly, there are plants which grow in ground that is kept constantly moist, as *Stellaria uliginosa*, &c. The third, and by far the most numerous group, are the land plants growing in positions higher than any water, and which depend for their supply on the rains and the nightly dews.

While for the first two groups (the water and bog plants), either a body of water or a low and wet position is necessary, this would be hurtful to the land plants, which require a free

circulation of the air, and would perish in sour, stagnant soil. When land plants are grown in pots or other vessels, whereby their roots are prevented from drawing the natural moisture from the soil, they will, of course, require an artificial supply, which must be adapted to their wants. As the pots in rooms must be placed in saucers for the sake of cleanliness, if they are watered too often, the water will stagnate in the soil, and render it sour, to the injury of the young roots; if, on the other hand, too little water is given, the roots near the surface dry up and wither, and in both cases the plants become weak and sickly.

The unskilful amateur seeks to extricate himself from this dilemma by watering frequently, but in such small quantity that the entire ball is not penetrated, and no water flows through into the saucer. With this kind of watering the soil cannot indeed become sour, but that part of it which is not reached by the water will soon become so dry and hard that no quantity of water will penetrate it, and the consequences to the plants are equally disastrous.—*From the German of Dr. Regel.*

(To be continued.)

FLOWER BASKET FOR VESTIBULES.

INSTEAD of maintaining the decorations of the vestibules of large country houses, and even those of the town, in the cold lifeless style of fitting up, much beauty, gracefulness, and charm might be added by the use of a well-furnished plant-stand in the form of a basket, of which the accompanying is a sketch. It is made of cut wood, gathered together in the centre with a light brace of iron, and is furnished in the inside with a double zinc basin, of which the first part is perforated so as to allow superfluous water to pass off; an iron stem occupies the centre, and two branches to support



Flower Basket for Vestibule.

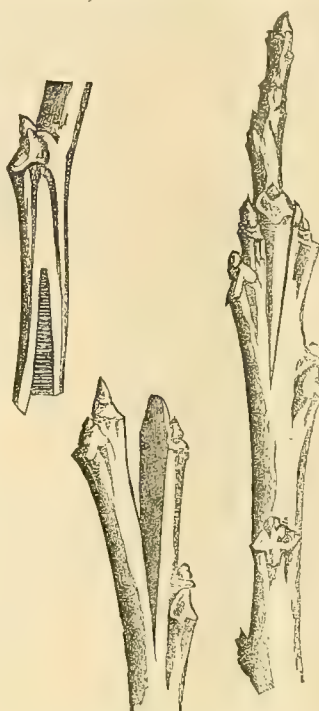
three vases in artistic earthenware, or, better still, in iron wire tastefully trellised, holding moss in which the plants are placed. Underneath are planted *Dracænas*, *Caladiums*, *Begonias*, *Ferns*, *Pelargoniums*, young *Palms*, *Fuchsias*, with a border of *Lycopods*. A *Cissus* or a *Tropæolum Lobbianum* climbs up the iron stem. The topmost vase contains a *Palm* or a *Yucca*, some light *Pteris* or *Nephrolepis*, some *Commelina zebrina* in falling festoons, and the lateral baskets are similarly decorated. The effect of this basket is very pretty and requires but little attention.—*Ed. André, in "L'Illustration Horticole."*

Flowers and Perfumery.—During the flower season over 10,000 persons are employed in the South of France to extract the aroma from various odoriferous materials. Of flowers, the quantities consumed are said to be—orange, 2,000,000 lbs.; rose, 600,000 lbs.; jasmine, 150,000 lbs.; violets, 60,000 lbs.; cassia, 80,000 lbs.; tuberose, 40,000 lbs. From this great bulk of material are turned out yearly 200,000 lbs. of rose water, and 1,200,000 lbs. of orange-flower water.

THE PROPAGATOR.

GRAFTING THE WALNUT.

As the Walnut is very difficult to graft, we have tried various methods, and have succeeded by means of the same treatment



Grafting the Walnut.

sap, which they do without starving the graft.—*C. Ballet, in "Bulletin du Cercle Horticole."*

NOTES AND QUESTIONS ON PROPAGATING.

Propagating Aucubas.—I want a considerable number of small plants of *Aucuba* for use next winter. Can you tell me the best and quickest way of propagating them?—*J. B. G.*—[The ordinary way is to have stools of *Aucuba* layered, and to take off the young plants every year; but for quantities, when the wood is half ripe, or perhaps a little more, that is when the leaves are not too tender, cut the branches up into pieces about four or five inches long with a leaf on the top; put them into a cold frame in September, and by this time they will be all rooted; plant them out thickly in a north aspect in May, having first incorporated with the soil plenty of rotten manure. Nurserymen plant them between the rows of tall plants, such as limes, &c.]

Dracænas.—These handsome plants are becoming so much and so deservedly used in the subtropical garden, and in the decoration of the greenhouse and stove, and even of the dwelling-house, that a few words on their propagation can scarcely fail to be useful. At present they are rather scarce and dear, but they are so readily increased that we look forward to a day when they will be as common as bedding plants. At first sight a *Dracæna* does not look a likely subject to increase abundantly from one stem; but if anybody will place a piece of the stem of an old plant on the surface of a tan bed in a stove, he will find that soon from almost every one of its many joints an eye will break forth. The most forward of these may be removed from the stem from time to time, and if inserted in heat will soon strike, the stem being put back again and slightly covered with the tan or cocoa-nut fibre. It will go on furnishing cuttings for a long time. This refers to all the *Dracænas*, the beautiful crimson-leaved as well as the green kinds.

Grafting Variegated Pelargoniums.—These are so slow of growth that any means which hasten their development are worthy of being generally known. If plants of the strong-growing varieties, such as *Punch*, are placed in a brisk heat in a frame or pit, or near the glass in a genial warm house, during the present month, they will soon begin to make a strong growth; and when this is so, if they are cut back rather short, and properly grafted with the finer kinds of tricoloured *Pelargoniums*, these will soon unite with them, and afterwards make a stronger growth than if left on their own roots. In fact, the little grafts taken off will by the end of the season be much larger than their parents. The grafted plants will be ready to put out with the other bedding plants, or may be more quickly grown into specimens for conservatory decoration, for which many of them, such as *Lady Cullum* and *Italia Unita*, are well suited.

A TROPICAL GARDEN.

WE are beginning to take considerable pride in the effects we manage to produce in our semi-tropical gardens as we call them, produced by means of artificially planting out such shrubs or trees as will stand the English climate pretty well during three or four of our treacherous summer months. The general effect thus created is often very pleasing; yet in most of the plants so treated there is nearly always a too perceptible kind of langour about them, that betrays their want of a balmy and more genial atmosphere—an absence of that gush and profuseness, and lavish vigour of growth, which would characterize a similar scene under a real tropical sun. It is true that our green turf, which enjoys the coolness and moisture of the northern climate, furnishes a refinement of foreground which the plants would not be surrounded with in their native clime; but the combination, though pleasing, has yet an artificialness about it that fails to realize to our satisfaction the ardently-sought aspect of true tropical scenery. Let us turn to the effects of really tropical vegetation, even when reduced to the trim neatness of garden purposes, as represented in the present engraving of a garden at Réunion.

Here we at once find ourselves in the full blaze of tropical luxuriance; we are surrounded by great masses of prickly pear and other cacti; giant ferns, slender-stemmed towering palms, and many forms of foliage, the rank luxuriance of which we feel must be the re-

sult of intertropical influences. We are compelled to strain the imagination beyond the usual limits of its power when picturing to itself the utmost beauties that can be reached by the very best management of the means at our command in European gardens; for we have to conjure up the presence of such plants as *Strelitzias* growing rankly in the open air, and great clinging parasites streaming all over with long racemes of gorgeous flowers, which are hanging abundantly, on all sides, and to the branches of *Magnolias* in full bloom, and as big as oaks. All this wild profusion of rank vegetable life receives

a chastening and piquant refinement from the European architecture with which it is associated in the annexed engraving, the pure, classical lines of which form a sharp and incisive contrast to the irregular and fantastic profusion of the noble leaf-forms with which it is associated. Gothic architecture, with its elaborate ornamentation, its pointed arches, and its intricate tracery, would be like a repetition of the scene itself, in its tangled and unchecked license of wild-gushing growth, and intricate intersections of lines and forms. It would seem as though a portion of the scene had become petrified, and then

pared down a little to suit human convenience. There would be no well defined line of distinction between nature and art. The European Gothic, in fact, is not suited to tropical scenery, which, on the contrary, harmonises and yet contrasts so well with the simpler Palladian forms of architecture. But while asserting that forms of European Gothic do not contrast successfully with the luxuriance of tropical vegetation, it must be admitted that the characteristics of Hindoo architecture, though allied to the Gothic, and especially to its pointed arches, are exceedingly well suited to contrast successfully with the vegetation of India, even to the rival arcades and leaf-fretted roofs of the vegetable temples formed by the Banyan; and the reason is not far to seek. The pointed arch is, in fact, almost the only link of affinity between Hindoo and Gothic architecture. In the Hindoo style the main lines are horizontal, even to the upper line of all; the whole mass being, in the



A Garden in the Tropics.

main, square, and only varied by a central dome, or dwarf minaret at the angles. It has nothing of the acuminating characteristics of the Gothic, which always seems struggling into a steeple, just as the great bulk of all vegetable forms taper upwards, and therefore offers no reposeful contrast to the surrounding natural features. The native architecture has another advantage over the Gothic as a contrast. Its walls are not profusely perforated with windows; and their smooth expanses (though often delicately chequered with damask-like carving in low relief) form agreeably large, even, and

symmetrical spaces for the eye to rest upon after it is sated with the tangled variety and profusion of over-luxuriant vegetation. It is thus sought to show that in architecture the peculiarities of European Gothic cannot be successfully introduced among the scenery of the tropics, but that the pseudo-classic of the Palladian school, or the various forms of the native Indian styles, are much more suitable as a contrast to the general characteristics of tropical scenery, either in Asia or America.

NOEL HUMPHREYS.

GARDENING FOR APRIL.

THE INDOOR GARDEN.

BY T. BAINES, SOUTHGATE.

Conservatory.—At no time of the year should conservatories be better furnished with flowering plants than at present; nor is there a time when they should be more interesting, on account of the numbers and diversity of plants that can be had in bloom during this month. In addition to the last batch of Hyacinths, Tulips, Narcissus, and other bulbs, there will be forced Hydrangeas, Roses, Deutzias, double flowering Plums, Spiræas, Lilacs, Epacrises, Cytisus, Azaleas, Cyclamens, Cinerarias, and Primulas. These afford so much variety as to admit of the most effective grouping, if tastefully arranged along with such foliage plants as are indispensable, such as Agaves, Yuccas, Dasyliirions, Cordylines, Rhopalas, and Tree Ferns. Without these, whatever numbers and variety of blooming plants may be at command, the general effect will be unsatisfactory. Never crowd, even if more plants are at hand than are required, as it has a most injurious effect. The object should be to grow every plant, even the commonest, so that it will bear looking at individually. Attend well to Fuchsias, Geraniums, and Calceolarias, as these will be required to play a conspicuous part when early spring plants are over. Keep Fuchsias well stopped in, and encouraged with manure water as soon as their pots are filled with roots. Be careful not to use it too strong, however, as when that is the case it does more harm than good. In tying Geraniums, use just sufficient sticks to support them and no more; as soon as their flowers are formed, give them weak manure water once or twice a week. Yet be careful never to give Geraniums too much water at any time, as they cannot bear nearly so much as many things. When Achimenes have made six inches of growth, pinch out their points, to induce them to break and grow stocky, and tie them out sufficiently open to allow the light to act on their bottom leaves, otherwise these will turn yellow and drop off. It is time now to make provision for next autumn and winter's display, by making a sowing of Primula and Cineraria seed; also by striking a batch of Euphorbia jacquiniæflora, Hydrangeas, and Poinsettias. Some experience difficulty in striking this Euphorbia; if the young shoots are taken off with a heel when from four to six inches long, and inserted in silver sand, in a moderate heat, and covered with a bell glass, very few will fail; but if the cuttings are made from a joint in the ordinary way, the greater number will not succeed. Give attention to such plants as Deutzias, Spiræas, and similar things that have been forced; for if neglected now they will not flower satisfactorily next winter. It is the best practice to cut all the old wood out of the Deutzias, depending on young shoots from the base of the plant for next year's bloom.

Stove.—Increase the temperature here, now that the days are getting longer, as the plants will benefit thereby; 70° by day in dull weather, with a rise of 10° when sunny, 65° to 70° at night, will be found about the right temperature. Allamandas, Clerodendrons, Stephanotis, and other free-growing plants that have not been repotted, will require the assistance of manure water as soon as active growth commences. Inure all the occupants to as much sun as they will bear without scorching. There are few plants more worthy of a place even in the most select collections than Pitcher Plants. Many imagine they are difficult to grow, yet such is not the case. Thoroughly open porous material, with a liberal supply of water at the roots every day, and plenty of light without direct sun, are what they require. They make few roots compared with most plants, and those they do make are very brittle, and in appearance seem to have little life in them, yet they require the greatest care in repotting, so as not to injure them, otherwise it takes them a long time to recover. This is an unerring guide as applied to plants in general, those that make few roots are most impatient of having them injured, even ever so little; on the other hand those that root freely soon recover any injury they receive in this way. Attend regularly to the training of climbers, either such as are grown permanently on the roof, or on trellises; if allowed to run too long they are certain to be injured, more especially such things

as Dipladenias and Stephanotis. In lofty stoves, nothing has a better effect than a few plants grown in hanging baskets. For these nothing is more suitable than Hoya bella and Paxtoni, with the different varieties of *Eschynanthus*, *Impatiens Jerdoniæ*, and similar dwarf-growing plants. Use strong galvanized wire baskets, lined with living sphagnum, inside which place wide shallow pots to hold the plants, using for soil good fibrous peat, with a moderate admixture of sand. The increase of temperature will cause a corresponding increase in regard to the different insects that infest the stove, and which multiply at this season amazingly. These must receive no quarter; choose dull weather, or early in the mornings before the temperature of the stove gets too hot, for attacking them; it is nothing short of cruelty to keep men at this work during the heat of the day, as we frequently see done.

Fern House.—The plants here ought by this time to be growing apace. Keep the atmosphere sufficiently humid for them, but not too close, otherwise the plants get so tender as to be useless, and cannot bear the necessary fumigation to keep down insects. Fumigate often moderately, in place of seldom severely. Do not syringe overhead, as it has a tendency to induce weak growth. Water liberally, as any omission in this respect during the season of active growth is detrimental to the well-being of the plants. The misuse of the syringe does not of course apply to the Filmy ferns, as these delight in water applied overhead, with an atmosphere approaching saturation, and dense shade. Ferns collectively are shade-loving plants; yet there is a great difference amongst them as to their requirements in this respect, which the observant cultivator will note, and act on accordingly, by placing those that require the most shade somewhat under such as will bear more light; by such means the necessity of using too thick shading material is avoided.

Orchids.—*Aërides*, *Saccolabiums*, *Cattleyas*, *Lælias*, *Dendrobiums*, with many others, will now be throwing up flower spikes apace, and some vigilance will be necessary to guard against the attacks of slugs and beetles, which are extremely fond of the tender young stems. Many use cotton wool as a means of protection, but it is unsightly, as well as uncertain, as a preventive. It is better to destroy these marauders than attempt to fence them out. There are many traps to entice them to destruction, such as treacle and water, olive oil, placed in shallow-glazed pots. Numbers may be destroyed in this way. Yet I have found nothing equal to Rot & Ringes's beetle poison. It must, however, be used with care, as I believe domestic animals will take it. Much has been said of late years about the temperature in which Orchids from the different quarters of the globe succeed best. Some argue that all are grown too hot, others that many of the section known as Mexican plants require very little artificial heat, even during their season of growth. A medium course betwixt these extremes will be found the most satisfactory; always bearing in mind that the more light the plants receive, the more heat and moisture they will stand without injury. After long and careful observation I have come to the conclusion that the majority of growers keep their plants too far from the glass, and use too thick material for shading.

Hard-wooded Plants.—Plants that have been potted recently will require close attention in respect to water. It is much more difficult to determine the condition of the soil as to its requirements in this respect with plants that have been recently potted, than with such as are established. All the stock should be gone over every day, and it is quite as necessary to use water that is something near the temperature of the house the plants are grown in as it is in the case of stove plants. Every plant house ought to be provided with a tank sufficiently large to hold a supply of water for one day at least. This is all the more necessary where spring water is used. The larger-sized plants that are required for blooming later on ought, if possible, to be separated from the smaller stock, to give an opportunity of keeping the latter closer with a little moisture in the atmosphere, easily obtained by syringing in the afternoon in bright weather the paths, stages, and outside of the pots; shutting up the house an hour or two before the sun is off the glass; this must be accompanied, except in the case of newly-potted plants, with all the light available, and more air, otherwise weak attenuated growth will be the result. It is not good practice to syringe overhead, even during the season of active growth, any varieties of plants that are subject to mildew, for it has a tendency to increase the evil. Such plants as are not subject to its attacks, or that are liable to the ravages of red spider, ought to have the syringe drawn over them lightly, every evening after a sunny day, during their growing season. This will apply to *Pimeleas*, *Chorozemas*, *Eriostemons*, *Gompholobiums*, *Acrophyllum venosum*, *Polygalas*, &c. It frequently happens that a vigorous plant will throw up one or more strong shoots that have a tendency to impoverish the rest of the plant; these should be stopped in time by pinching their points out, or bending down so

as to force the sap into the weaker branches; if such shoots are allowed to run unchecked, it becomes a waste of strength, for they ultimately have to be cut back, after having robbed the weaker branches. Heaths are air-loving plants, but avoid admitting it directly upon the plants during the time of cutting winds, or very great mischief will be done to the foliage.

THE FLOWER GARDEN.

BY GEORGE WESTLAND, WITLEY COURT.

THERE are several kinds of evergreens that may now be transplanted when the sap is in motion with the greatest certainty, and amongst them I would particularly mention the Cedar of Lebanon, the planting of which during winter is attended with great danger, whereas, if planted now, the chances of failure are reduced to a minimum. Careful removal is necessary, however, and it should be done speedily, so as to expose the roots to the drying influence of the weather as little as possible. When the tree is in position, cover the roots with the finer portions of the soil, and tread it solidly down, giving a thorough soaking of water, which must be allowed to subside previously to filling up the pit. Mulch the ground above the roots, and little after attention will be necessary. Hollies may also be transplanted at any time during the spring months, a point worth knowing, for the best gold and silver kinds are unsurpassed by any other subjects for summer embellishment. The same remarks are applicable to Rhododendrons and many other evergreen shrubs. Recently planted trees and shrubs must have timely attention, in order to prevent their suffering from want of water, and from wind waving. In the case of large trees, indeed, staking is an important point.

Replant Cerastium and other hardy edging plants. Violets, as they cease flowering, should be lifted, parted, and replanted in ground that is in good condition. Fresh turfy loam and dung, forked into the soil where they are to grow, will be found to suit them perfectly. They delight in a situation shaded from direct sunshine, such as the north side of a wall or in the shade of trees; but avoid "drawing" them by planting them under the spread of the branches. The best varieties for garden display are the Czar, the finest of all single Russian kinds, and the white sort called compacta. Pansies and Violas may now be planted out into beds that are well enriched with manure, and to which fresh soil has been added; bearing in mind that perfect success is only attained by promoting continuity of growth. Sow seeds of hardy annuals, biennials, and perennials, and plant out Hollyhocks. In the case of *Eurothera macrocarpa*, part the roots. This showy sort may be propagated in heat by means of the young shoots. Among Oxalises, which should now be divided, *corniculata rubra* is a very pretty variety for carpet-bedding. The striped grass, *Dactylis glomerata variegata*, should now be propagated by parting the roots. This elegant grass, which is very effective, is not nearly so extensively grown as it deserves to be. Of the *Pyrethrum* well known as Golden Feather, a sowing should be made at once, upon a warm sheltered border. It will come in well for panels, where the plants cannot well be too small when planted out.

Unoccupied beds should be treated in accordance to the crop they are to carry. In the case of Geraniums, a dressing of fresh soil will be more conducive to effect than one of rich manure, as over-luxuriant production of foliage proportionately diminishes the amount of flower; while, on the other hand, if an exuberance of leafage is desired, an abundant supply of nourishment must be given. Deep cultivation is important, for except that is secured, no after management will compensate for its loss. Leaf mould and thoroughly decomposed manure should only be used, avoiding rank dung.

General ground work must be proceeded with, and arrears of every description pushed forward. Cut box edgings, and if any remain to be relaid, they must now be seen to. Mowing, rolling, and clipping the edgings of walks will now demand attention. Weeds must be kept under, and perfect neatness and order must be everywhere maintained.

Pits and Frames.—To these particular attention must now be directed, in order to secure as soon as possible the requisite number of plants for bedding out. The hardier kinds, that are well established, if the weather is mild, may now be placed under temporary protection to make room for more tender occupants. Turf pits or skeleton frames of wood suit them perfectly, breaking to a great extent cold cutting winds. Plunge the pots in spent tan, leaf-soil, or other light material that may be at hand; this will not only preserve the roots, but save a vast amount of labour in watering. Gradually inure the plants to the atmosphere, and have covering at hand to protect them from frost and to ward off any sudden changes of temperature. Pot off cuttings, and plant out seedlings when fit for handling into frames or boxes. Several of the fibrous rooting plants may be planted out into frames with advantage, as they lift

safely with balls, and save time in watering. Canna roots should now be divided. There is no necessity for starting them in heat, as they will acquire a sufficient size and plant out better if started in cold frames in a light soil. By this means a more rigid growth is secured. Proceed with the propagation of tender plants that are required in quantities. Sow Asters, Stocks, Zinnias, and other half-hardy and hardy annuals.

THE ROSE GARDEN.

BY GEORGE PAUL.

THOSE who pruned their Roses early in March will, where the plants were thoroughly cut back, find them much in the same condition now as then. Owing to the late inclement weather, while pruned Roses seem hardly to have moved, unpruned plants have grown considerably, in the earlier warm time shooting fully out. These shoots have since been doubtless cut off to the exhaustion of the plants, so that early March pruning has this year answered best. The past frost seems to have injured what few of last year's buds had begun to vegetate. It is difficult to advise, but when much injured (the blackness of the shoot deciding this), it would be well to pinch the injured shoot right back, and, if in health, the plant will push out from the minor eyes which are often found on each side of the leading eye. With the soil in its present condition nothing further can be done; when drier, break down the dug ground with a strong hoe, to form a good tilth. Keep the soil loose throughout the spring and summer with deep hoeing. Climbing Roses on south walls, where forward enough, are worth shading; if a warm, genial time succeeds this, favourable for early flowers, they may produce a supply, say of Gloire de Dijon and Maréchal Niel, blooms very welcome in May and early June. Any pruning left uncompleted should be now done; the eight or nine weeks which bring us into June are but sufficient to allow for a slow, steady growth. If any beds of Roses on their own roots are to be planted in May, it would be well to ridge up the ground (digging in the manure) to get a loose tilth, in which to plant; but out of doors this is a month of rest—to wait is perhaps the grower's most difficult task. Roses in pots started in January will now be fit for tying; they should have been framed when pruned, and the shoots being now two to six inches long, each requires a stick to lead it in a right direction; this will thin out the shoots, admitting air, and, by bending down the leading shoots a little, give a better chance to the secondary ones, and so regulate the growth. In tying, all plants require some slight facing; the shoots, if any without bloom, should be tied back, to thicken the plant behind. A temperature of 55° to 60° in the day, 45° to 50° in the night, as much air as possible, a thorough look out for mildew, and on its detection dusting the spot and sulphurising the pipes, a careful search for maggots, which eat out the buds, are all minutiae which, attended to, insure success in the growth of pot Roses. As a stimulant cow manure diluted with water is safe and effective.

THE FRUIT GARDEN.

BY WILLIAM TILLERY, WELBECK.

Outdoor Fruits.—During these last few days winter has set in with some rigour. At this date, March 23rd, the ground is covered with three inches of snow, and 6° of frost were registered here in the morning. I am afraid that gooseberries and currants, now in full leaf, and some showing their flowers, will be injured. Some of the pears, too, on quince stocks are in flower, and will likewise suffer; but pear blossoms are often injured by severe spring frosts when the bud is expanding. Peaches and Nectarines on walls will now want protection of some kind; for the snow and heavy hail showers that have been experienced during these last few days are worse for the blooms than dry frosts, that often occur in spring. As soon as the trees are forward enough, disbudding will require attention, removing only a few of the strongest shoots at a time. Bullfinches will now be destructive to plum-tree buds. The best plan to get rid of these little depredators is, harsh as it may appear, to shoot them at once. Newly-planted fruit trees will be much benefitted by having their roots mulched, should a dry, warm time set in. About the end of the month cut down the shoots of the double-bearing raspberry to within a few inches of the ground. Weed, and lightly fork strawberry beds, if not already done; and if some litter is now placed round the plants, it will keep the fruit clean, and be a protection to the roots in dry weather.

Orchard-House Fruit Trees.—Peaches, Nectarines, Plums, and cherries will now be in full bloom, and plenty of air must be given them on all favourable occasions. See that the soil in the pots is kept moist, but not soddened, for the trees often drop their fruit when young under any excess of moisture or dryness. It is a good

plan to retard a few dozens of these kinds of fruit trees in pots, as they will flower later, and furnish a succession of fruit.

Vineries.—As soon as the grapes in the early house begin to show colour a drier atmosphere may be maintained, and air given liberally. Water freely the inside borders of the succession houses, and see that the protecting materials on outside borders still maintain their efficiency. Owing to the winter being mild and open, the buds of the vines in the latest houses will be swelling; and in the beginning of the month fire heat, where available, should be applied, so as to get the grapes ripe in September; they will then keep far better than when ripened in October or November. This is one of the great advantages belonging to the plan of bottling late grapes; for the vines can then be properly dressed, and forced earlier. This year I cut the last of our Muscat grapes on the 20th of March, the berries being quite plump, and maintaining, in a great degree, their perfumed flavour. The best coloured and ripened bunches were those that kept the longest and best in the bottles, and this will be found to hold good with other grapes as well as Muscats. I never kept Muscats in good condition much longer than the end of January when hanging on the vines; therefore, I am bound to prefer the bottling system. I find that the best preventive of vine mildew in late vineries is to use some fire heat in dull, moist weather in the daytime, and to give air freely at the same time.

Peach Houses.—The earliest house of Peaches and Nectarines will now be nearly past the stoning process, when a rapid change takes place in the swelling of the fruit; but, before this takes place, it must be thinned if too thickly set, as no more will drop off. If the trees are in good health, the fruit on them may be regulated from six to eight inches apart at this last thinning. When it begins to colour, air may be given freely, and the temperature may rise to 75° or 80° by sun heat. Succession houses will want syringing daily, and attention must be paid to watering the inside border; for, although the surface may look moist underneath, they may be as dry as dust. Tying down the shoots as they progress, and thinning them gradually where not wanted, keeping aphides and red spider in check, will be routine work now for some time in the late houses.

Figs.—Keep these well watered and syringed daily, as red spider is a great pest to them. When the fruit begins to ripen, watering must be gradually discontinued. Stop all shoots when six or eight inches long, in order to encourage a second crop.

Cherry House.—The earliest forced Cherries will now bear a higher temperature; but plenty of air must be given in the daytime, to colour, and give flavour to the fruit. The supply of water at the roots must likewise be lessened for that purpose.

Cucumbers and Melons.—Plenty of heat, together with light, air, and moisture, will now be required for Cucumber and Melon plants, and the shoots must be regulated frequently, by stopping and pruning them, so as not to get too crowded. A steady bottom heat must be maintained to Melons till they flower, and after plenty of fruit is set, liberal supplies of tepid water may be given to the roots. Sow good batches of seeds of both Cucumbers and Melons for a late supply of plants, and some of the ridge variety of Cucumber for planting out in the open air.

Strawberries.—Where plenty of room can be had in frames or in low pits, the remaining batches of Strawberries in pots may now be put in them to flower, and then be taken into the forcing houses as required for succession. By keeping a few dozens of pots of British Queen, Dr. Hogg, and Lucas, in low pits, to furnish the last supply of forced fruit, I have often had larger and finer coloured fruit in the end of June than any grown in the open air during the strawberry season. This was done, by thinning the fruit to two or three on a stem, and using weak liquid manure to water them with. President at the present time with me is very fine, and the fruit stands carriage well, a point of importance to such as have to send it to a distance. Sir J. Paxton, Empress Eugenie, and Eclipse, will follow in succession; and British Queen, Dr. Hogg, Lucas, and Dr. Radclyffe, in May and June.

THE PINERY.

BY JAMES BARNES.

INCREASE heat, humidity, and liquid manure as the light increases and the days lengthen. Carefully tie up to neat stakes all swelling fruits, in order that their crowns may be upright and in natural shape. Shift on strong succession plants, and fill up all vacancies with well-established plants ready to start into fruit. As fast as the fruit is out, the only way to follow up well at all seasons is to keep in hand a good and certain succession of fruit every day in the year. Continue always to take off suckers, and to pot them as previously directed, in order to have a good succession to select from, for without a methodical and systematic mode of procedure throughout the year, but uncertain success will attend the cultivation of this the king of fruits.

THE KITCHEN GARDEN.

BY JAMES BARNES.

A GOLDEN rule to be kept in mind in reference to the kitchen garden is, to sow little, often, and thin. Thin out and otherwise attend to all growing crops. Trench every bit of ground as soon as it becomes vacant, casting it up rough and in ridges with a strong steel fork. Where necessary, give it a good dressing with manure or other compost, thoroughly incorporating it with the soil, as the trenching progresses. Care must, however, be taken not to bring up too large a quantity of the subsoil to the surface; but it is of great importance to loosen it well every time at the bottom of the trenches. This allows water to run through it freely, and renders it pervious to air, which is so essential to the maintenance of a healthy tilth. During mild showery weather slugs are sure to be troublesome, devouring, as they do, young vegetables, especially those in seed-beds. To prevent their ravages, sprinkle with fresh air-slacked lime. At this season saw-flies deposit their eggs on the young leaves of gooseberries and currants, and by and bye the caterpillars from these prove destructive to the crop. These may be effectually got rid of by immediately applying a thick dusting of air-slacked lime, dry soot, and dry wood ashes, on a mild morning when the bushes are moist with dew, or after rain, or failing the occurrence of moisture naturally, they may be damped with the garden engine or syringe. In this way not only insects' eggs, but also moss and lichen may be got rid of, and a healthy, robust, dark-green appearance given to the bushes and clean stems. Previous to the last ten days or a fortnight, the weather has been favourable for cropping and seed sowing, and now that "bright days have come again" these operations may be proceeded with. Should gaps appear amongst vegetable crops, they should be filled up from parts that are thickest, carefully preserving the roots and lifting with good balls, with a trowel in each hand. Every kind of crop may be successfully transplanted when in a young state by using hand trowels; even tap-rooted plants, such as carrots, parsnips, beets, parsley, &c., will withstand moving in this way whilst young, whilst pulling or taking up young plants, and dibbling them in with naked roots, will be found to be attended with little success. As soon as young crops appear above ground, run a light hand scarifier or an open-toothed rake across the drills to loosen and break the surface; and as soon as the rows can be distinguished run a narrow Dutch hoe between them, so as to keep down weeds, and maintain an open healthy surface. Crops of all kinds should be thinned as soon as they can be handled, so as to prevent overcrowding.

Globe Artichokes.—From the crowns of these remove all weak suckers; strongly grown ones, intended for new plantations, may also be carefully taken off with a root or piece of the crown and planted in lines, two or three plants a few inches apart being put in together, so as to enable them to have a seakale pot put over them for a while until they have become a little established or sheltered with boughs.

Asparagus.—Those who practice the blanching system should finish the covering of their beds. Plants grown on the level ground plan in single rows, the alleys between which were manured and forked in the autumn, and stirred up with a strong hand scarifier during the dry weather in March, should be kept frequently surface-hoed and freed from weeds. The time has now arrived, if the ground has been brought into proper condition by means of previous deep trenching, heavy manuring, and additions of good surface soil, decomposed vegetable matter, seaweed, &c., for new plantations to be made. For these choose the strongest plants that can be got from the seed-bed when they have made a few inches of growth, and having the ground levelled and in readiness to receive them, mark it off into distances of two feet apart. This may be considered by some to be too close; but my plan is to lift when two years old every alternate row for forcing, thus leaving the permanent lines four feet apart. In planting, stretch the line, and draw deep drills on each side of it, thus leaving a ridge just under the line. Across this ridge place the roots systematically astride, and cover them over from both sides. This is a more natural mode of planting than taking out a notch on one side of the line only, and laying in the roots fan-shaped, as it prevents any undue huddling together of the fibres. Asparagus seed may also now be sown thinly in drills, and, as soon as up, thinned by hoe or hand; using the hoe frequently among the young plants, to stir the surface and keep it open.

Of Broccoli, Brussels Sprouts, Borecoles, Savoys, &c., make other sowings, to succeed those made last month, the produce of which, if big enough, should be pricked out a few inches apart.

Coleworts.—Make small sowings of these once a fortnight, in order to keep up a succession. Little Pixie, Matchless, and dwarf York are best for this purpose and the London green coleworts.

Cauliflowers.—Earth up these, and cover the surface about the roots with a mulching of short dung or litter; leave, also, a basin round

those that have had over them hand lights, in order to supply them with soakings of manure water. Prick off spring-sown plants, and when fit plant them out in succession in cool shady places. Sow Veitch's Giant in succession for late summer and autumn use; these should be planted in partially shaded places, such as between rows of tall Peas.

Carrots, sow these once a fortnight till the middle of July, in order to have nice young roots throughout the season.

Celery, of this sow a main crop on a slight hotbed, and prick off the plants as soon as they are fit to handle, into a well-pulverised, rich soil, such as a compost of equal parts decayed mulchings, leaf-mould, and half-decayed turfy loam, chopping the whole rather finely, and mixing all well together. Towards the end of the month the plants, which by that time will have become strong, may be pricked out on an open border, using the same compost, or a layer of it laid down to the depth of six or eight inches, on a hard bottom. The latter prevents the roots from penetrating too deeply; they, therefore, can be lifted the more easily, with good balls for transplanting permanently. Protect if necessary, and supply water plentifully.

Chervil, sow this in small quantities once every two or three weeks throughout the summer, on cold north aspects.

Lettuces, sow these in drills; thin, and, if necessary and the weather not too hot, transplant the thinnings.

Onions, thin those in beds or lines, and fill up any vacancies by timely transplanting: hoe and surface stir frequently, in order to maintain a healthy and vigorous growth.

Peas, of these sow tall kinds in succession, and run a wide-toothed rake across the drills of those just coming up; draw little ridges of soil about six or eight inches from the sides of the lines, in order to admit of a mulching of litter being administered, and to retain soakings of water that may be given in dry weather.

Spinach, sow the round kind in succession in cool situations throughout the summer; plant out New Zealand Spinach, and encourage the strong winter kinds by frequent stirrings.

Turnips, sow these in succession in drills in cold moist soil for the next two months.

Tomatoes, harden these off, and prepare for planting them out by the end of the month. Preserve a few plants in small pots, and expose them all summer, in order to obtain from them some short, stubby cuttings, for early fruiting next season. The older Tomatoes are the shorter, jointed and more fruitful they become. This treatment is also applicable to the Cape Gooseberry.

Sweet Basil and Marjoram, sow these in succession; prick off those already up, and grow them on in gentle heat.

Angelica, sow this, for next year's crop, in rows two feet apart. The first lot of stalks should now be ready, and should be looked too before they become too hard and strong.

Herb-ground.—This we too often find in a comparatively dilapidated condition. It should, however, now be neatly trimmed, and any blanks that exist in it should be made up. Borage and Burnet sow, and transplant last year's plants of Fennel. Lift the roots of Horehound, and divide and transplant them. Lift young plants of Hyssop, Lavender, Rue, Savory, &c., and replant them in beds, and put in another lot of cuttings. Sow seed of the common Thyme, and plant out that previously sown. Layer and plant out singly Lemon Thyme and Sage. Make new plantations of Tarragon; removing with a knife the young shoots a little under ground, and preserving to each some rootlets; plant it in rows a foot apart. Mint of various kinds treat as Tarragon, and top-dress the beds an inch or two in depth with rich earth or leaf-mould. Camomile, divide the roots, and transplant in rather moist and shady places. Make new plantations of Tansy, Pennyroyal, Balm, &c.

Mushrooms.—Obtain good manure, fresh from the stables, and incorporate it thoroughly with sound adhesive loam, in sufficient quantity to prevent its heating violently, and thus becoming over dry. It is by imprudent over-heating that so many growers fail in producing mushrooms of firm and useful substance, good flavour, and lasting, as regards crop. The most successful place for growing mushrooms during these next six months is in cold cellars, and other places with north and shady aspects. In such situations they are not so apt to become infested with maggots, as they otherwise would be if occupying a sunnier position; but precautions against these marauders are always necessary. To the surface of the beds now in bearing, and those just showing, if dry and crusty, give a little tepid manure water, manufactured only from the dung of cattle, sheep, or deer. It is seldom mushrooms are required to be grown artificially in the late summer months, when they can be procured from the fields; the last bed or beds should, therefore, now be made, to keep up the supply till then. The great desideratum in a mushroom house is cleanliness, by means of whitewashing the walls, and fumigating with sulphur when no mushrooms are in the move at such time.

SOCIETIES, EXHIBITIONS, &c.

ROYAL HORTICULTURAL SOCIETY.

(APRIL 3.)

AMONG the many attractive features of this exhibition none were more conspicuous than a magnificent stagel of Cyclamens, contributed by Mr. Goddard, gardener to Mr. Little, of Twickenham, by Messrs. E. G. Henderson, and by Mr. Clarke, of Twickenham. We do not remember to have seen on any previous occasion such noble plants of Cyclamens as those shown by Mr. Little's gardener, the plants bearing hundreds of blooms, standing firmly without support of any kind, and springing from a half spherical carpet of rich foliage fifteen inches through. We had seen so many lovely patches of Cyclamens at the various winter and spring shows this year already, that we imagined the season for such things was almost over. But, not so; they begin to bloom in September, and may be had in fine condition till the middle of next month. This establishes their claim to be considered what we have often pronounced them to be, the most valuable of winter and spring-blooming plants, dethroning even Cinerarias and Primulas, which were well-established in our greenhouses long before the Cyclamen. Some years ago one saw half-a-dozen Cyclamen blooms perchance among the gay show of ordinary greenhouse plants. Now the tables are turned, and well-grown Cyclamens are the gayest of the gay. In the various collections shown, the variety of form, as well as of colour, was most interesting. This will, doubtless, soon lead to the existence of lists of named varieties, such as happens with "florist's flowers;" but the Cyclamen is in itself such a lovely flower, that those who raise a good batch of seed will really be as rich in beauty as the most fastidious seekers after perfection could desire to be.

Orchids were furnished in great variety and beauty. A plant of *Masdevallia Lindeni*, bearing nine brilliant purplish magenta-coloured flowers, was one of the most lovely of cool-house Orchids. This came from Mr. Linden, of Brussels, to whom a cultural commendation was awarded. *Masdevallia Veitchii*, from Messrs. Veitch, and *M. ignea*, from Mr. Bull, likewise upheld with credit the surprising variety and beauty possessed by the different species of this fine genus.

The first prize *Odontoglossums*, a class of Orchids excelled by none in point of delicate loveliness, contained *O. Phalenopsis*, *O. Alexandræ*, *O. triumphans*, *O. hystrix*, *Hallii*, and *Pescatorei*. These came from Mr. Ward, gardener to T. G. Wilkins, Esq., Leyton. Mr. Bull won the second prize, and Mr. Linden the third.

Conspicuous among other Orchids were *Phalenopsis grandiflora*, growing admirably on bare wood, from Messrs. Veitch, and a grand plant of *P. Schilleriana*, from Mr. Williams. Among others, we noticed the exquisite little *Cypripedium niveum*, with charming whitish flowers, and *Oncidium sarcodes*, a distinct and beautiful species.

From Messrs. Veitch came a pretty *Oncidium* called *O. Croesus*, a kind dwarf in habit, and bearing flowers of a yellowish colour, spotted with dark brown. To this a first-class certificate was awarded. Another rare *Oncidium*, in the way of *O. ampliatum*, came from the Society's gardens.

An example of *Odontoglossum cristatum*, literally loaded with flowers, was exhibited by Mr. Ward; and Messrs. Veitch contributed a magnificently-flowered plant of *O. Andersonianum*, a kind believed to be a natural hybrid between *O. Alexandræ* and *O. gloriosum*. Natural hybridism in this direction, it may be remarked, does not appear to be a rare thing among Orchids; for Mr. Richards, gardener at Gunnersbury Park, also showed an imported plant in every way like *O. Andersonianum*, except that it was inferior to Messrs. Veitch's plant in point of beauty.

Trichopilia suavis, from Mr. Williams, was shown large and well-bloomed; and a fine variety of the same, with a reddish throat, was contributed by Messrs. Veitch. A plant of *Ada aurantiaca*, a compact and desirable cool-house Orchid, was furnished by Messrs. Rollisson.

To *Dendrobium pulchellum*, a charming basket plant, an extra prize was awarded.

Those beautiful and interesting hardy Orchids, which for several years past have delighted lovers of hardy plants at our flower shows, were again shown in excellent condition by Mr. Needle, gardener to his Royal Highness the Comte de Paris, York House, Twickenham. Thenceforward, nobody need doubt that these plants may be grown with ease in pots. Amongst them, we noticed *Ophrys fuscæ*, *O. bombylifera*, *O. lutea*, *O. mammosa*, *O. speculum*, *O. tenthredinifera*, *O. aranifera* var., *O. ferrugineum*, *O. apiculata*, and *O. Bertoloni*; also *Orchis maculata*, *O. longicruris*, *O. papilionacea*, and *O. quadripunctata*.

Grand collections of Roses, consisting of both plants in pots and cut flowers, were exhibited by Messrs. Veitch and Mr. Wm. Paul. To *Anthurium Scherzerianum*, one plant from Messrs. Veitch, and another from Mr. Wills, extra prizes were awarded. *Amaryllises* came from Mr. Baxter, gardener to C. Keiser, Esq., Broxbourne, who also showed a collection of seedlings, all promising sorts. A fine collection of *Amaryllids* was also staged by Messrs. Veitch.

Perhaps the most attractive feature of the show was a gorgeously-bloomed collection of Clematises in pots, from Mr. Noble, of Bagshot. These charming flowers, possessing, as they do, great variety and delicacy of colour, form lovely objects in greenhouses and conservatories in spring and early summer, while for outdoor decoration later in the year they are equally well adapted.

Among *Rhododendrons* was Countess of Haddington, with great trumpet-shaped white flowers, tinged with pink, also a few other fine kinds. *Asclepias* comprised a pure white kind, with flowers bold and symmetrical, named *Beauty of Surrey*. This came from Messrs. F. & A.

Smith, of Dulwich, and received a first-class certificate. The charming Tillandsia Lindenii was again exhibited by Mr. Williams; also another variety by Mr. Linden, called Lindenii vera, a kind with deep rosy bracts, shorter and broader than in the ordinary T. Lindenii.

Enchilition corallinum, with singular wax-like flowers, was also furnished by Mr. Linden. Several fine Palms, some singular-looking Arads, and many other plants of interest, were shown by Mr. Bull, who received a first-class certificate for Zalacca edulis, a graceful-looking and promising Palm. A plant of Areca Baueri, that received an extra prize, came from Messrs. Rollisson.

Amongst hardy plants we remarked the pretty and distinct looking Iris iberica, which is amongst the most curious and beautiful of its class, also the lovely little white Primula nivalis, a plant shown by several exhibitors, and a few plants of P. japonica just coming into flower.

Collections of Daffodils were shown by Messrs. Barr & Sugden, of Covent Garden, Mr. Masters, of Canterbury, Mr. Rawson, Bromley Common, and Mr. Leeds, of Manchester. In the last collection we noticed several hybrids of distinct character.

Of fruit there was little, but vegetables, especially salading, were well represented. Of Pears, two seedlings were exhibited by M. A. de Biseau, d'Hantville, Binche, Belgium; one of these, named Beurre de Biseau, was of remarkably fine flavour, and was awarded a first-class certificate; the other was too far gone to judge of its merits. A fruit and some foliage of the Chocolate tree, that created no small amount of interest, were sent by Dr. Moore, from the Royal Botanic Gardens, Glasnevin. Cucumbers were very fine, two of them measuring two feet three inches each in length; black spined sorts consisted of Oates' Black Spined and Blue Gown; of white spined kinds, there were Pizzey's Favourite, and Winter Supply; of smooth kinds there were Tender and True, and Telegraph.

Of salad vegetables the following came from Mr. Record, gardener to the Marquis of Salisbury, and Mr. J. Hepper, gardener to C. O. Ledward, Esq., Acton, to both of whom equal first prizes were awarded:—Cucumber—Telegraph; Lettuce—All the Year Round, Grand Admiral, Neapolitan; Endive—Moss curled, Batavian, Green curled; Celery—Veitch's Silver White, William's matchless Red; Beet—Nutting's, Pine-apple, Carter's Perfection; Cress—American, Water, Australian or Golden, Curled; Mustard—Winter, White; Radish—Wood's Early Frame, French Breakfast, Red and White Turnip; Corn salad; Chicory; Tarragon; Onions—Tripoli; Sorrel—French; Chervil—curled; and Parsley—Myatt's Curled.

The small salad materials were clean-looking and well grown, but it need not be added that there is no difficulty in the production of such. The essential elements of a good salad, i.e., Lettuce, Endive, &c., were simply wretched; the Radishes, except in one case, were all too old; of course we should not expect good Lettuces in the open ground at this time of year; but, considering the appliances now in our gardens, we were surprised that better Lettuces were not shown.

A few good heads of Broccoli were exhibited; some heads of Matchless, large and close, were sent by Mr. G. Cooling, of Bath; there were also some heads of Excelsior, large, and not unlike the former, but perhaps more closely covered by the leaves, from Messrs. T. Watt & Sons, Northampton. A rather curious kind called Leamington, from Mr. Perkins, was shown, and, judging from one we saw cut open, it appeared to be an improvement on the others; the flower was very white, compact, clean, and closely covered over by several layers of leaves, just as if the flower was produced in the middle of a close-hearted cabbage. This self-protection was represented at the meeting as being as likely to induce rot as protection; but this we hardly imagine will be the case. A plant of finely variegated sprouting Broccoli was sent by Mr. Dancer, of Chiswick. Large specimens of an improved Broad-leaved Dandelion, partly blanched, and producing a great quantity of vigorous-looking leaves, were furnished by Messrs. Stuart & Mein of Kelso.

Mr. Kemp, of Albury Park, sent an example of his grape-preserving rail and stand; and we also noticed another ingenious, yet simple, contrivance for preserving grapes in a similar way after being cut. It consisted of two tin tubes united at the base, in the form of the letter V, filled with water, and suspended by means of a piece of wire attached to the top of each tube, and united above them, so as to be hung over a rail or wire as the case might be. Each tube holds a bunch of grapes, just as if they were in a bottle, and it will be seen that any amount of bunches can thus easily be preserved.

ANOTHER VAST NATIONAL PARK.

We have recently illustrated and described the noble national park known as the Yosemite Valley, and we observe with great pleasure that it is now sought to preserve another and much larger scene for the Americans, or rather for humanity, for all time. This tract of land is called the Yellowstone Park. The following from the reports to Congress shows that the scheme is likely to succeed:—

"The bill now before Congress has for its object the withdrawal from settlement, occupancy, or sale, under the laws of the United States, a tract of land fifty-five by sixty-five miles, about the sources of the Yellowstone and Missouri Rivers; and to dedicate and set it apart as a great national park or pleasure-ground for the benefit and enjoyment of the people. The entire area within the limits of the proposed reservation is over 6,000 feet in altitude, and the Yellow-

stone Lake, which occupies an area 15 miles by 22 miles, or 330 square miles, is 7,427 feet. The ranges of mountains that hem the valleys in on every side rise to the height of 10,000 feet and 12,000 feet, and are covered with snow all the year. During the months of June, July, and August, the climate is pure and most invigorating, with scarcely any rain or storms of any kind; but the thermometer frequently sinks as low as 26°. There is frost every month of the year. This whole region was in comparatively modern geological times the scene of the most wonderful volcanic activity of any portion of our country. The hot springs and the geysers represent the last stages—the vents or escape-pipes—of these remarkable volcanic manifestations of the internal forces. All these springs are adorned with decorations more beautiful than human art ever conceived, and which have required thousands of years for the cunning hand of nature to form.

"In a few years this region will be a place of resort for all classes of people from all portions of the world. The geysers of Iceland, which have been objects of interest for the scientific men and travellers of the entire world, sink into insignificance in comparison with the hot springs of the Yellowstone and Fire-Hole Basins. As a place of resort for invalids it will not be excelled by any portion of the world."

We trust that the bill referred to may speedily become law.

COVENT GARDEN MARKET.—April 5th.

Flowers.—Besides cut flowers in great variety, amongst which were many charming sprays of Orchids, Stephanotis, White Lilac, Guelder and other Roses, we noticed the following in pots, viz.:—Callas, beautifully bloomed; Hyacinths, Tulips, and Narcissi, still fine, especially the Hyacinths; Solomon's Seal, a plant whose beauty is enhanced by being forced; Lily of the Valley; some nice Amaryllids, Gardenias, Mignonette, Cinerarias, single and double Zonal Pelargoniums, Spring Heaths, Azaleas, Camellias, Rhododendrons, Acacias, Cytisus, Spiræas, Tropæolums, Carnations, Fuchsias, Deutzias, double-flowering Stocks, Cyclamens, Chinese Primulas. In addition to these were several plants of Dracenas, both with green and coloured leaves, Begonias, Palms, Ferns in the form of the Maiden-hair, and some of the more graceful kinds of Pteris; also various kinds of Club Mosses, such as S. apoda, Kraussiana, and Mertensii; plain and variegated kinds of Box, Aucuba, Thuja, &c. There were likewise a good variety of flowers from the open air, such as Double Red Daisies, Forget-me-Nots, Pansies, Primroses, Anemones, Daffodils, Hepaticas, Eranthis, Violets, Wallflowers, and others.

PRICES OF FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples 3 sieve	2 0	4 0	Pears, kitchen doz.	2 0	4 0
Chestnuts bushel	10 0	20 0	" dessert doz.	4 0	12 0
Filberts lb.	0 6	1 0	Pine Apples lb.	6 0	10 0
Cobs lb.	0 6	1 0	Strawberries oz.	1 0	2 0
Grapes, hothouse lb.	15 0	25 0	Walnuts bushel	10 0	25 0
Lemons 100	7 0	10 0	ditto per 100	1 0	2 0
Oranges 100	4 0	10 0			

PRICES OF VEGETABLES.

Artichokes per doz.	4 0	to 6 0	Mushrooms pottle	1 0	to 2 0
Asparagus per 100	6 0	10 0	Mustard & Cress, punnet	0 2	0 6
Beans, Kidney per 100	1 6	2 6	Onions bushel	2 0	4 0
Beet, Red doz.	1 0	3 0	" pickling quart	6 0	0 0
Broccoli bundle	0 9	1 6	Parsley, doz. bunches	3 0	4 0
Cabbage doz.	1 0	1 6	Parsnips doz.	0 9	1 0
Carrots bunch	0 6	0 0	Peas, Continental, quart	3 0	3 0
Cauliflower doz.	2 0	5 0	Potatoes bushel	2 0	3 0
Celery bundle	1 6	2 0	" Kidney do.	3 0	5 0
Chiles per 100	1 6	2 0	Radishes doz. bunches	0 6	1 6
Coleworts doz. bunches	2 0	4 0	Rhubarb bundle	0 6	1 0
Cucumbers each	0 6	1 6	Salsify do.	1 0	1 6
Endive doz.	2 0	0 0	Savoy doz.	0 9	1 0
Fennel bunch	0 3	0 0	Scorzonera bundle	0 9	1 3
French Beans per 100	2 0	4 0	Seakale basket	1 0	2 0
Garlic lb.	0 8	0 0	Shallots lb.	0 4	0 6
Herbs bunch	0 3	0 0	Spinach bushel	3 0	4 6
Horseradish bundle	3 0	4 0	Tomatoes small punet	3 0	0 0
Leeks bunch	0 2	0 6	Turnips bunch	0 3	0 9
Lettuce doz.	0 9	1 6	Vegetable Marrows, doz	0 0	0 6

ANSWERS TO CORRESPONDENTS.*

SEVERAL correspondents having sent letters without any address, and one or two even without any name, initial, or other signature, we beg to say that we can take no notice of any communication without the full name and address of the writer, though not necessarily for publication.

B. A. (Only a form of the Common Primrose.)—A. L. (Galvanized wire never hurts fruit trees. The best covered walls we have seen for a long time are those under Mr. Stevenson's charge at Cobham Park, and they are all galvanized.)—HARVEY (Trillium grandiflorum will thrive in any shady position.)—S. L. V. (The blue Apennine Anemone.)—SIR T. B. (Through Vilmorin, Andrieux, & Co., Quai de la Mégisserie, Paris.)—W. (We never heard of a similar case, and shall print your interesting note.)—JAMES ELLIS (Next week.)

EXHIBITION NEXT WEEK: Royal Botanic Society (second spring show), Wednesday, April 10th.

* All questions likely to interest our readers generally are answered in the several various departments.



"This is an art
Which does mend nature: change it rather; but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE SIX OF SPADES.

CHAPTER IX.

WITH that anxiety which we ever feel that they whom we like should like each the other, I have essayed to describe carefully and faithfully the members of our little congress; and though I am well aware how easy it is to sketch from nature without being natural, I hope that I have conveyed to genial minds, by which I mean minds horticultural, some accurate presentments, as well as some favourable impressions, with regard to my floral friends. Writing with truth and earnestly, I permit myself to enjoy the pleasant confidence that I may have imparted to my readers some of the brotherly regard and affection which occupies my own heart for the hoar head of good Mr. Oldacre; for the bright intelligent face of the bearded Chiswick (you should see him in the uniform of our Volunteers, as straight and as handsome as a standard rose-tree!); for the shrewd, thoughtful countenance of Mr. Evans, musing upon soils, and "stopping," and training, with a view to future exhibitions; for the shining jolliness of Grundy; and for the kindly goodness of our worthy Curate. And, having this trust as my encouragement, together with some welcome words of approbation which have reached me from friendly critics, I go on joyously to chronicle our proceedings, and follow up my introduction with a cordial invite that you, my reader, will join us, in imagination and sympathy, as we sit in synod, and will listen leniently to our discursive colloquies.

Be with us, therefore, in those "long nights of winter, when the cold north winds blow;" chair thyself comfortably by our hebdomadal board within the pleasant influence of our glowing fire; charge thy calumet with the soothing weed, and thy crystal with golden wine from "the bright and laughing barley;" while throned on the tiny clouds above us, that sweet little fairy, Queen Fancy, smiles upon our cheerful convocation; and as she waves her magic wand,—

"Again the garden glows,
And fills the liberal air;"

again our beds and borders (hard-frozen in reality without and hidden by the snow) brighten in their summer sheen; again every greenhouse stage bears its precious freight of loveliness; again we see our exhibition vans drawn up at the garden gate, and borne delicately, as though we carried some sleeping beauty whom we feared to wake, the specimen plants so long, so fondly tended, come forth to witch the world; again we await in anxious suspense, during two hours which seem a fortnight, the departure of the censors, and the opening of the doors; again we draw nigh to our favourites, pretending indifference, and trying to saunter, but painfully eager in our fluttering hearts to know what award has been made to us; again those hearts rise, light and bright as a soap-bubble in the sunshine, as we read the welcome words "first prize," or sink, heavy as an underboiled barm-dumpling, to find that we are not placed; again we hear, victorious, that happy "All right, sir," from our gardener, and, like a schoolboy just informed of a hamper, can scarce forbear to cheer; again, defeated, we entertain for a moment an absurd conviction that the judges are either in league against us or in a state of hopeless intoxication, soon recovering our better mind, and finally feeling all the more likely to bear fruit hereafter, like beaten walnut-trees, or any other tree in fact, since each—

"Sucks kindlier nature from a soil enriched
By its own fallen leaves; and man is made
In heart and spirit from deciduous hopes
And things that seem to perish."

Such are our reflections and remembrances, and very soon, after a few preliminary remarks upon the weather, the news of the great world in general and our little world in particular, we come—

"Like doves about a dovecot, wheeling round
Our central wish, until we settle there,"

to open our hearts concerning them. And it is amusing to note the change that has come over us, now that our tourney is over, and the heavy harness of warfare doffed for the trunk-hose of peace. Can we be the same knights, who, whilome reserved, and cold, and dignified, moved through the serried lists? Can I be that captious florist, who, when dear Mr. Oldacre gave me his "candid opinion," which I pressingly solicited, about my bedding out (only I did not really want him to be candid, except in the sweetmeat sense), and told me that I "had sadly too much *Perilla*, and that the effect of my design was *hearsey*"—can I be the man in whose disappointed breast a malignant voice was permitted to whisper something about a "superannuated jackass?" Alas, I know myself to be so; and I make feeble amends by a tardy thanksgiving to my mentor, and by an acknowledgment to myself that I deserve flagellation from a robust lateral of *Araucaria imbricata*. And here is Mr. Evans, in a like spirit of meek magnanimity, acknowledging that his *Dahlias* were not large enough, whereas when the judges gave them second honours, he designated those functionaries as "three old scarecrows," and expressed a strong belief that they were only competent to grow groundsel for sick canaries. Even Mr. Chiswick is acknowledging a failure with regard to some choice *Auriculas*, and making to his neighbour the Curate a sort of auricular confession; while wise Mr. Oldacre laughs at us all, well knowing that, when spring and summer come, we shall be just as sensitive, jealous, and contentious as before. "But it's all right," he says, "for you're as honest and earnest in peace as in war, and whether the hand is open for amity or closed for sparring, the heart goes with it. May the best man win!"

Ordinarily, we have no stated subjects for discussion, and we pass from one topic to another, as the occasion prompts. We touch promiscuously upon boilers, flues, and stoves; heating, shading, and ventilating; washing, sulphurating, and fumigating; disbudding, stopping, and pruning; tying, training, and packing; manures, solid and fluid; soils, sands, and peat; tallies, ligneous, metallic, vitreous; traps for earwigs, birds, and mice; tiffany, nets, and bunting; knives, saws, and scissors (nothing said about tweezers);—these, with five hundred other matters—for our conversation takes an unlimited range, from a caterpillar to the Crystal Palace—pass rapidly before us, as we sit in conclave, "dreaming the happy hours away."

But for six nights in the year, at Christmastide, we have special subjects for the evening's consideration. Each member of "The Six of Spades" is called upon either to deliver a lecture, tell a story, or sing a song, in his turn. Here is our last programme, and a faithful chronicle of its realization shall be given hereafter in THE GARDEN:—

"THE SIX OF SPADES."—SPECIAL MEETINGS.

Date.	Member.	Subject.
1st Evening . .	THE PRESIDENT . .	Rosa Bonheur.
2nd Evening . .	MR. OLDACRE . .	The Lady Alice.
3rd Evening . .	MR. CHISWICK . .	On Bedding Out.
4th Evening . .	MR. EVANS	Shows and Showing.
5th Evening . .	MR. GRUNDY	Mr. Grundy's Song.
6th Evening . .	THE CURATE	The Happiness of a Garden.

S. R. H.

(To be continued.)

Change of Habit in a Plant.—*Loranthus macranthus* is one of the most interesting parasites belonging to the New Zealand flora, and is nearly allied to our mistletoe. Originally parasitic on native trees belonging to the orders Violariaceæ and Rutaceæ, it appears now to have nearly deserted these in favour of trees introduced since the colonization of the islands by Europeans, especially the hawthorn, plum, peach, and laburnum. The latter tree was only introduced in 1859, and appears now to be one of its most favourite resorts, where it is abundantly visited by the (also introduced) European honey-bee.

NOTES OF THE WEEK.

— It is announced that California has hired a State Tree-Planter at a cost of 15,000 dollars a year and expenses.

— ACCORDING to Mr. Scott, there are now forty thousand hands employed irregularly in the London market gardens. These are engaged in the cultivation of eighteen thousand acres.

— MINTON'S famous majolica fountain in the Horticultural Gardens, a relic of the Great Exhibition of 1862, is now in course of dislocation, with a view to its removal to the new museum at Bethnal Green.

— THE severity of the past winter in America may be gathered from the fact that this year, for the first time within the memory of man, Lake Michigan has been frozen over as far as the eye can reach, the ice being from four to eight inches in thickness.

— WE hear from Mont-de-Marsan, that the immense plain situated between Moreux and Solferino, in the Landes, and which is covered with young Fir trees, is the scene of an extensive fire, which lights up the sky for a distance of many miles.

— IN California, a new use has been found for the tules or reed-like vegetation which grows on the swamp lands. It is said to yield from fifty to sixty per cent. of paper pulp, equal to that obtained from cotton.

— PRINCE ARTHUR will visit Liverpool on the 20th of May. On his arrival an address will be presented to him at the Town Hall; a procession will then be formed, and proceed to the New Sefton Park, which the Prince will formally open.

— THE Metropolitan Board of Works is employing labourers in filling up the holes on Hampstead Heath, and has instructed its landscape gardener to employ the necessary labour, and obtain seeds for sowing furze, grass, &c., on such spots as may be considered desirable.

— FROM a recently-published return, we learn that there are in France the enormous number of six millions, thirty-seven thousand, seven hundred, and forty acres devoted to the culture of the grape vine. This, we believe, is more ground than all other nations put together devote to wine making.

— MR. H. P. PATTERSON, San José, California, writes to us respecting a beet grown by Mr. Z. M. Brown, near San José, which weighs 175 pounds, measuring six feet long (tops and roots) and three feet in circumference. It grew within twelve months from seeds, with irrigation, but without manure.

— THE Havre papers announce that that town is about to be transformed. A large boulevard, which will be called "Boulevard Maritime," is to reach the whole length of the shore, from the jetty to the cliffs of Ingonville. A wall to support it will be built on the side of the sea. It promises to be one of the most beautiful promenades known.

— AMONGST work in hand in Rome now is the decoration of the public gardens on the Pincian Hill. This favourite promenade is to be supplied with water from the restored Marcian Aqueduct; the walks and plantations are to be renovated; and new busts of celebrated men added to those set up there by the Government of 1849.

— THE Royal Parks and Gardens Bill has resulted in a compromise. Under the new "rules" meetings are to be permitted in Hyde Park, Battersea Park, Victoria Park, and Regent's Park; and any topic whatever may be freely discussed, subject only to the very reasonable restriction that two discordant meetings may not be held at the same time and upon the same spot.

— WE learn that the Cape has recently been enriched by a large introduction of florists' flowers and bulbs; also that seven large cases of seeds, bulbs, and trees, principally of an economic nature, were received by the early January mail steamer, for disposal by the superintendent of the Botanic Garden. In this importation there was a large number of varieties, new to the Cape, of apples, pears, plums, and cherries, seven new varieties of strawberries and Golden Champion grape vine. Upwards of one hundred new dahlias have also been received.

— A MEETING was held this week in the Birmingham Town Hall, "to petition Parliament against a proposal to construct any line of railway through Sutton Park." On Thursday last, in the House of Commons, Mr. George Dixon, one of the M.P.'s for Birmingham, moved that the consideration of the Wolverhampton, Walsall, and Midland Junction Railway Bill be postponed for six months. The Bill proposes to make a line of railway through the prettiest and

most frequented portion of Sutton Coldfield Park, near Birmingham, which may be described as the Epping Forest of that district. There appears to be no reason, beyond that of additional cost, why the projected line could not be made outside the park.

— THE schedule of the Royal Horticultural Society's great summer exhibition at Birmingham is now ready for distribution. The special prize fund, we observe, has reached £945, a sum still short of the amount required by the local committee. Further donations are therefore urgently solicited. The regulations respecting the exhibition of horticultural buildings, implements, &c., are also now being issued to the public along with the schedule.

— At the Horticultural Congress at Birmingham, two meetings, we understand, will be held at Aston Park, viz.: on Wednesday and Thursday during the show week, for the discussion of subjects bearing upon horticulture. Each meeting will be opened with a short address. That on the first day by Professor Thiselton Dyer, "On Recent Progress in the Scientific Principles of Horticulture." That on the second by T. Moore, Esq., F.L.S., "On the Recent Progress of Practical Horticulture." The same division of subjects will be followed, as far as possible, in the papers arranged to be read each day. The reading of each paper will be limited to a quarter of an hour, and speeches in discussion to ten minutes. In order to arrange the business of the meetings, it is requested that the papers (or abstracts of them) intended to be read, may be sent to Professor Dyer, Royal Horticultural Society, South Kensington, not later than June 1st. The chair will be taken punctually, each day, at four o'clock p.m.

— A FRENCH horticultural swindler is now practising in New York. The specimens of pears in the front window of his shop were found either to have been raised in a hothouse or made of wax. Large numbers of peach trees were described as producing a peach twenty inches in circumference without stone; but on close examination the trees were found to be dead. A coloured plate of gooseberries of various colours all growing upon the same bush, was shown, the bushes selling for two dollars each. Then there were trees four feet high, which were said to produce strawberries exactly resembling "those" raised on vines. This the proprietor regarded complacently as a great convenience, as it facilitated the gathering of the fruit. For these trees in embryo he charges ten dollars each. If the stories of this Frenchman are to be believed, the ladies are certainly greatly indebted to him, for he says he has obtained that long-sought-for and much-desired flower, the blue moss rose, the "bulbs" for the propagation of which he offers for the modest price of five dollars each.

— THE question of preserving for public use Plumstead Common and Bostol Heath, situate at the south-eastern extremity of the metropolis, having been referred by the district board to the Metropolitan Board of Works, inquiries have been set on foot to ascertain upon what terms the trustees of Queen's College, Oxford, who assume to act as lords of the manor, are disposed to sell their rights over the common. The sum named by the College is £18,000; but the superintending architect of the Board having stated that the rights in question are not worth more than £4,000 or £5,000, as the College is prohibited by a recent judgment from building upon or enclosing a foot of the soil, the Board has refused to entertain that offer. The Parks and Open Spaces Committee has, however, reported upon the expediency of preserving these picturesque places for the benefit of the public, and the Board is now endeavouring to obtain control of the commons by a scheme under the Act of 1866, a memorial having been presented on the subject to the Enclosure Commissioners.

— FRANCE has the largest number of landed proprietors in the world, the most minute subdivision of land, and at the same time the best existing system of registration. The geodesical chart, or *Cadastre*, as it is called in France, and its accompanying register, shows not only the piece of land belonging to each person, but each kind of land separately, and one holder may of course have parcels of arable, meadow, vine, or other ground, &c., on each of which he pays a different rate of land tax. In addition to this, every change in proprietorship, and every alteration of boundary between different parcels of land, and every conversion of a piece of land, has to be entered in a supplementary register, with references to the original and to the chart. This register contains not only the name, address, &c., of the proprietor of each parcel of land, but the exact measurement—no error larger than two metres in a thousand being permitted—of each of its sides, with its mode of cultivation or application. It is estimated that the cost of a new chart and register would be about nine millions sterling; the original *Cadastre* took nearly forty years to complete, and the smallest time that would suffice for the work, with the number of surveyors at present available, is said to be between twenty and thirty years.—*Architect.*

THE FLOWER GARDEN.

BEDDING SUCCULENTS.

AFTER the rage for colour only in our flower gardens began, in some measure, to subside, something more permanent and quiet in the way of decorative plants was inquired for. Many found, from experience, that a heavy shower washed

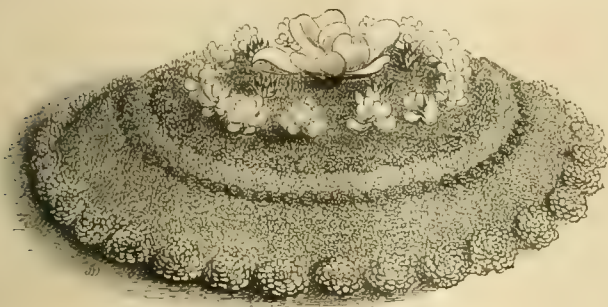


Fig. 1.

away the beauty of their *Calceolarias*, *Pelargoniums*, and *Verbenas*, and that drought often put an end to *Lobelias*. What, therefore, shall we have next? Our old friends, the Succulents, are not afraid of either sun or rain, and they are easily wintered. Let us have them: but we want variety in the way of growth and colour. A few notes, therefore, concerning such as are best adapted for bedding purposes may be useful.



Fig. 2.

For centres of raised beds or for vases, *Agave Verschaffelti*, *Seemannii*, *americana variegata*, and *mediopicta*, answer perfectly; also *Aloe arborescens*, *fruticosa*, and *socotrana*. For centres of circles, or to diversify a bank, *Gasteria verrucosa*, *Bowieana*, and *candicans*, are all that can be desired. Among tall sorts none are better than *Echeveria metallica*, *metallica glauca*, *gibbiflora*; and among dwarf kinds, *atropurpurea*, *secunda glauca*, *californica*, and *agavoides*.

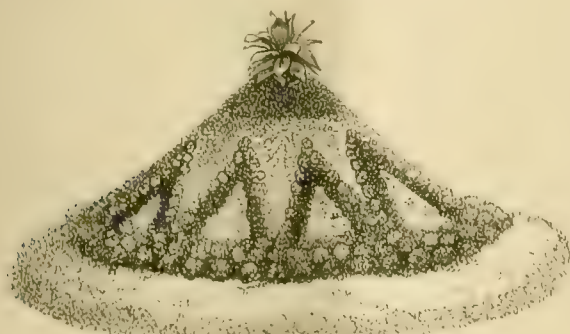


Fig. 3.

As to others, the following are useful as bedding plants, viz.:—*Pachyphytum bracteosum*, *roseum*, and others. Tall *Sempervivums* may consist of *arborescens*, *atropurpureum variegatum*, *helochrysum*, and *balsamiferum*. Large yet compact sorts may comprise *canariense*, *urbicum*, *cuneatum*, and *velutinum*. Small kinds, as *Haworthii tabulaforme* and *aureum*

Bollii; and dwarf hardy *Sempervivums* as, *californicum*, *hirtum chrysanthum*, *tectorum*, *soboliferum*, and *montanum*, are always useful.

Among *Mesembryanthemums*, compact for margins, take *M. fissum*, *Cooperii*, *agninum*, *tigrinum*, *felinum*, *linguiforme*, *bifidum*, *densum*, *hirtum*, *stellatum*, and *murinum*. Those for hanging over vases, or for pegging down, may consist of *M. polyanthum*, *retroflexum*, *roseum*, *emarginatum*, *spectabile*, *diflexum*, and *aggregatum*. Among white kinds, select *M. blandum* and *curvifolium*. *Kleinia repens* and *tomentosa* are also good white sorts. *Senecio pyramidatus* reaches a height of eighteen inches. *Crassula Cooperii* and *rosularis* are dwarf sorts; and of creeping kinds take *C. marginalis* and *perforata*.

Among tall *Cotyledons*, the best are *pulverulenta* and *elongata*; and among dwarf kinds, *maculata*, *cristata*, and *Cooperii*. Hardy *Sedums* may consist of *S. glaucum*, *hispanicum*, *dasyphyllum*, and *formosum*, among white sorts; *S. reflexum*, *virescens*, and *acre*, green kinds; *S. pulchellum* and *rupestre*, red; and *acre aureum*, yellow. Among *Mammillarias*, there are *spinosissima*, *rosea*, *rose*; *Parkinsonii*, *nivea*, *eximea*, *stellaris*, white; *auriceps*, *sulphurea*, *stella aurata*, and *densa*, yellow. In addition to these, the following will be found useful:—*Echinopsis multiplex* and *Eyriesii*; *Cereus strigosus*, *cinerascens*, and *procumbens*.

Among dwarf Cacti there are many which might be used; but these are the freest and most easily obtained. Those who like diversity of height may use *Cereus peruvianus*, *glaucus*, and *variabilis*; *Opuntia tunicata*, *leucotricha*, and *horrida*, which grow one, two, and four feet high. *Aloes* and *Gasterias* should be well exposed before being planted out, and they are best plunged in their pots.

Fig. 1.—Centre, *Echeveria metallica*; ground covering, *Sedum* and *Alternanthera*; next, *Echeveria agavoides*; then *Pachyphytum bracteosum*; circle, *Sempervivum californicum*; margin, *Echeveria glauca*.

Fig. 2.—Top, *Echeveria metallica glauca*, *agavoides*, *californica*; angular margin, *E. glauca*; circle, *E. secunda*; centre, *Sempervivum tabulaforme*; ground covering, *Sedum*.

Fig. 3.—Top, *Agave*; ground covering, *Sedum*; margin, *Echeveria secunda*. J. CROUCHER.

THE DAFFODIL GARDEN.

I HAVE only known two gardens of this kind that seemed in any way perfect, and they contained no variety, only masses of the great yellow Daffodil. Talk of apples of gold in baskets of silver, doubtless they are very beautiful; but the green and gold of Daffodils is even richer and more satisfying. And they rest not day nor night. The merest zephyr stirs leaf and flower like the gentle ripple of the sea.

There stands a pretty dairy at the end of a long walk, which connects it with a ducal kitchen garden. The walk shoots straight as an arrow to its mark, through tall overhanging trees, and hits the dairy in the doorway. But what is that great globe of green and gold in front of the entrance? Seen from under the shade of the wood it looks like a bright cloud or an enormous golden balloon. Why, that is a bed or garden of Daffodils, glowing brightly through the keen, pure air of March!

There is a second Daffodil garden. Across a green lawn, away through glossy hollies, like the walls of green yews, past masses of *Rhododendrons* lying on the turf, which they have largely overrun, under silver larches, along a walk running round veritable lines of beauty, slipping down valleys and climbing tiny banks, there lies a Daffodil garden, retreating from the eye till its outer boundary is lost amid the green skirts of the overhanging shrubs. It is large, irregular, natural. Its bulbs are planted in large masses in the turf, and the interstices are filled up with common primroses. The leaves and flowers spring forth amid the tender grass, furnishing a niche in the wood far from other flowers, and the surprise and delight which they afford are unbounded. Such groups in gardens of one common plant illustrate in an extraordinary manner the cumulative effect of mere numbers. One—a dozen, a score, a hundred Daffodils may be seen and admired, and almost immediately forgotten; but a waving sea of Daffodils—never. While thus writing of the beauty of the common sort, I must not be understood as disparaging other varieties. On the contrary, I should like to see niches in pleasure-grounds, shrubberies, and woods furnished with them all on a scale of equal width and grandeur. Then, indeed, would our Daffodil gardens become the sweetest and best of features about a place.

D. T. F.

SHRUBBY CALCEOLARIAS.

ACCOUNTS of failures in the growth of shrubby Calceolarias have often surprised me. When I hear complaints made against Calceolarias, or see, as I sometimes do at planting-time, little stunted bits of yellowish green doing duty for them, I feel sure that the plants have been coddled in a greenhouse or starved in small pots. Give them plenty to eat, keep their heads cool, and they will grow like lettuces.

Where bedding plants are grown by the thousand no doubt the best plan is to appropriate a cold frame to the cuttings in the autumn; but I am writing for amateurs, who, like myself, want but about two or three hundred plants at the most, and who cannot set apart a frame for the special treatment of one class only. My plan, therefore, is to insert the cuttings in eight-inch pots about the end of October. Nearly one-half of the pot is filled with drainage, and an open porous soil is used, leaf mould and road sand in the proportion of about two parts of the former to one of the latter being as good as anything. Each pot holds thirty cuttings. When these have been inserted, a thorough watering is given, and the pots are placed, wherever I can find room for them, amongst the chrysanthemums, which at that time occupy my small orchard house. Water is given during the winter only when the pots begin to get dry, and then enough is supplied to make its appearance at the bottom of the pot. Should the weather prove severe, I generally contrive to move the pots to a place where they will be just safe from the frost; at the same time, fire heat is a worse enemy than frost, for in the winter of 1870-71 my pots of cuttings were frozen through for three weeks or more, and I subsequently had no scarcity of plants for my beds.

As there should be a reason for everything, I may as well say that I recommend eight-inch pots, because they hold sufficient soil to keep moist without wanting perpetual watering, so that the plants do not alternate between extremes of wet and dryness; and I take my cuttings late in October, because there is always at that time an unlimited supply of healthy growth to choose from, and no weak shoots are made in winter, as would be the case with cuttings taken earlier in the season. At the end of the year I do not suppose my cuttings have made a single root, but by the end of January the pots are well filled, very few cuttings ever failing. They are then shaken out and planted in wooden boxes at about three inches apart, where they remain (still in the orchard house) until spring weather sets in. They soon make rapid growth, and are from time to time pinched to keep them bushy.

About the first or second week in April, or earlier if the weather appears settled, they are planted at about nine inches apart in a sheltered corner of the garden. Here they receive no further protection, unless frosty nights occur soon after they are put out, in which case they have some tiffany thrown over them. Were not my beds always full of spring flowers at the time, I think it would be better to plant at once in the positions intended to be occupied in summer. The plants are kept constantly stopped as they make fresh shoots, and by the time they are wanted they are nearly a foot through.

And now as to soil. I have seen a strong soil recommended, but of such I have no experience. I use, both in my boxes and afterwards in the nursery bed, an open and porous soil, or, if I may so describe it, an elastic soil, composed chiefly of decayed leaves, such as one finds ferns revelling in in woods.

The one fault of the Calceolaria, and no doubt the reason of its being in ill-favour with many people is, that it is apt to flower itself out in a hot, dry summer by August, when other bedding plants are at their best. This may be of more consequence to those who "bed out" elaborate patterns than it is to me. Flowers are as valuable to me in June and July as afterwards, and I can excuse plants taking a rest after giving me, for six or eight weeks, a sheet of bloom. I know my Calceolarias will be bright enough again when the autumn rains revive them. This exhaustion may, however, be in a great measure obviated by placing a good layer of half-decayed leaves or manure in the beds, and giving copious supplies of water in hot weather, and if in addition a situation shaded in the hottest part of the day is chosen, and about

half of the first set of blooming shoots are pinched back before flowering there will be little reason to complain of the plants at any season.

I do not think the Calceolaria is suited for places exposed to a blazing sun, though it will stand a good deal if kept cool and moist at the roots. There is no lack of plants which rejoice in such positions. Calceolarias, especially yellow ones, always look best without direct sunlight, and to my mind yellow should be but sparingly used in the full glare of a summer's sun. W.

A RAMBLE AMONGST BRITISH ORCHIDS.

A YEAR or two ago I was in Buckinghamshire in March, in a neighbourhood abounding in British Orchids. The first I found was the beautiful *Orchis mascula*, there called Ring Fingers. Arleyford Wood contains thousands of them, and myriads of Primroses. I looked amongst them and saw one, a snow white variety of *O. mascula*, which I dug up with as much earth as would adhere to its roots, brought it home, and carefully potted it. The first season it was magnificent, and kept in bloom for six weeks, a much longer period than the usual purple form would have done; indeed, I am not quite certain that it is not a distinct species. One day I was told that Whittington Park was famous for Orchids, so away to it I went, and there I found *O. Morio* in many varieties, from pure white to the richest purple; and in a piece of sandy bog I met with *Epipactis palustris*, *Listera cordata*, and *O. maculata* in many shades of colour, notably a pure white variety. *Orchis maculata* is a fine thing for pots, and is easily cultivated; so are *mascula* and *Morio*. I found also in this bog the beautiful little *Anagallis tenella*, and in the same field *Spiranthes autumnalis*; over the hedge, in a wet place, was a grand lot of *Chrysosplenium oppositifolium*, and nearer *Epipactis purpurata*. In the adjoining wood I came upon a bog containing a fine grove of *Equisetum Telmateia* and *E. sylvaticum*; and in the wettest places, Buckbean. In this wood I also found a variegated form of *Pteris aquilina*, and *Osmunda regalis* grows there, but I did not see it. *Listera ovata* I also found in great quantities, and one plant of it beautifully variegated; and, last of all, such grand plants of *Habenaria bifolia*. Altogether I do not remember any thing that pleased me more than meeting with these floral gems. Masses of the lovely *Pyrola media*, *Epipactis latifolia*, also abound in that neighbourhood.

In respect to cultivation, I have tried the different methods recommended, such as mixing chalk with the soil; but I find this does not suit. I take equal parts of maiden or hazely loam, sandy peat, and leaf mould, not much decayed, plenty of silver sand, and some broken bits of charcoal; I also crock with charcoal. Dig up the plants any time when you can find them with a ball of earth; when they are taken home, carefully remove all the earth you can without injuring the roots, drain well, and pot carefully and firmly. Plunge the pots under a north wall and in clean river sand; supply them liberally with water during the growing season, and in November remove them into a cold frame having a southern aspect, and you will be surprised at the result. They require to be more generously dealt with under artificial treatment than might be imagined from the position and localities in which they are found. *Ophrys apifera*, *O. muscifera*, and *Orchis pyramidalis* are capital sorts for pot culture. *Gymnadenia conopsea* I found on Ashley Hill, also a beautiful white variegated form of *Epipactis latifolia*; and in the Muntz a lovely variegated *Epipactis purpurata*, with the foliage banded and striped with rose colour, much in the same way as *Tradescantia discolor*; this I have unfortunately lost. I find that variegated forms are very common where Orchids abound. *Neottia Nidus-avis* can be cultivated; I do not think it is the root parasite that some observers have stated. If anyone would collect the whole family of British Orchids, and grow them as they are capable of being cultivated, they would form a *tout ensemble* worth a long journey to see. What a grand bog-plant *Orchis latifolia* is! and what is that *Orchis* so much like it, but with larger flowers, denser spikes, that blooms a month or five weeks later, and in a similar situation? I shall strenuously exert myself to bring these and other rare plants into notice, and then, when the public get familiar with them, no place will be complete without its bog garden. Of late years the great improvement in public taste for variety in decorative plants, has given a stimulus to the cultivation of these our native plants; for many are the undiscovered gems we possess, wasting their sweetness on the desert air, where the windflowers dance merrily in the breeze, where the sundew opens its golden eyes in the depths of our grand old woods, and by the side of the laughing ripples as they leap from the mountains to the valleys. Verily, does not nature sing an everlasting song, and shall not we rejoice in these the lovely children of the wood and wild? W. ELLIOT.

THE ROSE SECRET.

AFTER all that has been said about striking rose-cuttings as easily as willows, I wonder that none of your correspondents has made mention of striking them in a way pretty nearly the same as I remember to have struck willow-cuttings when a boy. How this may be done is told in the following extract, which I take from a French work, "La Taille du Rosier," by M. Eugène Forney, p. 69:—

"We are indebted," says the author, "to M. Lucy, of Marseilles, for an ingenious method of striking winter cuttings of the rose, which is easy to perform, and gives perfect results. A piece of stick is laid upon the ground, quite level; on each side of the stick little notches or trenches are taken out with a spade, rose-cuttings of about ten inches in length are made, and bent over the stick, with their two ends lowered into the trenches. The trenches are then filled in with soil, so as to leave only one eye of the cutting upon the top of the stick above ground. It is to be remarked that roots form only at the lower end of the cutting; the other end ultimately withers away up to the young shoot. It is easy to understand that a cutting managed in this way must be certain of success, since its upper extremity, being embedded in the earth, is not subject to dry up in the spring. Hard-wooded kinds, difficult to strike by cuttings, treated in this way, have given excellent results."

I laid after this manner about thirty cuttings of different kinds in October last, and at present they are all in vigorous condition. At the same time I also laid a great number in the ordinary way, and about three weeks ago nearly all seemed flourishing, and likely to succeed. Since then, however, such as were not long and stout, and well buried in the soil, have shown symptoms of dying off, doubtlessly dried up, as M. Forney observes. T. A. C. FIRMINGER, Edmonton.

THE GREAT WATER DOCK.

(RUMEX HYDROLAPATHUM.)

THIS not uncommon native plant is of great value in the picturesque garden; far more so than any exotic we could name as suitable for like positions. It is a very large water-side plant, of a size and habit sufficiently striking to entitle it to a place amongst ornamental subjects by the water-side. The radical long-stalked leaves, which are sometimes two feet



The Great Water Dock.

or more in length, form erect tufts of a very imposing character. The flowering-stem is frequently six feet in height, and bears a very large, dense, pyramidal panicle of a reddish or olive-fawn colour. The plant is most effective in autumn, when the leaves change to a lurid red colour, which they retain for some time. No care whatever is required in its culture. It merely requires a place by the margin of a lake or stream.

FERNS ON THE EASTERN SCOTISH BORDER.

THE following is a list of Ferns to be found around Kelso, and as it is a district often visited by tourists, amongst whom are many Fern collectors, it may be of use in indicating the stations where they are to be found:—

Common Polypody (Polypodium vulgare).—Common on shady banks, rocks, walls, and old trees.

Beech Fern (P. Phegopteris).—Frequent in moist, rocky places on Cheviot and the adjacent hills.

Oak Fern (P. Dryopteris).—This delicate-looking species grows on Cheviot along with the last, also near Hume.

Mountain Parsley (Allosorus crispus).—This elegant Fern is very local in this district; it is plentiful on the west side of Henshole (a wild glen on Cheviot), also on the Eildon Hills, and Black Hill at Earlston; it appears to like good drainage, as almost every plant I have seen of it is growing amongst loose stones.

Common Prickly Shield-Fern (Polystichum aculeatum).—This and the variety lobatum is not uncommon about Makerston and Melrose.

Mountain Buckler Fern (Lastrea montana).—Plentiful in Bowmont Forest, and the sides of hills on the Cheviots.

Male Fern (Lastrea Filix-mas).—This is the most common species in this quarter, where it varies greatly in appearance, both in form and size.

Broad Buckler Fern (Lastrea dilatata).—This, like the last, is both common and variable; it is most abundant, and thrives best in Scotch fir plantations.

Lady Fern (Athyria Filix-ferma).—This graceful and elegant species is frequently met with all over the borders; also the variety purpurea. The variety rhombium is common on Cheviot; I found a very fine form of rhombium in a plantation at Ewart Park, with fronds from four to five feet high.

Forked Spleenwort (Asplenium septentrionale).—This rare little Fern grows on Trap Rocks overhanging the Tweed at Makerston; it appears to delight in sunshine (a rather uncommon thing with Ferns, as all the plants I have seen of it face the south).

Atlantic Spleenwort (A. germanicum).—This was found at one time near Kelso; but as far as I know it is now extinct.

Wall Rue (A. Ruta-muraria).—Rare about here; but may be found on an old wall near Yetholm, and plentifully on Melrose Abbey and Berwick Walls.

Common Maiden-hair Spleenwort (A. Trichomanes).—This is common on rocks and walls about Makerston, Newtondon, Sandyknow Crag, &c.

Sea Spleenwort (A. maritimum).—This handsome evergreen Fern grows sparingly on the coast of Berwickshire; also at Twizel, on the banks of the Tyll, seven or eight miles from the sea.

Black Maiden-hair Spleenwort (A. Adiantum-nigrum).—Found in the same localities along with A. Trichomanes.

Hart's Tongue Fern (Scolopendrium vulgare).—This, though common in many parts of the country, is rare here; it grows on the north side of the garden wall at Newtondon.

Hard Fern (Blechnum Spicant).—Common on the hills and moors; it grows very strongly in Bowmont Forest, the fertile fronds being generally upwards of two feet high. I found a plant there with most of the fronds of the normal form, some forked, others the same as in the variety anomalum, and an intermediate form between anomalum and the type, all on one plant.

Bracken (Pteris aquilina).—Abundant on the hills.

Brittle Bladder Fern (Cystopteris fragilis).—This grows luxuriantly at Aichill Linn, and it is plentiful in some of the rocky glens of the Cheviots.

Wilson's Filix Fern (Hymenophyllum Wilsoni).—I have a specimen of this moss-like species, obtained from a friend, who got it on the Cheviots, though I have not seen it there myself.

Flowering Fern (Osmunda regalis).—I have heard of two plants of this noble-looking Fern being found in this district, one on Cheviot, and the other on Coldingham Moor. It grows luxuriantly about the canal and damp places in Newtondon Woods, but to these stations it has been introduced.

Mosswort (Blechnum Lycopodium).—This is to be found on Cossford Moor, and on the Lammermoors; but it is rare and local.

Common Adder's Tongue (Ophioglossum vulgatum).—Has been found near Melrose.

As the Club mosses are nearly related to Ferns, I may just mention that Lycopodium clavatum is common on all our moors; L. Selago and L. alpinum are also both plentiful on the top of Cheviot.

Kelso.

A. B.

WIGANDIA DISEASE.

I HAVE a plant of Wigandia, one of several attacked by a disease similar, if not identical, with that which attacks the potato. I have seen it in several classes of plants, such as Verbenas, Bauharias, Pentstemons, Heliotropes, &c., and I have for several years tried many methods to get rid of it. I have applied sulphur alone in a dry and in a moist state, also sulphur and soot, and sulphur, soot, and snuff, as I thought at one time the disease was caused by thrips; but I soon found out that it was not caused by an insect. Then I began to think of my old potato remedy, viz., dusting with lime, which thoroughly answered my expectations.

The disease attacks them in the youngest and most tender part of the stem and leaves. About two months since, I had a plant showing symptoms of the disease, on which I operated, and now it is growing away as clean as it was before the attack. The malady appears almost all at once, that is within twenty-four hours, and attacks the young and tender tops. I find, as in the case of the potato, that it is caused by a sudden change from warm and genial to a cold and damp atmosphere. It also spreads rapidly; and for the future I intend trying lime-dusting on all plants affected that come under my observation.

Wellington Nursery, St. John's Wood.

R. H. BARD.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Iris Kæmpferi.—This beautiful little Iris, the varieties of which are so much admired by all who know them, has stood this winter out of doors quite unscathed. Many are not aware that this fine and uncommon plant is hardy.

Palms in Guernsey (see p. 377).—The following have been grown in the open air here for several years past, and do well. They are quite hardy with us, viz.:—*Chamærops excelsa* and *humilis*, and *Rhapis flabelliformis*. *Cordylina australis* and *Banksia* also succeed in the Channel Islands.—JOHN RICH'D. WILLIS.

Single Mauve Primrose.—This beautiful spring flower, sometimes called the Irish Primrose, is now in full bloom in London nurseries, and is a plant worthy of general culture. Another richly-coloured deep magenta single variety, also distinct and beautiful, is likewise in full bloom. These charming early flowers should be seen everywhere, where spring flowers are grown.

Daffodils.—There is a slight error in the interesting notice of Daffodils which appeared in your issue of March 30th (p. 419), respecting the two large varieties distributed by us under the names "The Emperor" and "The Empress." The one with the sulphur perianth was called "The Emperor," whilst the other, with the white perianth, was named "The Empress"—this being exactly the reverse of what was stated by your correspondent.—JAS. BACKHOUSE & SON.

Myosotis dissitiflora.—This charming early spring bedding plant will not, I fear, stand much frost. I had a nice bed of it here edged with the variegated Arabis, and it was in full flower just before the weather changed to its wintry character. Nothing could have looked prettier in the way of a spring bed than it did; but now the flowers look all scorched and dead, and this after two mornings' frosts, on the 22nd and 23rd ult., when 5° and 6° of frost were registered on those days.—WILLIAM TILLERY.

Rock Gardens.—What seeds would answer best to sow in what was formerly a limestone quarry, but which is now prettily planted with trees? The rocks are picturesque.—M.—[You are fortunate in having so good an opportunity of making a noble rock-garden at little cost. The great majority of alpine and dwarf herbaceous plants will thrive well in such a position. To cover the ground and the rock seams, and get a showy bloom soon, you could not do better than begin with all the dwarf bell-flowers (*Campanulas*), and all the good showy cruciferous alpine plants you can get. We allude to the various kinds of perennial rock Candytuft or Iberis, the Alyssums, Aubrietias, and Arabises, all now easily obtained in nurseries and from seed. Consult "Alpine Flowers" and "The Wild Garden," both of which books deal with such spots as you name.]

THE HOUSEHOLD.

SELECT EDIBLE FUNGI.

THE VEGETABLE BEEFSTEAK (*FISTULINA HEPATICA*).

ALTHOUGH the popular name of "liver-fungus" corresponds very well with the scientific name of this species, yet we consider the name of "Vegetable Beefsteak" (aptly given to it by Dr. Bull, of Hereford) so very much better, both as regards the shape of the fungus itself and its taste, too, that we prefer to keep it here as its popular name. The taste is exceedingly like beefsteak; but it must be confessed, that a well-grown specimen more resembles a *great tongue* than either a lump of liver or steak; hence it is known in Italy as "*Lingua quercina*" or "*Lingua di Castagna*," and in France, "*Langue-de-bœuf*."

This fungus, which resembles a great red tongue protruding from tree-stems, when once known can never be mistaken for any other species. It generally confines itself to old (and often prostrate) oaks; but, in Epping Forest it is not uncommon on the beech. We have also seen it more than once on the ash; and it has been observed on the chestnut, walnut, willow, and other trees. We have tasted it from various habitats, but have never been able to detect the least difference in the flavour. Although

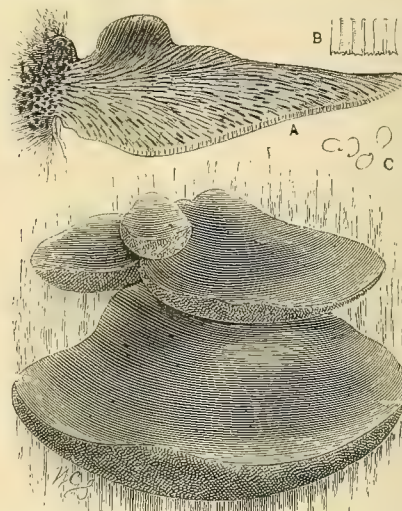
such a large fungus, its growth is very rapid, soon appearing, and again disappearing, on ancient trunks in the autumn.

When cut, broken, or bruised, it distils a copious red juice like beef gravy.

"When grilled," says Dr. Badham, "it is scarcely to be distinguished from broiled meat;" and Berkeley describes it as "one of the best things he ever ate, when prepared by a skilful cook." There is a very slightly acid flavour in the fungus when cooked, which adds considerable piquancy to the dish; it is extremely tender, succulent, and juicy, and resembles tender steak or tongue in a remarkable manner, the juice it distils being in taste and appearance like gravy from an excellent broiled rumpsteak. Of course, it should be gathered when quite young, fresh, and clean, and at once prepared for the table in the following manner:—

Wash and dry, and cut into quarter-inch slices half-an-inch wide, soak in scalding water for five minutes, and stew with butter and herbs; yolk of egg may then be added, and serve hot; or simply stew with a good steak, adding a scallion and parsley, salt, and pepper.

For *Fistulina Ketchup*, slice and macerate with salt, and, says Mrs. Hussey, serve "with a little lemon juice and minced shallots, with a broiled rumpsteak."



BEEFSTEAK FUNGUS (*FISTULINA HEPATICA*).—Upper surface at first pale purplish red, then chocolate; under surface at first cream colour, then yellowish red; flesh, when cut, streaked, red, and juicy, more or less like beet-root; size, from six inches to two feet in diameter.

A. Section through centre. B. Tubes enlarged, showing fimbriated orifices. C. Spores enlarged seven hundred diameters.

Unfortunately there are not many references to fungi in Shakespeare, so that it is extremely difficult to get an apt quotation; but there can be little doubt that Shakespeare was well acquainted with edible fungi, and a certain passage, met with in "As you like it" (Act ii., scene 1, Forest of Arden), if amended as we would suggest, would certainly show that the Bard of Avon was well acquainted with both the habit and edible qualities of *Fistulina hepatica*. The passage we have in view concludes the description of a forest scene, where, no doubt, the *Lingua quercina*, or "Tongue of the Oak," abounded.

The lines are, as usually printed:—

"And this our life, exempt from public haunt,
Finds tongues in trees, books in the running brooks,
Sermons in stones, and good in everything."

Of course, this is so much nonsense; Shakespeare could not have written such lines. Attempts have more than once been made to amend them, but never with any success till now. Without doubt, the following reading is what Shakespeare originally wrote:—

And this our life, exempt from public-houses,
Finds sermons in books, stones in the running brooks,
Tongues in trees—and good eating!

And good eating they are—Shakespeare knew it long before Dr. Badham.

W. G. S.

THE LIBRARY.

"THE MOUNTAIN."*

(SECOND NOTICE.)

"THE MOUNTAIN" contains numerous and beautiful illustrations; chiefly of mountain scenery. It is a companion volume to those interesting works "The Bird," and "The Sea," and is devoted to the aspects and life of the mountain and all its children; its lava streams, and its canopies of snow; its torrents, ravines, and forests. It is not technical; though full of pleasant instruction. We do not find so much about alpine flowers as we should like, though most of the subjects connected with mountains are treated of.

To us the Alpine regions seem an earthly paradise; to those who have to live in their terrible wintry solitudes they bear a very different aspect:—

"The mountaineer does not regard his mountain from the same view-point as ourselves. He is strongly attached to it, and constantly returns to it; but he calls it the 'evil country.' The white glassy waters which escape from it, leaping and bounding in furious rapidity, he names 'the wild waters.' The black forest of firs, suspended to the precipices, an image of eternal peace, is his war, his battle. In the roughest months of the year, when all other labour ceases, he attacks the forest. It is an arduous campaign, and full of perils. It is not enough to fell the trees, and start them headlong; their course must be directed. He must watch them on their passage, and regulate the terrible leaps which carry them to the bed of the torrents. The conquered is often fatal to the conqueror; the tree to the woodman. The forest has its mournful histories of orphans and widows. For the wife and the family, a terror full of mourning rests upon yonder heights, whose woods, mingled with snow, mark them out funereally from afar by spots of white and black. Formerly the glaciers were objects of aversion; men regarded them with eyes askant. Those of Mont Blanc were called in Savoy 'the accursed mountains.' German Switzerland, in its old peasants' legends, doomed the damned to the glaciers. They are a kind of hell. Wee to the avaricious woman—to the hard cold heart which in the

winter drives her aged father from the blazing hearth! As a punishment she shall wander, with a hideous black dog, wander without rest in the regions of ice. In the severest nights of winter, when everybody presses close to the charcoal stove, you may see there on high the white woman, faltering and tottering among the sharp-edged crystals. In the diabolical valley, where, every minute, thunders and crashes the avalanche from the summit of the Jungfrau, a host of doomed barons and ferocious knights ever dash and hurtle one against another, and shatter their fronts of iron."

To see the pathways through some high and narrow valley, garnished with frail and rude wooden memorials of those who have perished, is, however, more suggestive of the horror of mountain life in winter than anything to be gleaned from a description. Our illustration shows a scene in the great Indian range, and also the generic affinity which exists between all mighty mountain chains. Differ they may in flowers, forests, and temperature, but the same law everywhere moulds them, and almost everywhere the stately plume of the pine fringes the silent and perennial snows.

"The resinous trees comprehend more than a genus or family; they are a vegetable world, whose various forms record for our behoof the ages which have preceded our human era. Born in the time of the ferns, the cycads, and the equisetæ, they continue to imitate them in certain species. For example, the ephedra still fashions itself upon the equisetum, but by a system of joints attains a greater stature, and instead of foliage is clothed in scales. The resinous giants, such as the araucaria and the sequoia, still astonish the earth as she was astonished in her powerful youth, when her trees were mountains.

"In the southern hemisphere, the life of the resinous trees, which is more concentrated in genial climates, has a very different character.

Set free from the hard task of supporting masses of snow, and enduring the pitiless strokes of the hurricane, they breathe more at ease. The araucaria of Brazil or Chili bears a leaf like that of our tiny holly. The dammaras of Amboyna and New Zealand, reeking with warm waters, may well dilate their lungs. They cast off the thin needle-like form of the conifers, amplify their foliage, and grow in height and girth without restraint.

"The true stoics are our resinous trees of the North. They endure the sharpest trials by their power of self-concentration and their heroic sobriety. It is by such means they have prevailed over both space and time. Useful and beneficent, and greatly profiting the



Himalayan Mountain Scenery.

* The Mountain. From the French of Michelet. By the Translator of "The Bird." With fifty-four illustrations from designs by Percival Skelton. London and Edinburgh: T. Nelson & Sons.

world, they ask from it scarcely anything in return. One is wholly unable to disembarrass oneself of an emotion of gratitude and religious reverence when, wandering alone among the elevated pasturages of Switzerland, one encounters some of these venerable firs which for ages have been preserved as a refuge and a protection for the herd. One perceives in such localities the importance of the tree's mission. One feels that it is the friend and protector of all life. And well does every creature know it; goats, and sheep, and lambs, and indolent cows, spontaneously resort to its shade to enjoy their repose, each perfectly well acquainted with its own *gogant*—(the name borne by these protecting trees in the Pays de Vaud). There they establish themselves in the summer-time, and are at home. Near at hand the cascade murmurs. At different stages of the lofty tree buzzes and swarms a world of squirrels, insects, and birds."

THE INDOOR GARDEN.

BASKET PLANTS.

THE use of suspended baskets for conservatory decoration has now become so general, that a few remarks on the plants most suitable for their decoration may not be out of place. Formerly the plants grown in baskets consisted almost entirely of orchids, such as *Stanhopeas*, trailing *Dendrobies*, and the like; but now Ferns and Lycopods, Cacti, and succulent plants of various kinds are employed for this description of decoration; and why many other similar things are not used in the same way we do not know. No better way of examining the intricate beauty of some of the smaller melo-cacti could be devised, while a basket thoroughly well furnished with plants of *Cereus flagelliformis*, *Mallisonii*, and others of like habit, in full bloom, would be a sight worth walking far to see. The night-blooming *Cereus*, *C. grandiflorus*, would also be a grand subject for this kind of treatment. Again, for summer gaiety, what could be finer than a mixture of the brilliant orange, scarlet, purple, and silvery-white *Mesembryanthemums*? Of annuals, take the *Portulacas* and *Clintonias*; and for winter and early spring the various kinds of *Tropæolum*, especially the varieties of *T. Lobbiani*, and of the tuberous-rooted species, not forgetting our light and elegant friends *T. tricolor*, *T. Jarratti*, and the lovely blue *T. azureum*. If we go to foliage plants, the stove swarms with them—*Gymnostachyum*, *Fittonias*, *Sonerillas*, *Panicum variegatum*, and such climbing plants as *Cissus discolor*, *Lindenii*, and *porphyrophallus*, the latter especially delighting in a position where, like the ivy, it can root from every joint. Nothing can look more beautiful than these foliage plants when brought between the light and the eye, the *Iresines* and the *Dracænas* being specially beautiful in such a position.

Perhaps, however, the finest examples of basket-gardening are the immense masses of the choicer kinds of *Achimenes*, as they may be seen in the Victoria house and large conservatory at Chatsworth. These baskets are very large, requiring, when filled with soil, four or five strong men to lift one, and each is stocked with hundreds of plants; so that when fully grown they form one dense mass of bloom, almost perfect spheres from four feet to six feet in diameter, and loaded daily for several months in succession with thousands of flowers. It is singular that the original species, *A. longiflora* and *longiflora major* and *alba*, *patens*, *grandiflora*, and *Verschaffeltii* do the best; the modern hybrids not succeeding at all. The preparation for these baskets at Chatsworth is almost like the preparation for bedding out in an ordinary establishment. The caterpillar-like tubers may be seen by the peck, and after a time dozens of shallow boxes with the young plants growing up like small saladings. Still, grand as *Achimenes* are in their season, there is another tribe of plants, which, blooming—

"When chill November's surly blast lays field and forest bare,"

is still more effective. This consists of the *Epiphyllums*; and, though the baskets at Chatsworth have been planted within the last two years, they have already assumed such proportions as to give ample proof that when the plants become fully developed they will form objects of great and novel beauty. The *Epiphyllums* are particularly suited to this style of decoration, for to realise their special beauty the flowers must be seen upon a level with, if not above, the eye; and the baskets can be raised or lowered, so as to bring out the bright tints of their richly-coloured flowers. The *Russelia juncea*, one of those plants which, twenty years ago formed one of our most elegant exhibition plants, has fallen almost out of cultivation. It is a free-growing, light, and airy stove plant, not unlike asparagus in its elegance, with long drooping branchlets, tipped in the blooming season with myriads of bright scarlet, slender, tubular flowers, each about an inch long, and not more than a tenth of an inch in diameter; and hence, whether in bloom or out, it forms

a very elegant plant. Its drooping habit renders it peculiarly suitable for basket cultivation, and, though one plant after two or three seasons' growth would form a very graceful mass, it is better for the purpose of immediate effect to plant four or five in a group. Assuming that you have a basket eighteen inches in diameter, and of proportionate depth, line the inside first with live sphagnum, to which may be added some of the smaller Lycopods. Then fill in with a compost, consisting of tough fibrous loam three parts, flaky, half-decayed leaf mould, and any cowdung made sufficiently hot over a fire or stove to destroy insect life and its ova, one part, and a liberal admixture of charcoal and broken oyster-shells, and some gritty sand. Mix the whole intimately together, having it at the time rather dry, and then fill the baskets quite firm. In the centre, however, place a soft porous six-inch pot, with the hole at the bottom stopped up, and this kept constantly filled with weak manure water will be found of great service, especially in the second and after years of the growth of the plants. Taken out and examined, it will be found that the roots of the plants have wrapped round it like a perfect network, and, if sufficiently porous, it is fair to conclude a large quantity of nutriment would be thus taken up. The basket being filled, procure some *Adiantums* and other small-growing ferns and Lycopods; fill them in as a fringe around the sides, and as they grow they will form a very desirable cover to the basket-work. Then plant your *Russelias*, placing them equidistant around the circumference of the basket, and cover the surface with a few more dwarf-growing plants.

The temperature of the house should be that of the damp stove, 60° to 75° by fire heat, rising to 90°, with plenty of moisture in the atmosphere in bright weather. As the plants get established and the roots active, the syringe must be freely used with tepid water on all sides of the basket; and if sometimes clean weak manure water be added to it, the growth of the plants will be promoted. In the matter of watering plants in baskets, it is necessary that it be done thoroughly, so as to soak the whole mass of soil; and if this cannot be done by simply pouring water upon the surface, then the basket must be lowered into a tub containing sufficient warm weak manure to soak the whole mass thoroughly. For permanent plants this steeping of the soil will be necessary at the commencement of the growth in the spring, and perhaps once a month through the summer and autumn. This, however, will depend much upon the copious manner in which the plants are syringed; the surface of the basket being large, and the air hot and sometimes dry, the evaporation will be much greater than it would be from a pot or tub containing a similar amount of soil.

The branches of the *Russelias*, as they gain strength will rise to the height of five or six feet, and the branchlets, drooping in the most graceful manner, will form a living fountain of exquisite beauty. To bloom the *Russelias* successfully it is necessary that the maturing process be properly attended to in the autumn—that is, the quantity of water must be reduced towards the middle of August, the plants be exposed to full light and a free circulation of air, and in that manner the blooming principle is sure to be encouraged. Through the winter keep the plants dry rather than otherwise, but at the same time see that they do not actually flag. When growth commences in the spring, each tiny branchlet will be tipped with flower-buds in various stages of development, so that a succession of flowers will be maintained for a long time. Of course in the blooming season manure water must be supplied; and by copious syringing; sometimes with sulphur-water, the plants must be kept clear of red spider, which is a sad pest to them.

W. A.

SUCCULENTS.

If Mr. Croucher's enumeration of Succulents at Kew is correct, I think the collection a meagre one compared with what it ought to be. Mr. Croucher sets Cactuses introduced into England down at about 550. In 1833 I made a collection that contained over 500 sorts, and there were at that time known to me above 150 kinds not in my collection. Prince Salem, of Dyke, Düsseldorf, on the Rhine, one of the greatest Succulent authorities, told me that his collection of Cacti numbered about eight hundred sorts. Now, I am aware that during these last forty years there has been an immense number of Cactuses added to our gardens. The Duke of Bedford's collection, for example, was rich in many recently-introduced sorts; and many other private collections in England were far ahead of Kew in Succulents. My own at one time numbered 1,600 sorts, and was said to be the richest known in number of species. I had 500 Cactuses, 325 *Mesembryanthemums*, not including the annuals, 50 of the *Teneriffe Sempervivums*, and about 20 hardy sorts; *Euphorbia*, 50 kinds; *Aloe*, in all its sections, 130 kinds; *Stapelia*, 80; and the rest were made up of many smaller groups, such as *Sedums*, *Crassulas*, &c. In the year 1837-38, I had the management of the Succulents in the *Jardin des Plantes*, at Paris, where there was a much finer collection under my charge than now

exists at Kew. It should be borne in mind that this was thirty years and more ago, and during that time one would have thought that the Kew collection would have now reached at least two thousand sorts. There is a growing desire among cultivators to add these often beautiful and grotesque plants to their collections, and I can say that no tribe of plants presents so many interesting features as these do. A fine collection elicits the admiration of everyone. I have had the curious *Cereus abnormis* seven to eight feet high planted out in a niche, and along with it the singular *Serpentinus*, which grew up and twisted all round its rough partner, and covered it in a mass of beautiful flowers. It formed a truly lovely picture, which was admired by everyone who saw it. But I need not further advert to the merits of this useful tribe of plants. The increasing demand for something in addition to our flat beds of *Geraniums*, &c., is becoming every day more and more urgent, and I know of nothing that can add so much charm to a flower garden as Succulents. The combination of *Geraniums*, *Petunias*, *Lobelias*, &c., with fine-foliaged plants, such as *Bocconia*, *Acanthus*, *Eryngium*, *Wigandia*, and the grotesque forms of Succulent vegetation, cannot fail to make our flower gardens objects of admiration. As regards noble plants, the Kew collection, though deficient in numbers, is in many respects unsurpassed.

J. SCOTT.

[In our own day the Paris collection of tender Succulents has always been very inferior to that at Kew.]

PALMS FOR THE GARDEN.

(Continued from page 396.)

MALORTHA INTERMEDIA (SYN., *FENISTRATA*: CENTRAL AMERICA).—A handsome little plant, with erect palmate fronds; holed at the base, and a free grower, though small; useful for vases or for Wardian



Seedorfia Elegans (1866).

cases. This and the following species may be increased by cutting off the shoots that spring from the base, leaving them in the pot until they have become established.

M. SIMPLEX (BRAZIL).—A rather stronger plant than that just named, and without holes at the base of the fronds.

MARINEZIA CARYOTEFOLIA (PERT).—A noble palm, with dark, dense, arched foliage, something like that of *Caryota*, though denser; stem very spiny. An effective plant for the central portions of a stove, where shade is required.

OREODONIA GIESBRECHTIANA (SYN., *VENERICOSA*: BRAZIL).—A stately stiff growing plant, with broad spreading fronds.

O. OLERACEA (BRAZIL).—Elegant for furnishing purposes, and for towering up above other plants, so as to cause diversity of aspect. This and *O. regia* occupy a similar position among palms that Poplars do among hardy trees. Their fronds, which are slender, stand erect like a plume of gigantic feathers. *Regia*, which comes from Cuba, has narrower leaflets than *oleracea*, and is, altogether, the better of the two.

PHENIX.—The whole of the species belonging to this genus are much alike in habit; the fronds are regularly pinnate, and the base more or less spiny. For table decoration they are rather too stiff, but they make fine plants for stove and greenhouse ornamentation. The greenhouse kinds are *P. dactylifera* (Tropics: syn., *canariensis*), and *spinosa* (South Africa: syn., *leonensis*). Stove sorts consist of *P. acanthis* (India), *P. paludosa* (Bengal), *P. reclinata* (South Africa), *P. rupicola* (India), and *P. sylvestris* (India).

PSYCHOSPERMA ALEXANDRE (SYN., *PINANGA SMITHII*: NORTH AUSTRALIA).—A most desirable plant for the ornamentation of warm conservatories, in which its noble arched fronds of a greyish hue have a truly charming effect. A free grower, and when young very useful for table decoration.

P. RUPESTRIS (CEYLON).—A good stove palm, with the habit of an *Areca*, but with fronds tinted red.

PRICHARDIA PACIFICA (PACIFIC ISLANDS).—Of all the palms having fan-shaped leaves, this is the finest. The leaves on plants only eight feet high often measure from four to five feet wide; they are flat and abruptly cut; the leaf-stalk being clothed with white scales, and the stem with strong fibre. A capital central plant for a close stove, in which its grandeur of outline could not fail to make it a favourite.

PHYTOLIPHAS MACROCARPA (SYN., *ELEPHANTASIA*: TROPICAL AMERICA).—This though not a true palm has somehow been mistaken for one, owing doubtless to its resemblance to a palm. Its leaves are elegantly arched and feather shaped, and when young it is a good stove plant, but when old its appearance is anything but attractive.

RAPHIAS.—These are tall stiff growing palms from Tropical Africa, very fond of heat and moisture; when young they are ornamental, but in a few years they get rough and uninviting. The species are *R. Hookerii* (syn., *longifolia*) and *R. tædigera*.

RHAPIS.—These may be called humble palms; they throw up suckers so thickly as to form dense bushes. In pots, in windows, or in greenhouses, they have a fine appearance when kept to a single stem, which is erect, bearing fronds from eighteen inches to two feet long, nearly round, and cut into segments. All the species in this genus are moderately hardy, and are useful sub-tropical plants. They bear parting well. Of the Chinese *R. flabelliformis* there is a variegated form. *R. Sirotsik* (syn., *humilis*) comes from Japan.

SABAL.—This is a genus in which are to be found some of the largest of all palms, and where these have room to fully develop their fine fan-shaped leaves, that often measure from four to six feet wide, they produce a grand effect; on the other hand there are also in this genus small stemless plants which never grow more than six feet or so in height, as for example, *S. Adansoni* from Carolina, a nearly hardy species, though not a very elegant one. *S. Palmetto*, from the same district, is a tall plant, but not a very ornamental one; while *S. glaucescens* (syn., *grandis*, *princeps*), from the West Indies, is a noble palm, with fronds five feet in width, of a glaucous green, and *S. umbraculifera* (syn., *Blackburniana*), from the same locality, is also a very large plant. All the different kinds of *Sabal* will certainly live in a greenhouse, or even in a frame, if they could be got into it; but if required to grow they must have heat.

SAGES RUTIA (SYN., *RAPHIA MADAGASCAR*).—A good erect-growing palm of the pinnate class, with yellowish fronds; succeeds best as a sub-aquatic in a stove.

SEAFORTHIA ELEGANS (SYN., *PSYCHOSPERMA CUNNINGHAMI*: TROPICAL AUSTRALIA).—One of the most useful of all palms for vases when young, or for conservatories. The fronds are spreading, and very elegant. It is a kind that is easily cultivated, and it will keep long in a small pot.

STEVENSANIA GRANDIFOLIA (SYN., *PHENIXOPHORUM SEYCHELLARUM*, *ASTEROCARYUM BORSIGNIANUM*, AND *AUREO-CETUM*: SEYCHELLES).—As its name implies, this is a plant with grand foliage, having a metallic hue and suffused with yellow spots. In stoves it is magnificent, especially when associated with ferns and other small-foliaged plants. It is very sensitive of cold, and must have plenty of water.

The leaves are wedge-shaped, and its stem is clothed with strong black spines. If kept in heat it is a free grower. A large house and bottom heat suit it best.

J. CROUCHER.

(To be continued.)

REPOTTING AGAVES.

I AM anxious that no succulent-grower should become a convert to Mr. Croucher's mode of repotting Agaves (see p. 369), accomplished gardener though he be. Cutting off the plant below the collar is recommended, allowing it to root afresh, with the view of saving trouble and scratches. Nature seldom supplies us, in the vegetable kingdom, with anything superfluous: and why "crop off healthy roots"? a practice that holds good only when an Agave is "going to pot."

It is always two—sometimes four—persons' work to fresh pot a well-armed plant. Let it and the material in which it grows become dry; then place it on the top of a block, or hand-barrow, on a bright May morning, twist a piece of soft material, hay band or cloth, around the lower leaves, support it upright with this, smash the pot, prick out all the old loam with blunt sticks, cut off all decayed and a portion of the old roots, and leave the young ones (if any) alone. Into a well-drained pot, half filled with each man's favourite compost (who is not proud of his own peculiar mixture?), the plant should be lowered, filled in, and shaken fairly down; place it in the sun, in a few days the incised roots will have healed over, then water freely.

Decapitation may be both "simple and excellent," but it behoves us to be as conservative as possible in the management of such slow-growing plants as succulents. I say, preserve your crown and have mercy on the radicles.

SEMPERVIVUM.

FLYING FLOWERS AND RUNNING WATER.

PERMIT me to thank Mr. Noel Humphreys for his interesting remarks on flowers with wings. Talk of the charm of motion, methinks it will be all motion under glass when the flowers take wing. But they are only butterflies, to which has been given a charming name. They, however, often rival real flowers themselves in beauty of form and colour. What the last touch of the artist is to a work of genius these "flying flowers" may prove in our plant houses; I therefore bid the butterflies hearty welcome. But how are they to be kept in? The ventilating spaces must be netted over, and care must be taken not to let the winged flowers lose themselves in space through the open doors. With proper care this might be managed. Another point occurs: no butterfly that would be likely to prove destructive to choice plants in the larval state must be introduced among valuable plants, as it might be much easier to introduce flying flowers than to extirpate ravenous grubs. There seems no reason why tropical butterflies should not perpetuate themselves in our hothouses; but if not, doubtless a demand for chrysalids of different varieties would soon bring forth a supply; and in many hothouses the glory of tropical butterflies might add to the beauty, richness, and interest of tropical flowers. But there is another source of motion within reach of almost every possessor of a plant house, and that is, running water. The sound of this is one of our most satisfying pleasures; and yet how seldom it is heard under glass! Few sounds can equal in sweetness the liquid music of the droppings of water into a glass basin set on a narrow pedestal, or suspended in the air; and in all forms up from this to a torrent proudly dashing over artificial rocks, scarred and fretted with the wear and tear of the stream, or leaping over a sheer precipice into a dark gulf of boiling spray, running water ever gratifies and satisfies. There could be no great difficulty in having its gentle ripple at least made audible in many, perhaps most, of our plant houses. Thus, with running water seen and heard, and the air stocked with "flowers on the wing," we should be able to reap a richer harvest of pleasure from our glass houses than we even do at present.

D. T. FISH.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

A Simple Plan for Forcing Roses.—To obviate the trouble of keeping up a stock of roses in pots for forcing, we adopt the following plan:—About the end of October, or the beginning of November, we select a number of plants from the rose border (good forcing varieties); these are pruned in close, lifted carefully, and potted in nine, ten or twelve inch pots, as may be needful, potting them firmly in good sound loam. The plants are then set in the coolest house we have got till January, when they are introduced into heat, and pushed on into bloom in March, April, and May. From such plants we have had a display in April that

would not have disgraced an exhibition table. The plan is not so good as keeping a stock in pots, if these are well attended to; but there are many places where there is not time to do this properly.—J. S. W.

Spotty Cyclamens.—Would you kindly inform me by what means I may preserve my Cyclamen blooms from becoming spotted? My plants otherwise look strong and healthy.—D.—[Your frames or houses are possibly too damp for Cyclamens; they cannot withstand a damp or stagnant atmosphere. Where they are grown in the greatest perfection they are kept in houses to which is admitted a continual current of fresh air, and, to counteract its depressing effect on the temperature, a little fire heat is kept up. To some fire heat may appear unnecessary; but, without it, large flowers, pure in colour and plenty of them, cannot be obtained.]

Tacsonia Van-Volxemi.—This Tacsonia is, without exception the most beautiful of all greenhouse climbers we know, while its culture is always satisfactory, from the rapidity of its growth and abundance of its flowers. It thrives luxuriantly in conservatory, greenhouse, orchard house, or, indeed, any cool structure. It will do in a large pot, but it is much the best way to plant it out in a bed of earth, if such exist in the house; if not, it is well worth while making a special little brick pit for it, this pit to be filled with light and rather sandy soil, the plant then put in, and trained over the roof, or over slender arches, or up rafters. It flowers throughout the whole of the summer and autumn months. Wherever the drawing-room opens right into the conservatory—as is frequently the case—it would be well to so plant this that its suspended blooms may be seen from the interior.

Paul's Scarlet Thorn for Forcing.—We potted a dozen young trees of this last spring in twelve-inch pots, and plunged them outdoors. About five weeks ago we introduced six of the trees into a temperature of 55°, allowing a rise of 10° by sun heat. At this date (March 18th) they are coming generally into full bloom, some of the plants better than others, and best generally where the shoots have been pinched during the summer. After being another year in pots I fully expect the plants will force much earlier and bloom more profusely. I can scarcely imagine a more striking or more ornamental plant than the double scarlet thorn for the conservatory in the winter and spring months. In pots it is a plant that promises to force early, and with very little trouble. I have been thinking of potting a number of the common white hawthorn, as a match to the scarlet one. I have little doubt the one would force as well as the other. Who does not like the May? We send boxes of it to London every summer, and find that it is just as highly appreciated as the rarer exotics from the conservatory; and, no doubt, it would be even more appreciated in the dreary winter and spring months.—J. S. W.

Winter-Blooming Begonias.—Many of the Begonias are valuable for their winter-blooming qualities. They are very easily propagated by cuttings, and those who have not plants should lose no time in obtaining cuttings, which, inserted now in a gentle bottom heat, will quickly root, and form nice blooming plants by next winter. There are a great many Begonias that flower during the winter, but we shall confine ourselves to a few—in fact, a select list of the best species only, that may be grown either for the decoration of the stove, or to cut from in mid-winter. Begonias luxuriate in a light and moderately rich compost of turfy loam, peat, and leaf mould in equal proportions, with the addition of a little white sand. If watered with weak guano water, it will assist them in the production of flowers very materially. The following are some of the best winter-flowering kinds, of which descriptions will be found in the nurserymen's catalogues:—

B. fuchsoides	B. erecta multiflora	B. Dregii	B. Weltoniensis
B. nitida	B. Pearcei	B. Daviesii	B. Wagnerii
B. Saundersii	B. manicata	B. Ingramii	B. Sedenii
B. insignis			B.

PLANTING HIMSELF TO GROW.

DEAR little bright-eyed Willie,
Always so full of glee;
Always so very mischievous—
The pride of our home is he.

One bright summer day we found him
Close by the garden wall,
Standing so grave and dignified,
Beside a sunflower tall.

His tiny feet he had covered
With the moist and cooling sand,
The stalk of the great, tall sunflower
He grasped in his chubby hand.

When he saw us standing near him,
Gazing so wonderingly
At his baby-face, he greeted us
With a merry shout of glee.

We asked our darling what pleased him,
He replied with a face aglow:
"Mamma, I'm going to be a man;
I've planted myself to grow."

—Mothers' Journal.

THE ALPINE GARDEN.*

CONDITIONS OF SUCCESS IN THE ALPINE GARDEN.

IN treating of the culture of alpine plants, the first important consideration is that much difference exists among them as regards constitution and vigour. We have, on the one hand, a number of valuable subjects that merely require to be sown or planted in the roughest way to flourish—the common *Arabis* and *Aubrietia* for example; but, on the other, there are many kinds, like *Gentiana verna*, and the *Primulas* of the high Alps,

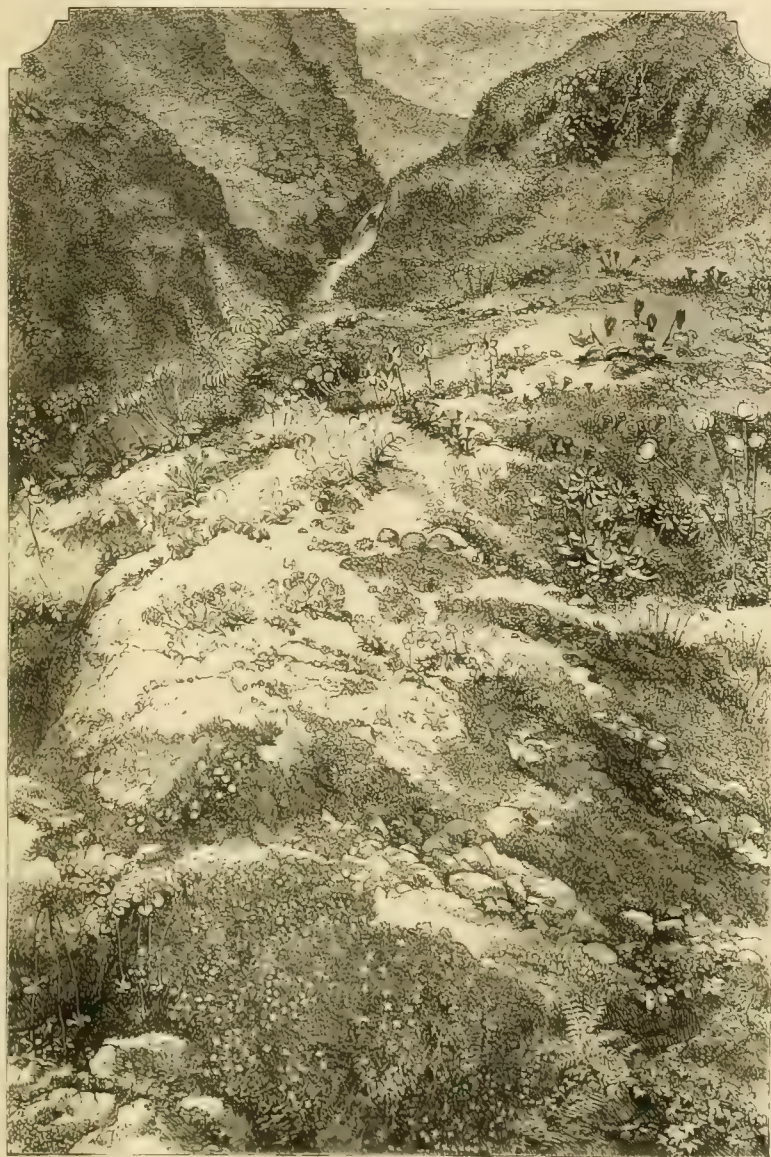
with many of their beautiful companions near the perpetual snows, which we rarely or never see in good health in these islands or elsewhere in gardens. It is as to the less vigorous species that advice is chiefly required. Nearly the whole of the misfortunes which these little plants have met with in our gardens are to be attributed to a false conception of what a rockwork ought to be, and of what the true alpine plant requires. These plants live on high mountains; therefore it is erroneously thought they will do best in our gardens if elevated on such tiny heaps of stones and brick rubbish as we pile together and dignify by the name of "rockwork." Mountains are often "bare," and cliffs are usually devoid of soil; but we must not conclude therefrom that the choice jewellery of plant life scattered over the ribs of the mountain or the interstices of the crag live upon little more than the mountain air and the melting snow. Where will you find such a depth of well-ground stony soil, and withal such perfect drainage, as on the ridges of *débris* flanking some great glacier, stained all over with tufts of crimson saxifrage?

Can you gauge the depth of that narrow chink, from which peep tufts of the diminutive and beautiful *Androsace helvetica*? No; it has gathered the crumbling grit and scanty soil for ages and ages, and the roots enter so far that nothing the tourist carries with him can bring out enough of them to enable the plant to exist elsewhere. And suppose we find plants growing apparently from mere cracks without soil. If so, the roots simply search farther into the heart of the flaky rock, so that they are safer from any want of moisture than if in the best and deepest soil.

* An illustrated revision of the cultural and structural part of "Alpine Flowers."

In 1863 I met on the Alps with plants not more than an inch high, and so firmly rooted in crevices of half-rotten slaty rock that any attempt to take them directly out would have proved futile. But, by carefully knocking and peeling away the sides from some isolated bits of projecting rock, I succeeded in laying the roots quite bare, radiating in all directions against a flat rock, and some of the largest more than a yard long. We think it rapacious of the Ash, a towering forest tree, to send its roots under our garden walls and rob the soil therein, and are surprised at finding the roots of a tree more than a hundred feet

high descending a fifth or a sixth of that distance into the ground; but here is an instance of a plant one inch high penetrating into the earth to a distance forty times greater than it ventures into the alpine air! And there need be no doubt whatever that even smaller plants descend quite as deep, or even deeper, though it is rare to find the texture and position of the rock such as will admit of tracing them. It is true you occasionally find hollows in fields of flat hard rock, into which moss and leaves have gathered for ages, and where, in a sort of basin, without an outlet of any kind in the hard mountain, shrubs and plants grow freely enough; but in exceptional droughts they are just as liable to suffer from want of water as they would be in our plains. On level spots of ground in the Alps the earth is of great depth, and if it be not all earth in the common sense of the word, it is more suitable to the plants than what we commonly understand by that term. Stones of all sizes broken up with the soil, and sand, and grit, greatly tend to prevent evaporation; the roots lap round them and follow them deeply down. While in such positions, they



Alpine Flowers.

never suffer from want of food and moisture, or vicissitudes. Stone, it need scarcely be remarked, is a great preventer of evaporation, and shattered stone forms the dust as well as the subsoil of the mountain flanks where the rarest alpine plants abound. It should also be taken into account that the degradation so continually effected by melting snow water and heavy rains in summer serves to earth up, so to speak, many alpine plants. I have torn up tufts of them showing this in so marked a manner that the remains of many generations of the old plants were seen buried and half buried in the soil beneath their descendants. This would, of course, be effected to some extent

by the decaying of the plants themselves, but very frequently grit and peat are washed down plentifully among them, and in such cases where these do not come so thickly as to overwhelm them completely, they thrive with unusual luxuriance.

Now, if we consider how dry even our English air becomes in summer, and that no positions in our gardens afford such moist and cool rooting-places as those described, the necessity of giving to alpine plants a treatment quite different from what has hitherto been in vogue will be fully seen. The only sound principle generally employed is that of elevating the plants above the level of the ground. Naturally protected in winter by a dry bed of thick snow, some of them cannot exist on our wet soils in that season, if not raised well above the level. But this principle of elevation should in all cases be accompanied by the more essential one of giving the plants abundant means of rooting deeply into good and perfectly firm soil, sandy, gritty, peaty, or mingled with broken stone, as the case may be. How *not* to do this is capitally illustrated by persons who stuff a little soil into a chink between the stones in a rockery, and insert some minute alpine plant in that. There is usually a vacuum between the stones and the soil beneath them, and the first dry week sees the death of the plant—that of course not being attributed to the right cause. Precisely the same end would have come of it if the experiment had been tried on some alp bejewelled with Gentians and Primulas! Every one of these two brilliant families should have means of rooting a yard or more into a suitable medium. We should not pay so much attention to the stones or rocks as to the earth from which they protrude. There are certainly alpine plants that do not require a deep soil, or what is usually termed soil at all; but all require a firm roomy medium for the roots.

(To be continued.)

THE ARBORETUM.

JEFFREY'S BRITISH COLUMBIAN CONIFERS.

At a recent meeting of the Botanical Society of Edinburgh, Mr. McNab read the following paper on the discoveries made by Mr. Jeffrey and Mr. Brown, collectors to the Botanical and Arboricultural Expeditions from Scotland to British Columbia, between the years 1850 and 1866, with remarks on the cultivation and propagation of certain species:—

PICEAS.

From my knowledge of Jeffrey's doings, said Mr. McNab, I am enabled to state that he was the means of introducing nearly as many novelties in the coniferous line as Douglas did while travelling in British Columbia between the years 1825 and 1833. Before leaving this country, Jeffrey was particularly directed to devote his attention to those kinds which were then exceedingly scarce in Britain, such as *Picea amabilis*, *P. grandis*, *P. nobilis*, as well as other genera and species previously introduced by Douglas. The two former species have never been received correct from any other collector. In 1851, Jeffrey sent home cones and seeds of a tree under the name of *Picea grandis*. The Association, believing it to be correct, took no further notice of it at the time. Of recent years, seeds of this same *Picea* have been sent home by other collectors, named by one *Picea Lowii*, by another *Picea Parsonsii*, and under the former name it is now extensively cultivated. Very few plants of that long-leaved species must have been raised from Jeffrey's seeds, as original seedling plants are by no means plentiful. One raised here has been twice transplanted after being six feet in height, and is now a beautiful tree fifteen feet high, and thirty-six feet in circumference of branches. In its native state, Jeffrey says that it grows to the height of 280 feet, with a stem fifteen feet in circumference. Jeffrey has undoubtedly the credit of introducing this very handsome tree, notwithstanding the discussion which at various times has taken place about the naming of it. It therefore ought to have been called *Picea Jeffreyi*. The cones sent home by Jeffrey under the name of *Picea amabilis* are not the *P. amabilis* of Douglas. After the young plants were of such a size as to satisfy me that it was not that species, I provisionally named it *P. magnifica*. This is a most beautiful tree, perhaps the handsomest of all the *Picea* tribe. One of the original plants in the garden is now eleven feet high, and is easily known by its robust habit, pyramidal shape, and sharp rounded leaves, as well as the delicate bluish-green colour of the new foliage during the summer months, and the perfectly green state during the winter season. The cones of this

species were large, and had a peculiar curve in the middle. They were much destroyed by insects, which was the cause of so few being raised. Not many years ago a large quantity of the seeds of this variety were sent to Messrs Low, also under the name of *Picea amabilis*. The seeds, being good, were soon raised, and extensively sent over the country under that name. They are identical with the variety sent home by Jeffrey, and now called *P. magnifica*. Jeffrey also introduced a *Picea* which was figured and named by the Oregon Association as *Picea lasiocarpa*. This is a very free-growing tree, many of the annual upright growths being above three feet in length, on plants only ten and twelve feet high. These upright shoots afterwards become stunted by the free growing nature of the side branches. The largest plant in the garden is now twenty feet high, the circumference of the branches on the surface of the ground being forty-eight feet. Many of the seedlings recently raised in this country from north-west America, as *Picea grandis*, seem to be identical with the *Picea lasiocarpa* of Jeffrey, and totally different from the *P. grandis* originally sent home by Douglas.

ABIES.

Of the genus *Abies*, Jeffrey was instrumental in introducing three species previously unknown to British gardens; the most prominent being the *Abies Albertiana*, a species somewhat allied to the hemlock spruce. This is one of the most graceful of the tribe, particularly if growing on soils suitable to it, such as a peaty loam. Some of the original plants sent home were planted by the late Lord Justice-Clerk Patton, in what he called the Moor Pinetum Nursery at the Cairnies, in Perthshire. They are admirable specimens, and must be now upwards of thirty-five feet in height, proving that peaty soil is the most suitable for their growth. The largest specimen in the Edinburgh garden is only twenty-five feet in height, growing in soil of a sandy nature. Notwithstanding that the *Abies Albertiana* is allied to the *A. canadensis* or hemlock spruce, the latter does not succeed here, nor has it the constitution of the *A. Albertiana* when seen growing side by side in situations where the *A. Albertiana* succeeds well. Other allied species sent home by recent collectors under the names *A. Bridgii*, *A. Mertensiana*, and *A. Williamsonii*, do not appear to be specifically distinct from the *A. Albertiana* of Jeffrey. Besides, the *A. Albertiana*, when growing in different soils and degrees of elevation, varies very much, which makes one think that it is identical with the three former named species; such, however, may not be the case when all are seen old enough to produce cones.

Abies Pattoniana is another species introduced by Jeffrey, and one previously unknown in Britain. The *Abies Hookeriana* was also sent home by him at the same time. These two species, although somewhat allied in habit, are totally distinct when examined together. The leaves of the former are green on the upper side and whitish beneath, while *A. Hookeriana* has a uniform glaucous colour all over. The leaves also have no proper upper surface, being rounded, and densely set on the branches. The finest specimens of *Abies Pattoniana* known to me are to be seen at Glen Almond and the Cairnies, great care having been taken of them by the late proprietor, whose name it bears. At my suggestion (many years ago), the side branches were foreshortened, which has given the plants an upright tendency. Both species are exceedingly hardy, and, like the *Abies Albertiana*, luxuriate in soil naturally composed of loam and peat. As these plants have a great tendency to branch on the surface of the ground, instead of cutting them off, I would recommend them to be treated as layers. By doing so a great advantage will be gained by inducing in them an upright growth. The way I find the layering of these plants to succeed best is to bare all the lower branches of their leaves and small side shoots, leaving eight or ten inches at the point undone; then twist a very fine copper wire tightly round the lower portion cleared, and peg the branch down in a mixture of loam and peat, previously prepared and placed round the plant, covering the surface afterwards with a coating of sphagnum moss, and placing stones on the surface to prevent the moss from being blown about, as well as to assist to retain the moisture round the layers. If the layering practice is carried on for a few years, the plants will soon begin to assume an upright habit. I have never succeeded in striking either of these species by cuttings.

Several other species of *Abies* were also received under the names of *A. alba*, *A. nigra*, and *A. rubra*. Whatever the two former species may turn out, the last, *A. rubra*, is a very distinct-looking tree, with pendent branches and soft-pale coloured leaves. A good many seeds of this tree were distributed, but I have not been able to learn of any being planted in peaty soil, like the other species of *Abies* previously noticed. It is well known that most of the *Abies* tribe luxuriate in peaty soils, where the Norway spruce (*Abies excelsa*) is to be seen in its healthiest condition, as also the originally introduced specimens in Scotland of *A. alba*, *A. nigra*, and *A. rubra*.

(To be continued.)

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE SWEET-SCENTED VIRGINIAN RASPBERRY (*RUBUS ODORATUS*).

This forms a dense upright bush, from four to six feet high, with numerous stems. It thrives well in any good garden soil, flowering profusely in June and July, but more or less until September. It is a native of the Alleghany Mountains and the woods of Canada. It was first introduced into this country in 1700. The leaves are alternate, large, broadly five-lobed, unequally toothed on the edges, green above, more or less viscid beneath, sweet-scented and deciduous. The larger leaves are on longish, viscid, hairy footstalks, while those nearest the flowers diminish in size, are nearly stalkless, and mostly three lobed. The stems, which push up annually more or less from the ground, are erect, numerous and destitute of prickles, but are beset with viscid hairs when young. The flowers are in compound terminal corymbs, large, purplish-red, and nearly circular, consisting of five broad round petals. The fruit, which is seldom produced in England, is velvety, reddish-yellow or amber-coloured. This plant makes a fine display in shrubberies by means of its fine maple-like leaves, and especially in summer, when clothed with its showy corymbs of large purple flowers. The name *odoratus* was given to it on account of the leaves being sweet-scented, not the flowers, as is generally supposed.

THE SHOWY-FLOWERED CHINESE CRAB (*PYRUS SPECTABILIS*).

This forms a small tree, from fifteen to twenty feet high, which flowers profusely in the end of April or beginning of May. The flowers, which are of a beautiful rose colour, last a considerable time in perfection, and when the tree is loaded with them it forms one of the grandest objects that can adorn the shrubbery or pleasure-ground. It is a native of the north of China, whence it was brought to us in 1780; and no place, however limited, should be without it. The leaves are alternate, oval-oblong, somewhat pointed, regularly serrated, smooth and deciduous. The branches are rather crowded and erect when the tree is young, but afterwards, when it attains age and size, more or less spreading and slender. The blossoms are arranged in many-flowered terminal stalkless umbels, large, semi-double, and when in the bud-state, that is just before they expand, of an intense deep rose colour. The fruit is comparatively small, irregularly round, angular near the eye, on long footstalks, greenish-yellow when ripe, and about the size of a small Siberian or cherry crab. It is not eatable, and is produced but sparingly, owing to the flowers being semi-double.

FAMOUS TREES.

EVERY country possesses vegetable giants, and this, too, from the most different groups of trees. India has its Banyan; Africa, its Baobab; Germany, its Linden; England, its ancient Oaks and Yews; and California, its magnificent mammoth trees, which belong to the natural order *Coniferae*, and which are upwards of three hundred feet in height. A Chestnut tree (of which we have given an illustration, see p. 37) is now growing on the side of Mount Etna, in Sicily, the stem of which is hollow, and one hundred and eighty feet in circumference. It consists, in reality, of several stems, which have grown together at their base, and whose crowns are concealed within one another. It is called by the natives, "*Castagna di Canto Cavallo*;" because a hundred horsemen can find shelter in its interior. The age of this tree is unknown, but its immense size proves its great antiquity. It is indeed a noble tree, which has outlived and sheltered successive generations. By Neustadt, in the kingdom of Wurtemberg, in Germany, stands a Linden tree, which must have been very old in 1229; for an old tradition says that the city, which formerly was called *Helmbundt*, was destroyed in 1226, and was again rebuilt in 1229, "*near the Great Linden*." This Linden was so remarkable and well known, that for centuries the Germans were accustomed to speak of Neustadt as the city "*near the Great Linden*." In a poem written in 1408, it is described as growing near the gate of the city, its branches being supported by sixty-seven pillars. In the year 1664, there were eighty-two, and 1832, one hundred and six of them. They were built

of stone, and erected just as they were required, in accordance with the increase in the horizontal growth of the branches. The oldest inscriptions on these pillars bear the respective dates of 1558, 1562, and 1583, with the name and escutcheons of those who erected them. In the year 1832, the stem of this tree was, at a height of six feet above the ground, thirty-seven feet six inches in circumference. It must, therefore, have been from seven hundred and fifty to eight hundred years old, at the lowest estimate. Since 1832, it has suffered so much by tempests, that it is now almost, comparatively speaking, a complete ruin. Walnut trees, also, occasionally reach a great age. There is one in the Baidar Valley, near Balaklava, in the Crimea, which is at least a thousand years old. It yields annually from eighty thousand to one hundred thousand nuts, and belongs to five Tartar families, who share its produce peacefully amongst themselves.

There are Oaks now growing in England, which were planted before the time of the Norman Conquest, in 1066, and which are therefore more than eight hundred years old.

The Yew trees (*Taxus baccata*) are still older. One of these trees, located at Fountain's Abbey, near Ripon, in Yorkshire, was examined by Pennant in 1770, and was then more than twelve hundred years old; and another, in the churchyard of Brabourne, in Kent, according to the measurement of Evelyn, in 1660, had then attained an age of two thousand eight hundred and eighty years, and consequently is now more than three thousand years old.

The so-called American Cypress (*Taxodium distichum*), found in Florida, in southern Louisiana, and in Mexico, has not unfrequently, at a height of one hundred and twenty feet above the ground, a circumference of forty feet, and must, therefore, be very old. A fine specimen of this tree now grows in the garden of Chapultepec, Mexico, which was of an immense size at the time of the conquest of Mexico by the Spaniards, in 1520, and was then known as Montezuma's Cypress; and in the province of Oaxaca, in the same country, still stands the same Cypress which sheltered the troops of Ferdinand Cortez. These trees are at least four thousand years old; in fact, De Candolle considers them to be much older. But by far the most remarkable trees in the world are found in California. The Sequoia (*Wellingtonia gigantea*), popularly known in the district where it grows as the "*Mammoth Washington Tree*," was first discovered by the English traveller and naturalist, Lobb, on the Sierra Nevada, at an elevation of five thousand feet, and near the source of the rivers Stanislaus and San Antonio. These trees grow two hundred and fifty and even four hundred feet in height. The bark, which is of a cinnamon colour, is from twelve to eighteen inches thick; the wood reddish, but soft and light; and the stem is from ten to twenty feet in diameter. The branches grow almost horizontally from the stem; their foliage resembles that of the Cypress; yet, notwithstanding the monstrous size of these trees, their cones are only two inches and a half in length, resembling those of the Weymouth Pine (*Pinus Strobus*); whilst the Araucaria, or South American Pine, although far inferior in size to the Sequoia, produces cones of the form and magnitude of a child's head.

The Baobab (*Adansonia digitata*), of which we have given an illustration at p. 241, surpasses even the trees of California in grandeur and antiquity. It is the oldest vegetable monument on earth. Its stem is only from ten to twelve feet in height, but of immense proportions, for it is thirty-four feet in diameter. This colossal circumference is an absolute necessity; because, from its summit it unfolds so vast a leaf-crown, that it can only be supported on such a massive foundation. The main branch rises perpendicularly to a height of sixty feet, and from it branches extend themselves to a distance of from fifty to sixty feet horizontally on all sides; so that they form a noble leaf-crown, whose diameter is more than one hundred and sixty feet, giving to a single tree the appearance of a whole forest. The leaves of the Baobab are palmate, and forcibly remind us of the Horse Chestnut, being divided to the leaf-stalk. It is covered with great Malvaceous-like flowers, which droop on their peduncles. The fruit is about the size of a small gourd. In its native country, this tree bears a name which signifies "*a thousand years*;" and, contrary to what is generally the case, this name

expresses what is, in reality, far short of the truth. Adanson noticed one in the Cape de Verd Islands, off the coast of Africa, which had been observed by two English travellers three centuries earlier; he found within its trunk the inscription which they had graven there, covered over with three hundred woody layers, and thus was enabled to estimate the rate of the increase of the stem in three centuries. With this measure he succeeded in estimating the number of years' growth of the entire stem, and in ascertaining the age of the tree, which he found to be 5,150 years. These are a few, and probably a very few, of the remarkable trees with which the earth is adorned. The world has not yet been sufficiently explored for us to have become acquainted with all its remarkable trees; and lately we have learnt that some of the colossal gum trees of Australia surpass in size the big Californian trees.

But, although some trees live for thousands of years, yet the life of all must sooner or later terminate; for, to each tree, equally with the lowly plants which grow beneath its shade, a limited period of life has been allotted. This period may vary with the favourable or unfavourable circumstances in which the tree is placed, and depends also on the greater or less amount of life-force with which the embryo was endowed in the beginning; but, nevertheless, the life of all trees has its appointed period, like their form, altitude, and other specific peculiarities.

We close this chapter with the following list of trees, which is designed to show how the age of the same tree may vary. The—

Palm lives from	200 to 300 years.
Larch (<i>Larix europæa</i>) from	263 to 576 "
Chestnut (<i>Castanea vesca</i>) "	360 to 626 "
Walnut (<i>Juglans regia</i>) "	900 to 1,000 "
Olive (<i>Olea europæa</i>) "	700, 1,000 to 2,000 "
Orange (<i>Citrus aurantium</i>) "	400, 509 to 646 "
Yew (<i>Taxus baccata</i>) "	1,214, 1,466, 2,588 to 2,880 "
Oak (<i>Quercus europæa</i>) "	600, 800, 860, 1,000 to 1,400 "

HARLAND COULTAS.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

The Japan Privet.—This is so conspicuously useful and distinct a member of its family that we do not hesitate to direct attention specially to it as, though it is frequently planted, it is not sufficiently known. With leaves large and smooth like those of a medium-sized orange, and flowers somewhat like those of the white Persian Lilac, and growing from six to nine feet high, it has all the qualities for a first-class shrubby ornament. As a town shrub it has still greater value, because it will grow where most evergreens fail in towns, and may even be tried with confidence in a London "back yard."

Plants that Succeed in the Shade.—I have just taken charge of a place where there are a great many evergreen oaks, some of them very large. The greater part of the ground under them is quite bare. A few *Laurustinus*—illustrating the "struggle for existence"—and some *Butcher's Broom* make up the present undergrowth. I am anxious to exchange the bare soil for something more pleasing to the eye. Can you kindly assist me? The *Butcher's Broom* looks well, and perhaps *Ivy* would grow.—**ILEX OAK.**—[Try, in addition to *Butcher's Broom*, the *Aucuba*, various kinds of *Periwinkles*, English and Irish *Ivy*, and *Berberis Aquifolium*.—J. BARNES.]

***Aucuba* versus the Cherry Laurel.**—There can be no doubt of the *Aucuba* being decidedly the hardier plant of the two, and admirably adapted for many purposes for which many other faulty things are employed in town, villa, and large gardens. No plant surpasses it in glossy beauty where evergreens run riot in wild places near our shores, while in towns it withstands smut and other detrimental agents better than any other evergreen. These are not only encouraging facts as regards the common *Aucuba* itself, but much more so when considered in relation to the male plant, and the many fine and striking varieties that have been brought to our gardens during recent years. The Laurel is often used for planting out railings and other objectionable surfaces, whereas over the greater part of the country the *Aucuba* is by far the better plant of the two.—*Henry Viner.*

Blighted Thorns.—Is the pink thorn liable to be blighted? I have a large specimen which must now be forty or fifty years old, and which last spring, just as it was putting out its leaves, was suddenly struck; the leaves dried up, and from that time to this the tree to all appearance is dead, except, on examining its trunk, and parts of its main branches near the stem, the sap still seems to exist. The whole head of the tree, which is a very well grown one, is, however, quite dead. Some years ago I planted a pink thorn in another part of the garden; this was struck apparently in a very similar manner about the month of June. The tree died off, and remained apparently dead all that year. It was in an out-of-the-way part; I left it to see if it would recover, and, to my surprise, the following year it sprouted and flowered as if nothing had happened, and has done well ever since.—*MONTAGUE WILLIAMS.*

NEW, RARE, OR NEGLECTED PLANTS.

SILENE PENDULA, VAR. BONNETII.

AFTER the rose-coloured *Silene pendula* (so well-known from its general use in borders and in groups of spring flowers) we had the white-flowered variety (*S. p. alba*), and then the deep rose-coloured variety (*S. p. ruberrima*). A new variety has just been announced by MM. Vilmorin, Andrieux, & Co., who have named it after its raiser, M. Bonnet. It is a seedling of *S. p. ruberrima*, but is a great improvement on its parent; as in addition to its flowers being of a very deep carmine rose colour, the whole of the rest of the plant (stems, branches, leaves, and calyx) are of a very decided brownish red, which renders it a valuable subject for forming a contrast of colour in groups of other plants. The old *S. p. ruberrima* had the fault of growing in less compact tufts than the common rose-coloured kind; but the variety *S. p. Bonnetii* leaves nothing to be desired in this respect. If required to flower in summer, it should be sown thinly in the flower bed in February, March, April, or May; and for spring flowering, it should be sown in August or September in a nursery bed, and planted out either the same autumn or, in a general way, towards the end of winter.

LILIUM BLOOMERIANUM.

THIS is the most magnificent Lily of the Pacific coast. Its flower stalks are often ten inches to a foot in length, and so widely spread as to be slightly reflexed. Flowers, much more open and flexuous than the *L. superbum*; eight to twelve in number, or, in the most robust specimens, twenty to thirty. This Lily is easily distinguished from all others in any stage of its growth. The bulb is purplish. Its first bud above ground is always purple, which hue it bears in stem, leaves and bracts, in every stage of its growth. The cotyledonoid scattered leaves at the base of the stem perish early, as the proper whorls appear, leaving, however, scars to record their presence. The bulbs are larger than those of any other Californian Lily. It furnishes offsets sparingly, and is not "somewhat creeping," as in *L. pardalinum*, which produces offsets abundantly.

Root, a slightly oblong, broadly conic, scaly bulb, somewhat laterally compressed; scales lanceolate, fleshy, elliptically incurved; two to three inches long; somewhat loosely set; often oblique or progressively developed, but not creeping. Stem terete; very short-pubescent above and somewhat scabrous; purplish, smooth and glaucous below; six to eight feet high. Leaves broadly oblanceolate, acute or sub-acuminate; five to seven—rarely nine—nerved; nerves pubescent underneath; margins of leaves and foliaceous bracts slightly scabrous; waved, varnished above; glabrous and shining beneath; veins anastomosing or reticulate; whorled in verticles of six to twenty mostly; somewhat scattered above and below. Peduncles alternate; long and widely divaricate—often at an obtuse or depressed angle. Flowers nodding, large, loosely-recurved, bell-shaped; claws of the three inner petals short—about one fourth of an inch—and somewhat crested; claws of the three outer narrower petals longer—one half of an inch; light orange-colour, with madder brown velvet-like spots.—*Dr. Kellogg, Trans. Cal. Acad. Sciences, 1872.*

TOOLS, IMPLEMENTS, &c.

A NOVEL TRELLIS.

THE art of displaying plants with taste plays a highly important part in horticulture. It is nothing, and at the same time it is



everything. There is an English proverb too little known, that says, "Trifles make perfection, and perfection is not a trifle." It is for this reason that we think the accompanying sketch worthy of reproduction. Every one with two or three ends of slightly galvanised wire can make this little iron trellis in a very neat manner. It is handier than the commoner kinds of trellis, and the plants suspend themselves from it in a more graceful and airy manner.

EDOUARD ANDRÉ.

NEW PATENTS.

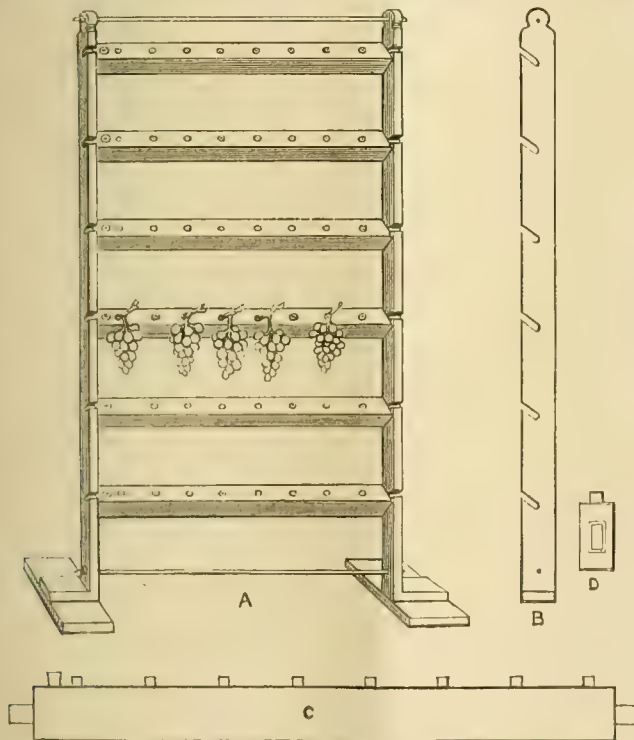
MR. HOUSE, Devizes, has patented an implement for extracting weeds and roots from lawns. It consists of a metal tube three-fourth inch in diameter and two feet six inches long, to one end of which is attached a foot piece or treader, and a short tube three inches long and one inch in diameter sharpened to a knife edge, and fitted with a plunger worked by a rod passing through the whole tube, and actuated by a lever handle. The tube has a cross handle.

MR. TAYLOR, Mussleton, Lancashire, has patented an improved apparatus for sowing or distributing seed. It consists of a perforated cylinder driven by the main axle and revolving beneath a seed-box. The surface of the cylinder forms the bottom of the seed-box, and is perforated all over with recesses, each about the size to contain one seed. Above the cylinder a wire-guard lets the seeds pass, but prevents them from bearing heavily on the cylinder.

AN American patents a mode of colouring seeds to distinguish them from the soil, that they may be sown uniformly. The seeds are moistened, then rolled in flour till they are coated. This coating is further stated to aid germination, from its absorption and retention of moisture.

KEMP'S GRAPE RAIL.

WE have much pleasure in engraving a sketch of a new patent arrangement for preserving grapes in water, a practice now becoming common. This contrivance is the invention of Mr. Kemp, gardener at Albury Park, in Surrey, and mainly consists in the substitution of a zinc trough for a series of bottles. We believe it to be handier than the bottles. For the rest the woodcut explains itself. We hope this and similar contrivances may serve to popularize this mode of keeping



Kemp's Grape Rail.—A, front view; B, side view of support; D, end view of trough; C, side view of trough.

grapes, now generally admitted to be a great boon to the gardener. We were as fully assured of its merits when everybody was laughing at it as now when it is being widely adopted. As Mr. Hill, of Keele Hall, says, "There is no question about its being the right course to pursue with late grapes. It not only relieves the vines and allows one to clear the house, and utilise it for any other purpose, but the grapes may be kept perfectly for months."

The Shamrock. It was some dim conception of the worship due to an adorable Trinity in Unity which led the Persians of old to reverence the threefold leaves of the shamrock as symbolic of a Divine Triad, to whom this plant was consecrated by the sons of Iran for many long centuries ere St. Patrick made use of the same green leaf to exemplify the same mystery to the sons of Erin. We may notice, by the way, that the name of the shamrock, like the idea it symbolises, claims to have reached us from the East, the word being identical in the Arabic.—*Miss Gordon Cumming, in "Good Words."*

THE PROPAGATOR.

THE ART OF GRAFTING.

(Continued from page 407.)

WE have remarked in our garden that in bilateral cordons that is, when the stem divides right and left in the form of a T, the parts join easily enough in grafting by approach or lengthening; but as the sap meets in two opposing currents, the same uniformity of growth is not obtained as with the unilateral cordon.

USE OF APPROACH GRAFTING FOR INCREASING THE SIZE OF FRUIT.—This application of grafting by approach is not very common, as, in the first place, it demands some skill on the part of the operator, and, in the next, success does not always crown his work. We have, however, more than once seen its successful results, and especially with M. G. Luizet, arboriculturist



Grafting to increase the size of the Pear.

at Ecully, who in 1856 exhibited some fine specimens at Lyons at the inauguration of the Pomological Congress. About the month of June a young herbaceous branch is grafted by approach on the stalk of a pear, and bandaged with a woollen thread, which must not be drawn too tightly. If the branch continues to grow vigorously, the end of it is pinched; if it has ceased to increase in length, it is left as it is. The object is to secure a greater flow of nourishment to the fruit. When the fruit has come on the branchlet a feeding scion may be inarched upon the branchlet, in addition to the



Grafting to increase the size of the Peach

scion on the fruit stalk. We have tried this with success. With fruits which have too short or too slender stalks, like the apple or peach, we must confine ourselves to grafting by ordinary approach, or inarching the herbaceous branch on the fruiting branch as near as possible to where the fruit of the branch will grow. The bandages should be tied so as to be easily opened without cutting. (*C. Bollet's "L'Art de Greffer."*)

(To be continued.)

Propagating Camellias, Azaleas, and Epacrises.—Could you kindly inform me how I can best propagate these plants?—C. H. P.—Camellias and azaleas may be propagated by inarching, grafting, and budding. The camellias on the single-rod, and the azaleas on some of the varieties of Phœnicea. Epacrises may be increased by means of cuttings struck in silver sand under bell glasses on a slight bottom heat.

THE FRUIT GARDEN.

STRAWBERRY CULTURE.

AMONGST soft summer fruits the Strawberry stands pre-eminent, both in its fresh ripe state, and also as a preserve. It may be cultivated with more or less success in almost any kind of soil. It is, however, perhaps most at home in deep alluvial soils on the banks of rivers, or in a good deep loam resting on a well-drained clay; and though spring frosts sometimes injure the grower's prospects, still, generally under fair treatment, Strawberries are a certain crop.

Deep digging or trenching I look upon as all important; it helps to drain and warm cold heavy clays, and, by deepening hot, light soil, allows the roots to run down to a cool medium, thus enabling them to resist the heat and drought of a dry summer. Where the subsoil is bad, break it up thoroughly in the bottom of the trench, but do not bring it to the surface; simply breaking it up will let in the ameliorating influence of the atmosphere, and the rain will percolate through it more freely, leaving, on its way, the soluble manurial matter carried from the richer surface soil; and thus a gradual, but constant, improvement will take place in its character.

For heavy land, burnt earth or charred rubbish of all kinds may be applied with advantage, along with moderate dressings of lime and liberal manuring; but the manure should be trenched in deeply, and the lime, burnt earth, or a sprinkling of bone dust, spread on the surface after the digging, and be lightly forked in.

In the case of poor sandy soils, they also will be much improved by deep trenching, burying the manure moderately deep; and afterwards, if it can be obtained, spread over the surface at least an inch of clay or marl, and allow it to remain, if possible, exposed to the atmosphere several weeks, when, selecting a dry day, it may be forked in. But clay being the heavier substance, its tendency is always downwards; therefore, it is a mistake to bury it too deeply.

Although I recommend a liberal application of manure to land intended for Strawberries, still, one word of caution may be necessary, as it is for the inexperienced alone that these remarks are intended. It is possible, by using heavy dressings of rank manure only just buried under the surface, to defeat the object which we have in view—it is, in fact, possible to grow magnificent foliage with very little fruit; indeed, over luxuriance, as most people know, is an enemy to fruitfulness—therefore, trench deeply, burying the manure in the middle and bottom. The surface can easily be put right by top dressings, when necessary.

The best time for making new plantations is in August, although, in special cases, they may be made in spring. Such, for instance, as making a new plantation of the best of the plants that have been forced in pots. Such plants invariably do well, and bear an excellent crop the following season; still, in a general way, when young plants are used, August is the best month in which to plant. Let the ground be made firm before planting, and let each plant have room for individual development. There is nothing gained by thick planting, but rather the reverse; as not only is the fruit not so fine but much of it may be injured by the feet of those who gather it.

Plant in rows two feet from row to row, and eighteen inches plant from plant. Many good cultivators allow even more space, but, considering that two, or at the most three, years is the longest time I recommend the plant to remain on the spot, I think the above distances will be found sufficient. Where it can be done, it is best to lay the runners into small pots early in July; but many have not the time or convenience for doing so. It is best, also, to plant in showery weather. But August is frequently a dry month; therefore, when it is necessary to plant in dry weather, and the plants are not in pots, it is a good plan to mix together two or three bushels of damp earth, and short dung in about equal proportions, working them up into a thick stiff kind of paste, and when each plant is lifted, take a little of the plastic material, and place it round the roots, working it into a ball. A handy lad will do this a deal quicker than I can write it, and new plantations may be made in this manner in dry weather almost without a

leaf flagging. Soak the plants well as the planting proceeds, drawing a little dry earth round the plants with a rake, to check evaporation, and, unless the weather is very dry indeed, they will not require much further attention in watering. Always make it a rule to pull up all barren or unfruitful plants as soon as their true character is perceived. There will then be less difficulty in selecting prolific runners.

Unless very strong plants are used, they will not occupy all the land the first season; therefore, if it is desired to make the most of it, a light crop of some kind of vegetable or salad might be taken, without doing any material injury to the Strawberries. The best arrangement of this kind that has ever come under my notice is the following:—

Supposing the Strawberries are planted in August, and the ground hoed over the following March, the rows of Strawberries may be top-dressed with manure, and one drill of onions sown between every two rows of Strawberries in the centre of the space. I have seen splendid crops of onions grown this way without injuring the Strawberries. Make a new plantation annually, trenching up at the same time a corresponding plot of old plants.

Strawberries are, in a measure, surface-rooting plants; therefore, do not permit the spade to be used amongst them but when an intermediate crop of onions has been harvested the first season. After they are removed, and the runners cleared off in September, a dressing of manure may be lightly forked in the spaces between the Strawberries, taking care not to use the fork too close to the plants. Leave on all foliage till March, to protect the crowns during the winter; but in the spring dressing any old foliage that has been damaged by the winter's storms may be cut away, and the plants afterwards top-dressed with manure heavily all over the bed; and before the blooms open, place a layer of clean straw, long grass, or litter, of some kind, to keep the fruit clean. If the weather is hot and dry about the time the fruit is setting, a good soaking or two of water will be beneficial; but deep cultivation and heavy mulching will do away with the necessity for much watering.

The varieties of Strawberries are now becoming very numerous; but some of the best old kinds still retain their hold on public favour—a clear proof that they are not yet beaten. Although I think it is best to place the main dependence upon three or four varieties that have been proved in many situations to be trustworthy, still, at the same time, it is as well to bear in mind that this is an age of progress, and that there is a gradual improvement taking place in most of our cultivated plants. Therefore, I think it would be folly for those who wish to have the best of its class, to ignore new varieties; although, I have no doubt, many new varieties will come and go before some of our old favourites disappear.

In making the following selection, I have enumerated a few of the best old varieties, adding, also, several good new ones that I think may be depended on:—

KEENS' SEEDLING.—This is so well known, that little need be said about it. It is first-class in flavour, ripens moderately early, and the fruit packs and travels well.

PRESIDENT.—Firm, good flavour, bears well; one of the most useful.

BRITISH QUEEN.—A well-known old kind, of fine flavour; in deep, warm soils is almost unequalled; rather tender.

CAROLINE SUPERBA.—Hardy, free grower; fruit, large, fine flavour.

TROLLOPE'S VICTORIA.—Strong, vigorous grower; very free bearer, and has the property of swelling off its late fruit almost as well as the first; does well in hot, dry soils.

ELTON PINE.—Large, high-coloured fruit, brisk flavour; one of the best late kinds.

VICOMTESSE HERICART DE THURY.—Ripens early, bears freely, fine high-coloured fruit; does well in difficult situations.

MARGUERITE.—Large fruit, of a pale red colour; very free bearer.

DR. HOGG.—Hardy, large, good flavour; highly recommended.

FROGMORE LATE PINE.—Very large pale fruit; rich flavour; good late kind.

If very early fruit is wanted, a few Black Prince may be planted on a warm border, and a few Elton or Frogmore Pine for a late supply of large fruit, in a north aspect, and the Alpine will continue the season till the end of October.

I am surprised that the Alpine is not more largely grown than it is. I know market gardeners, as a class, understand their interests thoroughly; but I have often thought it would pay them to grow the Alpine extensively for market after the other kinds of Strawberries were over.

E. HOBDAV.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Vegetable Crops in the Orchard.—Am I right in proposing to grow vegetable crops in a small orchard of pear trees?—[Perfectly right. We know of no better examples of good culture than some London market gardens, in which rhubarb and other vegetables are planted beneath the orchard trees.]

A Large Peach Orchard.—Colonel Edward Wilkins has now 1,350 acres, with 136,000 trees. The peaches from his orchard (near Chestertown, Maryland) are packed in crates, and sent to Baltimore to one factory, which contracts for the whole crop. In 1869 they netted him one dollar ten cents per crate; last year only thirty-five cents, or seventeen and a half cents per basket; yet, at this price he esteems it more profitable to grow peaches than to grow corn at the rate of sixty cents per bushel for a crop of sixty bushels per acre.

Sham Fruit Syrups.—It appears that a considerable trade is carried on in fruit syrups, which, on the *lucus a non lucendo* principle, contain no fruit whatever, but are artificially prepared from solutions of sugar, flavoured with ether, and coloured with aniline dye. There are, fortunately, various tests for this disgraceful imposture—such as nitric acid, which, when mixed in equal volume with real fruit syrup, causes no change, but turns the imitation yellow. With solution of carbonate of soda, the artificial remains unchanged, and the real becomes lilac or green, so that the preventives against making our interior an ethereal dye-house are easily obtained, and put in force.

Freeing Starved Trees on the Quince Stock.—Cut several slits lengthwise (that is to say, vertically) into the back of the swollen part of the stem, at the point where the graft and stock meet. Extend the cuts upwards above the point of junction till they are three or four inches long. A bit of crock, or better charcoal, inserted in each slit to keep it from closing, will tend to the success of the operation. Then heap some good soil above all round up the stem, so as to cover the part operated on. Of course, the tree has never been disturbed during this process from where it is planted. The tree will soon throw out roots from the point of union and above it, and as the pear rapidly tends to outgrow the quince, the pear roots will eventually but gradually overcome those of the stock. Meanwhile, the tree will continue fruitful, as there is no sudden shock, but gradual change. It is a capital plan with trees on the quince in very poor dry soil.

THE KITCHEN GARDEN.

THE CUCUMBER—ITS CULTIVATION AND USES.

(Continued from page 437.)

AIR AND MOISTURE.

THE necessity for air and moisture cannot be over-rated, for though many years ago some of our learned *sarcus* (Knight among the number) considered the ventilation to plant houses unnecessary, it is now established that the sturdy growth of the plant is proportionate to the free access of air, so long as that air is of the necessary warmth, and contains a proper amount of moisture. Dry, hot air is very destructive to the tissue of plants by drinking up its moisture; but warm, moist air tends to the distension of the fabric of the plant, and to its performing its functions in the best manner. Plants that are naturally the inhabitants of shady places, and others with tender foliage like the Cucumber, require more moisture than hard-wooded or succulent plants. Plants of that description will not endure full exposure to the sun, except in the presence of abundance of moisture in the atmosphere, not because of an abundant decomposition of carbonic acid, which takes place in the presence of light, is injurious or otherwise than unfavourable to them, but because the epidermis allows the escape too freely by insensible perspiration, and hence they wither and die. In the admission of air into a forcing house—more especially during the prevalence of cold or north-east winds—it is most essential that it should be supplied with moisture before coming in contact with the plants, and if special provision is not made by evaporating troughs at the place of ingress, care must be taken, by sprinkling the paths and walls of the house, that the moisture shall be supplied before the foliage can be injured by it. No plant suffers more from a dry high temperature and a rapid current of air than the Cucumber. Its foliage is so tender that it is quickly dried up. This, in some measure, accounts for the success which attends the cultivation of the plant in dung frames, where it receives a uniform degree of moisture; but supply the same amount to a pit or house of larger dimensions, and success is greater, because there is a freer circulation of air and a larger atmosphere to feed from—for, be it known, plants feed almost as much from the atmosphere as they do through the roots from the soil. Should the plants at any time flag or

droop, they do so from the want of moisture in the atmosphere, therefore do not give more air to cool it, as some would advise, as that will only increase the evil, but immediately close the house or pit and sprinkle it, and, if necessary, shade it for a short time. The plants are suffering from the juices being carried away faster than the roots can supply it, and hence they wither and droop. It will thus be seen that it is by a proper apportionment and combination of light, heat, air, and moisture that success in plant management is secured. We have endeavoured to show that either in excess is injurious, and the same may be said of any deficiency in the quantity required. The careful cultivator will, therefore, so adjust his management as to secure these indispensable requirements in due and proper quantity.

THE CUCUMBER UPON DUNG BEDS.

This, though the original and perhaps not the worst system of management, is attended by so much trouble, and we might add danger, that but few follow it at the present time. Still there are those who delight in Cucumber culture who have no other resource from which to prosecute their favourite hobby. Pits and houses are too expensive for them, so that the Cucumber frame must still be considered one of the institutions of gardening. In years gone by the expense that used to be incurred to cut by means of dung heat a few Cucumbers in February was very great, while those who tried to get them by such means through the winter obtained them at an enormous cost. Most people who want this vegetable in quantity and perfection have their pit or house heated by a fire or hot water, and some of the working men in large towns make considerable sums of money by the sale of their surplus stock.

PREPARING THE DUNG.

The dung for the formation of a hotbed must be properly prepared—that is, it must be reduced to uniform consistency as to its state of decomposition; be rendered somewhat dry, and as free as possible from that rank fermentation by which so much ammonia is evolved. To that end, it is necessary that a quantity of stable litter be procured—say two, three, or more cartloads, according to the size of the bed to be formed. This must be thrown into a ridge six to eight feet wide at the base, and of proportionate height, taking care in the operation to shake every portion with the fork thoroughly out, and to mix the wet and dry portions regularly together. This will secure uniform fermentation; but, should any portion of the fresh dung be very dry, or in what is called a mouldy state, consequent upon being overheated, that portion must be sprinkled and made quite wet with fresh water. As soon as the mass gets to a good heat, which will be in a week or ten days, the heap must be turned again, observing precisely the same rules as to shaking the dung thoroughly out, mixing the dry and wet portions together, and sprinkling any part that may require such an aid to fermentation. To prepare dung properly for a hotbed, it will be necessary to turn it three, four, or, in some cases, more times; in fact, it requires to be turned until such time as it is brought into a state of uniform decomposition, dry rather than wet, and as free as possible from that rank steam which, when full of ammonia brings the tears into your eyes.

A.

(To be continued.)

How to Keep Tools in Proper Order.—Keep constantly in the tool-house a dry cloth and an oiled one. When a tool is brought in, as it is when the day's work is done, it should be cleaned and wiped with the dry cloth. If it is not to be used the next day, the oiled cloth is then rubbed over it. By pursuing this course through the summer, every implement is kept bright and ready for use. In addition to this, hoes, shovels, spades, &c., are kept sharp. All this time use lard-oil; but when the tools are laid by for a long time give them a good coat of linseed-oil. This forms a covering that is impervious to moisture, and the tool is as bright in the spring as when laid away in the fall.—*American Farmer.*

Use for Charcoal Dust.—Elijah Low, Bangor, Maine, writes:—"I have a fruit garden of over fifty plum and pear trees, which, as a rule, bear regularly every year, and I have not used stable manure for twenty years. For ammonia (which all fruit trees need largely), I take a hog-head, bore several inch auger-holes in the head, then fill it with charcoal dust; into this I pour all the chamber-water, and not a particle of ammonia will escape. In a few months the dust will be so charged with this valuable fertilizer that in stirring it the effluvia will be nearly as strong as that from an old-fashioned smelling-bottle. This I dig in for my trees."

THE GARDEN IN THE HOUSE.

ON CHOOSING FLOWERS FOR DECORATING VASES.

THERE is, I am persuaded, more art in this matter than in arranging the flowers when they have been selected. It may be that you have leave to go into a well-stocked garden, and cut what you like; it may be, too, that you have a *carte-blanc* to get anything you fancy in Covent Garden Market. It has fallen to my lot on several occasions to be allowed to ransack the finest collections of Orchids round London, and to take away every flower I choose to ask for. These are opportunities on which much discrimination must be exercised; for, whether it be your own, or your friends garden and houses that you are free to plunder, it behoves you not to take a single bloom that you cannot make good use of; to do so would not only be wasteful or extravagant, but, what is worse, it would be a selfish act, as it would deprive others of the chance of making use of them; and really good flowers are never so plentiful, that no one will buy or accept them. The circumstances under which I have thus far considered the selection of flowers are doubtless exceptional, as the majority of decorators have, as a rule, to exercise their choice of blooms under more or less restriction. In that case you must, in the first place, ascertain clearly what you can have and what you may not have. Go over the collection to be culled from repeatedly; calculate carefully which of the flowers are most suitable for the vases at your disposal, and mentally discard all those for which you have not a vase of the proper form, or that will not look well at the time, or by the time, they are wanted to look at their best, or that require certain foliage which you cannot command. Having thus eliminated what you cannot use, you must next group, "in your mind's eye," some of the remaining flowers, and think which will combine best to make the most effective arrangement for the intended purpose. All this may appear to some to be unnecessary; but they would soon alter their views if they were often asked to furnish a dinner-table with flowers for a few shillings, when to do it well would need the expenditure of as many pounds. It is under such restrictions that the comparative abilities of table decorators are most apparent.

I have often wished that some one would offer a prize, in competing for which the competitors should be restricted to one or more vases of a certain definite form and size, and to a certain specified list of flowers, with an intimation that the foliage was left to the discretion of each exhibitor, and that it was not necessary to use all the flowers mentioned. The list of flowers should include kinds that are unsuitable as well as suitable for the form of vase chosen. Such a competition would afford a better test of skill in arrangement than any prize that has yet been offered. If such a prize were to be offered, the art of choosing flowers would be illustrated by the results produced; and it is not at all improbable that the best effects would prove to have been made with the smallest variety of flowers. W.

CONCEALING POTS UNDER DINING-TABLES.

PLANTS would, I am sure, be oftener used for the decoration of a dinner-table if the difficulty of hiding the pots could be got over. Covering a flower-pot with common fern fronds, which have been stuck round the edge and bent over, is probably the best way of concealing the heavy block of dull red colour. I like this better than any pot covers I have yet seen, be they silver, gilt, glass, china, terra-cotta, or wood. When the plant is a fern of suitable character, it looks well at the apex of a pyramid of moss decorated with flowers; the only objection to this way of hiding the pot is, that the width of the base of the pyramid is often too great for a narrow table.

After trying every scheme that I could hear or think of, there is, I am convinced, no plan so simple and so manageable as that of putting the pot through the table. The expense of arranging the table to do this is very trifling, and the necessary alteration does not affect the appearance of the table when it is not used for this special purpose.

The following illustration shows how easy it is to fix a supporting shelf under the table to receive the pot, which can thereon be blocked up until its rim touches, or nearly touches, the under surface of the top of the table. But it does not show how the stem passes through the table top. This is, however, easily explained. A spare leaf for the table must be made; but as it need not be more than three or four inches wide, and of any common wood, unpolished, this addition to the household furniture will not be a costly one.

This spare leaf is to be cut into two pieces by the removal from its centre of a piece three or four inches long. Then on the table being put together, there will be a square hole in the middle of it, through which a flower-pot can be dropped on to the shelf below, or if the pot is too large to go through the hole, the plant must be placed upon the shelf first, and the leaves of the table afterwards pushed into their places over the pot.



If it be wished to apply this principle to tables which are not to be covered with cloths, the only additional expense will be that of the wood of this extra leaf being of the same kind as that of which the table is made, and of its being polished.

The drawing herewith shows a plant of white Bouvardia passed through a table. The pot was filled up with good moss. The table cloths having been duly arranged, some good fronds of Maiden-hair were stuck into the moss, some lying on the cloth, whilst amongst them were arranged a few blooms of Scarlet Geraniums and cream-coloured Chrysanthemums. The effect of a series of these groups, placed at intervals down a set of long narrow tables in a large room, was very pleasing and much admired.



Some may be disposed to think that they could produce as good an effect without using the plant as I have described, and without a hole through the table. Let them try it, and they will find out that they are wrong, that is if they are not to be allowed to cut up the plant. Of course the same effect can be obtained by sticking branches of Bouvardia into a lump of clay upon a plate, and finishing it off as before mentioned; but then the plant is destroyed. On the other hand, by putting the pot through the table, the plant can be used repeatedly all the time it is in bloom, and after blooming is over it can be saved for use again next year in the same manner. With rare and valuable plants this is an important consideration. T.

AUTUMN LEAVES.

I THINK it was Professor Owen who first divested falling leaves of all pensiveness, by showing that they fell, not because an old leaf had died, but because a new leaf was born. I am sure Mr. Ruskin will excuse me for directing attention to this more cheerful view of the matter; it is in strict accordance with science. The leaf is pushed off by the advance of life—not blasted by the breath of death. The new bud at its base gives it notice to quit. By-and-by that notice becomes so urgent, that it cannot be resisted; the swelling bud becomes so large as to push the old leaf off. Possibly Professor Owen may favour us with his version of the matter in his own words, which would be so much better than mine. This hopeful view of the falling leaf has given me much pleasure, and I wish others to share it. It shows life, not death, to be master of the situation even in winter. This new truth ought to lay the foundation of a new school of poetry. The old is saturated with the fall of the leaf as the symbol of death. On the contrary, it is the proof of life ever pushing onwards, and never stopping until the final terminus—the death of the individual—is reached. D. T. F.

[We are not aware that Mr. Ruskin took a lugubrious view of the fall of the leaf.]

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

PRIVATE GARDENS.

Indoor Plant Department.—In conservatories, Hyacinths, Tulips, and Primulas, now nearly over, are being succeeded by such things as Roses, Azaleas, Rhododendrons, Ceanothus, Cytisus, Heaths, zonal and the earlier-flowering fancy Pelargoniums, that have been brought forward in a little warmth, Imantophyllums, Amaryllises, Acacias, and Salvias; to which are added some of the freer-flowering Odontoglossums, and such stove plants as Begonias, Eucharis, Ixoras, Stephanotis, Torenias, Gardenias, Clerodendrons, &c.; these and the orchids are placed in the warmest part of the house, where they are free from draughts. No fire heat is used now in conservatories or greenhouses if it can be avoided; but in cold weather such houses are shut up early, so as to make the most of the sun heat.

Flower Garden and Shrubbery.—Such spring-flowering plants as Heartsease, Daisies, Iberis, Roman Hyacinths, early Tulips, Narcissi, Alyssums, Aubrietias, Anemone apennina, Periwinkles, Trollius, Corydalis, Doronicums, Fritillarias, &c., are now quite gay; as are also such handsome-leaved plants as Golden Feverfew, Cerasiums, variegated grasses, the dark brown-leaved Ajuga, variegated Arabis, and Polemonium, all of which serve to make beds and borders quite attractive. Violets done blooming are divided and replanted. Hardy annuals, such as Saponaria, Nemophila, Collinsias, Alyssum maritimum, Clarkias, Virginian Stocks, Silene pendula, Mignonette, &c., for early summer flowering, are now sown, some where they are to remain, and others on well-sheltered borders for transplanting. Viola cornuta and lutea are lifted, divided, and replanted, so as to make nice plants for summer bedding.

Indoor Fruit Department.—To Pines is given an increase of temperature and moisture. Suckers as fit continue to be taken off and potted. As Grapes begin to colour, the amount of humidity in the air is gradually lessened. To such as are stoning a steady moist temperature is maintained, and care is exercised to guard against cold currents of air. Thinning, stopping, and tying of shoots are operations which at all times receive attention. To Peaches and Nectarines a steady moderate temperature is kept up. Succession houses have their fruit thinned, but too many are not removed until after the stoning period has been successfully passed over, when they are thinned out to the required distances apart. Strawberries for succession continue to be introduced, and the last batch of them is placed on raised boards in frames or near the glass in cold pits; to such as have set their fruit a little manure water is given, but this is discontinued as soon as they begin to ripen. Melons and Cucumbers are timely thinned, which prevents depriving the plants of so much foliage at once. Seedling Vegetable Marrows fit to handle are potted singly, and such as are established are planted out in frames and protected. Endive is still sown in brisk heat and gradually hardened off. Kidney Beans are also sown in frames, in lines about eight inches apart, and where failures have occurred they are made up from parts that are thickest.

Hardy Fruit and Kitchen Garden Department.—Peach trees have some of the least promising newly-formed fruits removed, in order to strengthen those that are better developed. Plantations of Artichokes continue to be made, and established ones to be top-dressed. Seakale is being increased by means of seeds and divisions of the roots. Asparagus seeds are still sown, some where they are to remain, and others on beds for transplanting. Kidney Beans are sown on warm borders, and Windsor Beans are now sown for late main crops. Another sowing of Peas where necessary is also made on deep, well-manured ground. Cauliflowers are also sown, and such as have come up are being pricked out four inches apart. Cabbages continue to be planted out wherever room can be found for them. Of Broccoli small sowings are still being made. Round-leaved Spinach is sown between lines of Peas. Of Lettuces new plantations from thinnings are made as required. Sowings of White Dutch Snowball and of Red and White stone Turnips continue to be made. Main crops of Carrots and Parsnips are now sown on deeply-trenched ground. Mustard and Cress are put in in small patches on wall borders, and if necessary have a mat or some other kind of protection thrown over them. Radishes continue to be sown in succession.

NURSERIES.

Indoor Department.—Young hard-wooded greenhouse plants, now that they have started into growth freely, are being pruned back pretty closely, so as to make nice shapely plants for next season. The prunings are used for purposes of propagation. Certain sorts of Heaths are treated in the same way, and where the pruning has been neglected last year they are cut well back into the old wood. Such as are thus cut back have not been repotted this

season, but are kept in dry, airy houses; and, if necessary after they have started, they will be repotted. Roses are being raised from cuttings under handlights well shaded. Autumn-grafted Camellias are having their ligatures loosened; and spring "worked" ones are kept close, and well shaded. Acrophyllum venosum is, in some places, being raised from seed in gentle heat; as is also Mandevilla suaveolens. Grevillea Banksii also comes pretty true from seeds; as does also Anthurium Scherzerianum; the seeds of the latter are collected as soon as ripe, and the pulpy substance is washed away from them; small pots are then filled to the extent of one-third with drainage, over which, to within three-fourths of an inch of the brim, are placed well-chopped sphagnum and fibry peat, on the top of which is placed a thin layer of finely-sifted peat, mixed with silver sand in equal proportions. On the surface of this the seeds are placed; but they are not covered, merely lightly pressed into the soil. The pots are then covered with squares of glass, and plunged in cocoa-nut fibre under handlights, in a shady part of the propagating house, where they germinate in less than a fortnight; bottom heat is unnecessary. Roots of tender Nymphæas and other tropical aquatics are being potted and started in stove aquaria. Caladiums which have filled their pots with roots are shifted into larger ones before the roots become matted. Bignonias, Aristolochias, Beaumontias, Clerodendrons, Combretums, Hoyas, Manettias, Passifloras, Tacsonias, Stephanotis, and other stove plants, are being pruned back, and the prunings are being used for cuttings. Grafting the finer kinds of Conifers still continues to be done, after which they are kept closely shaded in frames in gentle heat.

Outdoor Department.—The grafting of stone fruits, such as Cherries, Plums, &c., has in most cases been finished; that of Pears is also nearly finished, but Apples are still being "worked," as are also many of the finer kinds of hardy forest and ornamental trees. Where last summer's buds have failed, the stocks are re-grafted this spring. Where young fruit trees are required for training, they are pruned back to within a few eyes of the old wood; but where they are kept for standards, they have only a piece of the point of their main shoots cut off, and the lateral branches removed. Ground that has become empty is filled with stocks for operating on next year; they are planted as the trenching proceeds. Any empty spaces amongst large trees are filled up with cuttings of Planes and other trees; or Seakale roots are planted amongst them in lines for lifting for forcing. The main stock of herbaceous plants is now being repotted and set outside on north borders, on which a layer of ashes has been spread. Gladioli are being planted in beds. Tulips, Hyacinths, and other bulbs done flowering, are placed in cold frames and outside in shady borders, where they are allowed to ripen.

MARKET GARDENS.

VEGETABLE MARROWS are being sown; some are potted off singly, and others are planted out in frames. The frames are prepared by digging a trench about eighteen or twenty inches deep, filling it up with hot manure, over which is placed the compost; wooden frames are then put into position, and the plants planted, and, should the weather prove severe, a cover of litter is placed over the sashes at night. Vegetable Marrows are also planted in lines about ten feet apart, and six feet plant from plant. Under each plant a hole is dug, and a barrowful of hot dung placed therein, and over which is put the mould. The plants are planted, and a handlight is placed over each, or round vegetable baskets are substituted where handlights are scarce. A little soil is placed around the base of each light or basket to prevent a current of cold air. Between the Vegetable Marrows are Radishes, or the space is filled up with Lettuces. Tomatoes are gradually hardened off. French Beans are sown in lines on sheltered borders, and two lines are sown on the tops of each of the Asparagus beds. Those grown in frames are now up, and deficiencies are made good from a reserve stock by transplanting with a dibber. Between the beds of early Carrots raised in frames, Lettuces or Radishes are sown. Seakale roots that were preserved from those lifted for forcing have been cut up into pieces about the size of a man's finger, and laid pretty thickly on the surface of a bed with a few inches of soil placed over them; they are now emitting eyes and young roots, and are lifted and dibbled in in lines between the rows of Cabbage plants. Some of the finest Cabbages have pegs placed beside them, so as to mark their place as the stock is cut for market, but the stump is retained for seed. Radishes continue to be sown in beds. Sowings of Spinach also continue to be made; and on new Cauli-flower plantations a sprinkling of seed is sown broadcast. Cauli-flowers reared under handlights have some soil drawn up around their base. Mushroom beds in the open air are in good bearing condition; on gathering the surface litter is removed with steel forks into the alley between them, the produce collected, and the covering immediately replaced.

SOCIETIES, EXHIBITIONS, &c.

ROYAL BOTANIC SOCIETY.

(APRIL 10TH.)

THE principal features of this show were collections of stove and greenhouse plants in flower; Azaleas, Roses, Cyclamens, Herbaceous plants, Amaryllises, Rhododendrons, and Orchids, among which was a gorgeously bloomed plant of *Dendrobium Parishii*.

There were also some good groups of stove plants, conspicuous among which was the lovely *Clerodendron Balfourii*. In this class, as well as in that of greenhouse plants, Mr. Ward was first.

Indian Azaleas were very fine, especially a group of small plants from M. Van Houtte, of Ghent, which were much admired; amongst them were some new kinds of considerable promise. To the following certificates were awarded, viz., President de Ghellinck de Walle, a double purplish rose; Mme. Iris Lefebvre, double rose; Dr. D. Moore, purplish rose; Alice, something like the last; John Gould Veitch, fimbriated pink, the edges of the flowers light coloured; Comtesse de Beaufort, a fine purplish rose kind, with the inside of the petals deeper mottled with brown than the others; and Marquis of Lorne, a fine single vermilion scarlet kind. A few small plants from Messrs. F. & A. Smith, of Dulwich, possessed good symmetrical flowers; amongst them, Beauty of Surrey received a certificate. Messrs. Lane & Sons were first for Azaleas; and they also showed well flowered Rhododendrons in pots.

Amaryllises were shown in good condition. Mr. Baxter, being the only exhibitor, took the first prize for a group of six. Grand collections of Cyclamens were again shown by Messrs. Goddard and Clarke, Mr. Goddard being first with a batch of twelve, and Mr. Clarke second.

Herbaceous plants in attractive variety were shown by Mr. Ware, of Tottenham, to whom was awarded a first prize.

New and rare plants of great interest were exhibited by Messrs. Veitch. Amongst them was a new *Trichopilia*, the flowers of which have a deep rose-coloured throat. To this a certificate was awarded. The same award was also conferred upon *Croton Weismannii*, a fine species, with long linear leaves, the midrib and edges of which are blotched with yellow; *Masdevallia Harryana*, which was exhibited, also received a certificate.

To Erica Neitneriana, from Messrs. Rollisson & Sons, a certificate of merit was awarded. This is a superb kind, with flowers of a rosy red colour, dark brown at the neck, from an inch to an inch and a half in length, and commonly produced in fours at the end of each shoot.

ROYAL HORTICULTURAL SOCIETY.

THE following are the rules and regulations in connection with the show of dinner-tables' decorations, to be held at South Kensington, May 15th and 16th:—

I. The table for 20 persons will be 16 feet long, 5 feet 9 inches broad; 8 places to be laid on each side and 2 at each end.

II. The table for 12 persons will be 10 feet long, 4 feet 6 inches broad; 5 places to be laid on each side and 1 at each end.

III. The tables will be 3 feet 10 inches from the ground, so that visitors walking round may view them at the same elevation as if they were seated in chairs at them.

IV. Each dinner-table will have a separate compartment in tents erected for the occasion, so that each exhibitor will have a private room to himself, and a separate side table will be provided for his accommodation.

V. Table cloths and dinner napkins to be found by the exhibitor; also all such requisites as sand, moss, clay, &c. The Society will supply water.

VI. The table to be furnished with the following articles:—plates, knives, forks, spoons, wine glasses, salt cellars, &c., complete. The receptacles for the fruit and flowers may be of any material and of any form.

VII. The following appliances are optional:—carrages, ice dishes, statuary, plants, and other ornaments not required for fruit and flowers.

VIII. In Class 2. Economy of cost of the furniture of the table, as well as of the fruit and flowers, will be considered one of the primary tests in awarding the prizes.

IX. The exhibition will be judged as for a dinner by daylight, no lamps or candelabras allowed on the table.

X. Taste in arrangement will take precedence of costliness in the objects.

XI. In order to provide for the safety of the objects exhibited, an officer will be placed in charge of each separate compartment, and the tables raised off at a distance of 3 feet, but the Society will not be responsible for any loss or damage.

XII. Entries must be sent in on or before the 9th May, in order that proper accommodation may be provided.

HORTICULTURAL EXHIBITION AT BIRMINGHAM.

I UNDERSTAND that £100 are placed at the disposal of the implement committee belonging to this exhibition for appropriation in the shape of five gold medals; one for the best horticultural building, one for the best hot-water apparatus, one for vases, &c., one for garden machinery and tools, and one for wirework, &c. Now with regard to those awards which come under the three latter headings, I apprehend that after the question of lawn-mowers has been decided, the judges will experience little difficulty in arriving at a satisfactory selection of such of the remaining meritorious articles as come within those classes; but with respect to the "best" horticultural building I am not so sanguine. By what standard of excellence are these structures to be judged? Is it to be a consideration of size, quantity erected, construction, or novelty in design, or good materials and workmanship, or utility, or of interior

arrangements, &c.? Again, of what is the building to consist? A conservatory, vinery, peach house, pinery, orchard house, plant stove, pit, or a hand glass? Some instructions on these points should surely be issued, and the buildings classified; otherwise one kind of building will be competing against another of a very opposite character, and this will create much confusion and dissatisfaction.

As regards the best hot-water apparatus, that is really a knotty question. First: Is the apparatus to be working or not? Second: By what test is it to be certified as being the "best"? Third: Is the competition to resolve itself into the long-talked-of trial of boilers? If so, where are the conditions and regulations by which such trial is to be governed? Fourth: By what special points are the judges to be guided in making their awards? And finally, what are the qualifications necessary to constitute a competent judge, capable of giving a just decision in this important matter? I am of opinion that the judges should be men of scientific attainments, of good position, and entirely outside the horticultural world, as engineers, &c. They should, in short, be above suspicion of being influenced by trade considerations or personal interests. S.

L A W.

FENNEMORE AND OTHERS v. SPICE.

THIS was an action for alleged injury to crops, hedges, and herbage, arising from chemical works at a place near Egham. The object of the works was to utilize the products of the manufacture of gas. Last year complaints were made by the plaintiffs that the pitch or tar refuse of the works flowed into the ditches, and soon after that a suit was filed in the Chertsey County Court. The defendant removed the case into a superior court, and it now came on to be tried, the plaintiffs claiming about £150 in respect of loss. For the defence Dr. Voelcker said there were no fumes generated in the defendant's works which were injurious to vegetation; and as to the smoke, it was not in that respect like ordinary smoke, which was more or less mixed with sulphurous matter, very deleterious to vegetation. Furnace soot, he said, was so far from being injurious, that it was an excellent manure, and no amount of the black produced at these works could be deleterious, nor was there anything at all produced in the works injurious to the herbage. Acid fumes, he said, always showed their effects unmistakably on the top parts of plants—the tender shoots; but there were no traces in the plaintiffs' hedges of such injury.

The Lord Chief Justice, in summing up, said, there was no evidence of injury from sulphurous acid, which it was admitted was injurious to vegetation. Certainly there was smoke accompanied by the deposit of blacks, which gave the vegetation the appearance of being burnt. But then it was only the appearance, the evidence showing that the vegetation was not really burnt up. As to the soot, the scientific evidence showed that it was rather a benefit than otherwise to the soil; and the evidence was, as a matter of fact, that where the blacks had fallen the grass had grown more luxuriantly. As to the supposed burning up of the hedges and herbage, according to the evidence for the defence, there was nothing in the works to cause any such injury; and so as to the alleged grievance of allowing pitch and tar to flow into the ditches. On the whole case the jury must say whether the plaintiffs had made out their claim, or any part of it.

The jury consulted together for some time in the box, and then desired to retire to consider their verdict. While the jury were in deliberation, the parties, at the suggestion of the Lord Chief Justice, agreed to terms of settlement, a juror being withdrawn.

ANSWERS TO CORRESPONDENTS.*

T. C. (*Asplenium flabellifolium*, the best of all for a basket plant.)—T. WATTS & SONS (Your Broccoli is excellent, and, when not too far advanced, beautifully white and compact.)—K. (Irish Ivy, Virginian Creeper, Bour-sault Rose, and in summer some of the trailing *Nasturtiums*.)—D. S. GILBERT (Sand, when it can be got pure and good, is desirable in most kinds of plant composts.)—ARTHUR HUNT (A very complete index will be published with the first volume at the end of the first half year.)—A. PROCTOR (Mr. Douglas, Loxford Hall, Ilford, is the raiser of the Cucumber "Tender and True." We are not aware that it is yet sent out.)—RURUS (The Willow-leaved Bay, a distinct and narrow-leaved form of the Sweet Bay, *Laurus nobilis*.)—H. S. (There is only one hardy *Pelargonium* that we know of, *P. Endlicherianum*.)—F. L. S. (You may naturalise most of the Daffodils as easily as the common one.)—OXFORD (The Woodruffe, *Asperula odorata*.)—T. S. (Put half a pint of spirits of ammonia in a pail of water, and dip your bug-infested plants in it; washing them well.)—C. C. MOET (The interesting variation you send is not one that could be reproduced true from seed we think.)

* All questions likely to interest our readers generally are answered in the various departments.



"This is an art

Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

HOME LANDSCAPES.

GARDEN BEAUTY IN MARCH.

NEVER is a well-planted pleasure garden without beauty of some kind, not even in the depth of winter. Sometimes, during the leafless season of the deciduous trees, the hoar-frost makes them more beautiful than even in their summer leafage, transforming their slight terminal branchlets into the semblance of spangled feathers, more delicate and graceful than the artificially-curved plumes of the ostrich or the weeping wings of the bird of paradise. At other times, snow-laden branches produce a grand and impressive effect; and again, after heavy winter rain, when every branch is dripping with glistening globules, bright as liquid diamonds, the true lover of garden scenery perceives another variety of attraction not less charming. But it is in early March—the first month of spring promise—that garden scenery enters the most attractive epoch of the leafless period.

In March, though the branches of deciduous trees are still unclothed with their many-tinted robes of green, the buds are already beginning to swell. Those of the Horse Chestnut become magnificent in their highly-varnished husks of glowing brown. Ash buds, as they enlarge, become conspicuous by their soft, full black—a blackness deep as that of unpolished ebony. The young leaves of the Lilac, of pale, sunny green, begin to unfold, and at the end of every leading branchlet disclose miniature models of the bunches of flowers that in another month will weigh down many a blooming branch with their rank luxuriance. These signs and prophecies of coming summer impart an infinite charm to the garden in March, and there are many other such; for instance, the grey, silken envelopes which contain the florets of the Willow tribe, and the small rosy cone-blossoms of the graceful Larch. And while many trees are only in a state of forward promise, others have already burst into bloom. The Cherry-plum is covered with a mass of white—a very snow of flowers. And how glorious is March with its Almond trees, whose very branches are hidden with the profusion of rosy-hued bloom! a display which, despite its glorious beauty, is yet compelled to succumb to the dazzling scarlet of the close masses of blossom that crowd every limb of the *Cydonia japonica*, when deftly trained against some coigne of vantage, or revelling as an untrained bush in some sheltered nook, where no east wind can pay its unpropitious visits, but where the rays of the southern sun have free and uninterrupted access. Surely, this list of beauties is enough to prove that the March garden offers a very charming display of many and various attractions; and even where blossoms, or swelling leaf-buds, brown, and black, and pink, and grey, are absent, many deciduous trees, leafless, bloomless, and budless, have yet a peculiar charm of their own; for their delicate branchlets, in endless variety of characteristic and minute ramification, define each of their terminal fibrets against the daily brightening sky with such distinctness, that their curious intricacy of aspect, to a loving observer, recalls the appearances of some exquisite organism seen beneath the lenses of a powerful microscope, rather than ordinary objects seen in the open garden with the naked eye.

The herbaceous and other low-growing plants that bloom in

March must next be named; they are among the most lovely of the year, and, in contrast to the leafless or only budding state of deciduous trees, shoot forth their profusion of bloom from rich clumps of foliage. Hepaticas, red, white, and blue, double and single, form masses of floral jewellery wondrous and delightful to look upon. The hanging bells of the graceful Fritillarias, some speckled, some creamy white, are very charming in the subdued tones of their unpretending beauty; while the whole primulaceous tribe—Primroses, Oxlips, and Polyanthuses—are seen in front of the shrubberies in such "lush" profusion, and sweet-scented Violets peep in such crowds from the shelter of their dark-green leaves, that even one untutored to the love of flowers cannot but stand and admire. But the best is not yet told. It is, after all, the Crocus tribe that gives the final touch of splendour to the garden borders all through March, for their "cohorts" are literally "gleaming in purple and gold." And, again, the Daffodil must not be forgotten. It was Shakespeare's favourite March flower, one that he especially marked out as a glorious denizen of the keen and windy month. I saw over thirty distinct kinds during last Ventôse, as the fanciful French reformers of the nomenclature of the months, named the gusty, blustering month of March, and not more than two of those thirty species were known to Shakespeare. Among them, pre-eminent over all the rest, rose the giant species, *Narcissus maximus*, throwing up a flower-stem two feet high, crowned with its splendid nodding bloom of golden yellow.

To this list of floral splendour in March must be added the many-hued tribe of Anemones, varying from pink stained white to crimson, and from a soft, pale lilac, to the deepest purple. Early Tulips, too, gaudy with yellow and scarlet, help to enrich a March garden, as well as Hyacinths, judiciously planted out; while the lawns assume a brighter and fuller green, as though to welcome the arrival of the first gay flowers of the year, many of which I have no space to describe in this hasty sketch.

This picture of horticulture in March was painted almost tree for tree and flower for flower from a very delightful garden at Edgbaston, a favourite region close to the great Warwickshire metropolis, where many a millionaire of Birmingham delights to make his *rus in urbe*, and generally knows how to do it with a rare taste and skill not always found so abounding in the suburbs of the greater metropolis on the banks of the Thames.

NOEL HUMPHREYS.

THE PARRAMATTA ORANGE GROVES.

PARRAMATTA, New South Wales, lies some fourteen miles west from Sidney, and is some sixty feet above the level of the sea. The first impression which fixes itself on the mind of a visitor to Parramatta is the English appearance of the town—the old cottages and pleasant gardens, the lofty trees, and the quaint-looking buildings. Attached to the old Governmental residence, is a park, now thrown open to the public, which is reputed to contain some of the largest Oaks in the colony. The soil in the immediate vicinity of Parramatta, though varied, is for the most part poor, and it seems difficult to understand how a tree like the Orange should flourish and thrive so well in ground apparently so incapable of affording it sufficient nutrition. Yet Parramatta possesses some far-famed Orange groves. In that owned by one gentleman, a military man, some of the trees are really magnificent, being close on thirty feet in height. They were planted nearly forty years ago, and are still yielding most abundant crops. They begin to give a crop after being planted for seven or eight years, and it is astonishing to see in what barren, rocky, unpromising-looking places the Orange thrives. Rock and sand are the characteristics of some of the plantations, and young trees are planted wherever a ledge will hold a little earth that the rains won't wash away. Piled up stones keep the soil together in places, but in many cases it looked as if the trees were growing out of the solid rock. Last year the crop of this particular grove, in a lump sum to a dealer, produced £2,000. This year the money produced will be much larger. Such glorious trees, their glossy green starred with hundreds of golden globes, the boughs tipped with snowy blossoms, and the air heavy with rich perfume, cause a delicious languor to creep over the senses while reclining beneath their cool and welcome shade. The freshly plucked fruit is delicious in temperature and flavour, and, of course, surpasses that which has been handled and packed for transport.

NOTES OF THE WEEK.

— THE attention of visitors to the Inner Temple garden during the past few days has been attracted by the fine show of tulips displayed there, and which are now in full bloom.

— ABETENE, which is the product of a Californian tree, the *Pinus Sabiniana*, promises to take the place of spirits of turpentine in the arts, and to present many advantages over it. Mr. W. Wenzell, in the *American Journal of Pharmacy*, for March, has an exhaustive article on this new hydrocarbon.

— WE would remind such of our readers as intend to compete for the prize offered by the Royal Horticultural Society for the best collections of hurtful insects, that the collections must be placed in the hands of Mr. Richards, the secretary of the society, at the offices, South Kensington, by the 1st of May.

— THE Earl of Shrewsbury and Talbot has consented to open the gardens of Alton Towers to visitors this year (commencing on Whit Monday, May 20th) on the following days: viz., for passengers by cheap excursions, on Mondays, Tuesdays, and Saturdays. For passengers by pleasure party orders, on Mondays, Tuesdays, Fridays, and Saturdays.

— THE centennial anniversary of American Independence will be celebrated by an international exhibition, to be opened in Philadelphia, July 4, 1876. Fairmount Park, Philadelphia, one of the largest and finest public parks in the world, has been adopted as the site of the exhibition. The buildings to be erected are to furnish fifty acres of floor space.

— THE Royal Parks and Gardens Bill has been reprinted after the discussion of it in committee. It now contains a clause providing that the park rules to be made by the Ranger or the Commissioners of Works, must be laid before Parliament, and if any rule be disapproved by either House within a month thereafter, such rule shall not be enforced.

— MR. W. J. EVELYN has signified his willingness to allow the townspeople of Deptford to use six acres of ground for purposes of recreation, a nominal rent only being charged. The ground is to the west of Old Sayes Court Farm, and, as it includes the site of the house in which Peter the Great lived while learning the art of ship-building in this country, it possesses some historical interest.

— DOCTOR JULES GRUYOT, who died on the 31st ult., rendered great service to the cultivation of the vine in France, and was appointed to explore those departments which are almost entirely devoted to vineyards. His accounts of them, after eight years' experience, have been published, at the expense of the Government, in a work entitled "Study of the Vineyards of France."

— THE Palais Royal Garden cannon—one of the favourite sights of Paris—which on every fine day since 1786 fired off a charge of powder at noon precisely, the sun acting as artilleryman, was taken away two years ago to be repaired, and the nursery-maids and children who frequent the well-kept garden never expected to see it again. It was, however, restored to its place a day or two ago, and attracts as many meridian visitors as ever.

— NEARLY all the boundaries and divisions of land in Sardinia, says a correspondent of the *Times*, are cactus hedges, a mode of separation that could hardly be afforded in a country where land was more valuable and more extensively cultivated, since the cactus bushes push out their huge fleshy, prickly stems in all directions, cumbering and covering a great deal of ground. All the railway hedges are cactus; there are already some 250 miles of them; each one of the little bushes that compose them produces its ten or twelve prickly pears, and this fruit is a source of revenue.

— THE new East End Museum is 182 feet long, and is built in three spans or bays, each measuring fifty-two feet in width between the pillars. The site which it occupies is so ample as to leave not only a convenient space on either side and at the back for light and air at all times, but a handsome piece of ground in front, which is 330 feet long and 187 feet in depth. This land, enclosed by high iron railings—the standards of which are wrought, while the rest of the palisade is cast—will be ornamentally laid out, and will contain as a central adornment Minton's great majolica fountain.

— AT a meeting of the London Court of Common Council on Thursday, a report was presented by the Markets Committee on the proposal to build a new market for fruit, flowers, and vegetables, in the City. It was proposed to re-construct Farringdon Market on an extensive scale, the cost of the undertaking being estimated at £150,000; and as there exists great necessity for a good and convenient fruit and vegetable market, the views of the Committee met with considerable support. The report was adopted, and it only now remains for the Committee to receive the sanction of Parliament and raise the sum requisite to carry out the improvements.

— THE 19th of April is especially set apart for tree planting in Nebraska, and the State Board of Agriculture urges upon the people the vital importance of tree planting, and offers a special premium of 100 dollars to the county agricultural society of the county which shall, upon that day, plant properly the largest number of trees; and a farm library of 25 dollars' worth of books to that person who on that day shall plant properly in Nebraska the greatest number of trees. Other States are doing likewise; that of Minnesota appoints the 10th of April as "Arbor Day."

— THE report of the progress of the Ordnance survey of London for the past year has been issued. It states that the plans of London on the scale of sixty inches to a mile are now complete. They are drawn on 326 full-sized sheets of paper, and probably form the largest and most complete plan of a city ever produced. Of these plans, 144 sheets have been engraved and published, and the remainder are in progress. The continual increase in the size of London and the alterations constantly made in it are so great as to make it highly desirable that arrangements should be made for an almost constant revision of the plans.

— SOME who have ascended the Beacon at Great Malvern, says Mr. Edwin Lees, in *Notes and Queries*, may be surprised to hear that the summit of the hill has been recently enclosed, and several ugly buildings erected there by a local speculator and photographer, for refreshment and photographic rooms, &c.; and I am told that even a croquet ground is to be laid out, thus utterly spoiling the natural aspect of the spot. It was always supposed that the greater portion of these noble hills, being included in Malvern Chase, could not be enclosed according to the compact made with the commoners by Charles I., whereby the king was empowered to sell one-third of the lands included in the Chase, and the other portion was to remain unenclosed for the use of the commoners for ever.

— METROPOLITAN Suburban cemeteries thirty or forty years ago were in the open country, but so rapid is the growth of London that there are few of them which are not now surrounded by houses; while some are actually situated in the midst of very populous neighbourhoods. Take, for example, the Tower Hamlets Cemetery at Bow. This already crowded burial-ground was but a few years ago separated from town by fields and market gardens; but London has overtaken it, and now streets of shops and houses surround and even extend beyond it eastward for several miles. The great cemeteries of Brompton, Abney Park, Dulwich, and Nunhead are also already outstripped by the builders; while even Highgate and the classic Kensal Green are manifestly doomed to be thus before long brought practically into town. The question, therefore, of whether the limits defined by the Burial Acts should be extended ought at least to receive the earnest attention of the Legislature.—*Times*.

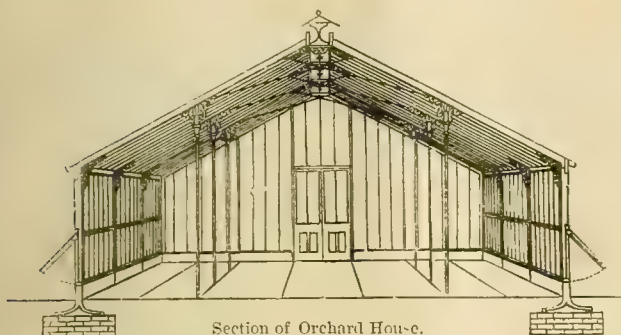
— WHATEVER objections may be entertained towards the appearance of Leicester Square, says the *Pall Mall Gazette*, it cannot be denied that it has one claim to admiration above all the other squares of London, inasmuch as it is the only square which is open to the public. The railings having been broken down in several places, children unattended by nurses, and by no means fashionably dressed, are admitted, or rather admit themselves, to the enclosure at all hours of the day and night, and find it a most convenient playground; indeed in its present condition it may fairly lay claim to be ranked among the "lungs of London"—a diseased lung, it is true, but nevertheless a lung, and one which is much appreciated by the youthful members of the lower classes. It behoves, however, all who use the enclosure of Leicester Square as a place of recreation to show by their conduct that they are worthy of being permitted to enjoy that privilege. They should be especially careful to do no "damage" to any of the valuable shrubs and other attractive adornments of that hallowed spot! Above all, the remains of the statue should be treated with the tenderness and respect due to all that is left of a beautiful work of art. We regret to say that some miscreant has so far abused the confidence reposed in the public with regard to this treasure as to take away some of its fragments, which, but for the vigilance and activity of the police, would have been for ever lost. Michael Foley was the other day charged at Marlborough Street Police-court with having about fourteen pounds of lead in his possession, and not giving a satisfactory account of his possession of the same. Indeed, his account was most unsatisfactory, for having been seen by a police-constable to throw down the lead and run away, his defence when captured was that "seeing some children knocking pieces off the statue in Leicester Square, he took up a piece and walked away with it, not thinking there was any harm in doing so." The prisoner was remanded for a week, in order that inquiries might be made respecting him; and in the meantime let us hope that immediate measures will be taken to preserve the battered horse which, minus his rider and part of one of his legs, still prances proudly on his pedestal—a noble memorial of our respect for vested rights.

THE FRUIT GARDEN.

ORCHARD HOUSES.

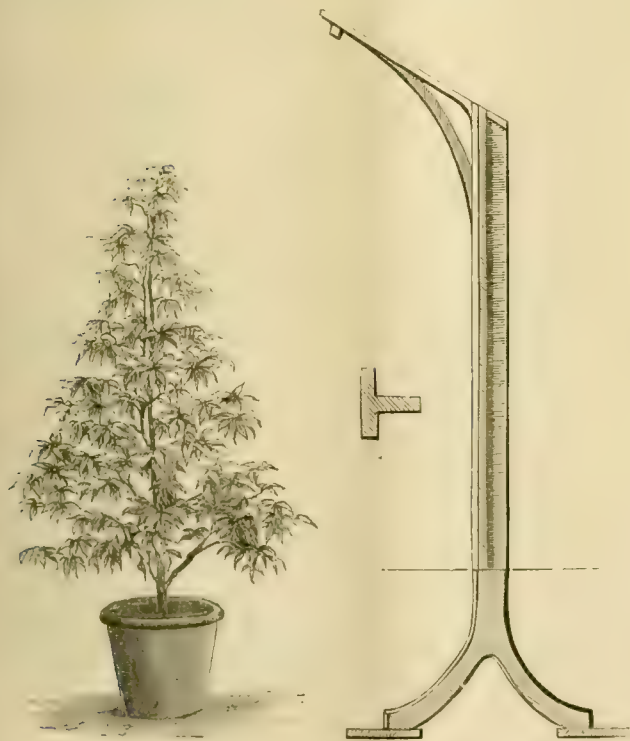
(Continued from page 105.)

IN saying that double-roofed houses are as cheap as lean-to houses, I intended to say that a large number of square feet of land can be covered at as little expense by building a double-roofed house as by covering a wall already built. This, of course,



Section of Orchard House.

would not be true in the case of narrow houses. I had in my mind a house from twenty-four to thirty feet wide. A narrow glass case is a covered wall, not an enjoyable house. In calculating whether a house is cheap or not, I ask how much land it covers. This mode would not do for a builder, but it suits my purpose. The above woodcut will give a good idea of one



Young Pyramidal Peach Tree.

Iron Roof Support.

of my houses. The ridges, though a hundred feet long, lift with the greatest ease, by the same means as are employed to open the side-lights, *i.e.*, a similar screw is used. A screw like this would lift a locomotive steam engine; and so easily does it work that lights one hundred feet long can be opened with the point of the little finger. The house, as will be seen, is divided into four beds and three paths. Such a house is a garden under cover, in which ladies may walk and children

may play; not a low glass shed. All the bricks required in its construction are to form the little square blocks, on which the iron standards are placed. Their having a base of three feet, and standing ten feet from each other, gives enormous strength to the house. No man can shake them, nor can they be seen to tremble in the highest winds. Another great advantage of this mode of construction is that these houses can be made quite movable, instead of being fixtures, a great consideration in building on another's property. Those who want further information had better pay me a visit. With grooved rafters and glass curved on the bottom edge we have almost got rid of breakage from frost and drip. In the most stormy weather my last-built houses are as dry as a room. Nothing adds more to the appearance of such an orchard house than a vine trained up each pillar. Meeting at the top they give a beautiful arch of foliage and fruit; and as the pillars are ten feet apart, the shade is very trifling.

Opposite the openings, between the pillars, *i.e.*, in the centre of the middle beds, standard Peaches and Nectarines are planted, forming two rows of orchard-like trees. Last year some of these produced as many as fourteen dozen fruit each of the finest quality. The rest of the house is occupied by trees in pots. Part of these dwarf trees might, of course, be also planted in the soil; but too many fixtures are a sad nuisance when the house requires painting. In choosing trees in pots, take care they are well formed, with strong bottom branches, or it will be difficult to get them to form such branches afterwards. In commencing with a young tree, called in the nurseries a "dwarf maiden," cut it down to five or six eyes above the graft, and make it grow like our illustration. This is by far the most natural form for the Peach. Any shoots that grow too fast can be stopped, and weak ones be allowed to grow; for nothing is easier than to make them assume this form, the advantages of which are obvious. The top does not shade the bottom branches, or the fruit upon them. If the top be allowed to grow wide, the fruit on the bottom branches is spoilt by shade, and the branches themselves become weak and unhealthy.

To save time, many Peaches are pinched in in the nurseries, and made to assume a pyramidal form before potting. This is a very bad practice. Not only are such trees often deficient in bottom branches, but what lower branches are formed are generally weak; besides which, the main stem of the tree having been formed out-of-doors is generally half-ripened, and often becomes unhealthy afterwards. The best soil for Peaches, and, indeed, for all fruit trees, is a good turfy loam; if of good quality, little or no manure will be required. Pot firmly, ramming the soil well down during the operation. Trees planted out should never have the borders either dug or forked afterwards; a loose soil encourages gross shoots, on which fruit will not set. When the soil of the borders is pretty dry, trample it as firm as a footpath, and keep it so. Nothing is more certain than that many Peach failures arise from loose soil.

I. R. PEARSON, *Chilwell*.

(To be continued.)

PLANTING OUT FORCED STRAWBERRIES.

WHERE strawberries are forced in quantity, the plants after being forced are planted out, if they are planted out at all, as an auxiliary plantation generally, without expecting either a great or certain return from them in the way of a crop, nor are they treated as if any expectations were entertained of them. The good things are reserved for what are usually called the permanent plantations, which do disappoint us often enough; but plants that have been forced the previous year, if planted out under ordinarily favourable conditions, may be relied upon to a certainty to produce, not only a crop, but a crop which for regularity and abundance will surpass anything that can be expected from permanent plantations. In bad years when strawberries have been a failure generally, I never knew the old forced plants to disappoint us, or any one else who tried them, the first year after planting. They are not to be relied upon a second year.

We have always planted out our forced plants in a systematic way every year, trenching the former year's lot down, and they

have always more than supplied our wants for all purposes. From one piece of ground, about thirty yards long by three yards in width, we gathered of Black Prince last year one hundred pounds' weight of good fruit, and we lost many by the wet, I could not say how many, but the wet weather delayed us getting any fruit for a long while. The plants from which this fruit was gathered were planted out the previous August, after a crop of potatoes had been taken off the ground.

Our usual plan is as follows:—As the forced plants cease bearing, they are moved out of the strawberry house and set in a sheltered corner, where they can be attended to and watered till planting-time. If the pots are needed, the plants are turned out and packed closely together, the interstices between the balls being filled up with any kind of soil at hand. We like to plant them out as soon as possible, but as a general rule, they have to stand as I have described till we begin gathering our early and second early potatoes, and the strawberries follow at their heels, getting them all into the ground by August. Plants which have been forced do not make such luxuriant growth as those which are planted out permanently, so we can afford to plant thicker. Black Prince varieties are allowed about one foot between the plants and eighteen inches between the rows; Prince of Wales and strong growing sorts a little more. In planting the balls of the plants are reduced sufficiently to disentangle the points of the roots, and they are planted as deeply as can be done without covering the heart. All the old leaves are cut off, and the plants always make a new growth.

Such plants always bear a fair crop the same season till late in autumn, if they are attended to, without, so far as I have observed, lessening the next year's crop. In spring the following year we mulch between the rows with old hot-bed manure, generally before the plants come into bloom, and when the fruit is set they receive a sprinkling of guano, which is washed down by the hose at once. After all the fruit is gathered the plants are trenched down, and winter spinach is sown in their place; this completes a routine of strawberry culture, which I have practised for many years. J. SIMPSON, *Wortley*.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Drainage for Fruit Trees.—It is useless, says an American paper, to talk about "fruit in a frog pond." We might as well expect our children to be healthy with wet, cold feet the year round as to expect fertility in our apple or other fruit trees in such a position. Drainage, either natural or artificial, and protection, are indispensable requisites of a healthy and productive orchard.

Injury to Fruit Crops.—I fear that fruit crops are much injured by the wintry weather which we experienced during last month, although it is too early to say to what extent. Apricots, I think, are gone; Peaches look bad; and also some kinds of Pears. Vines on a south wall here, which had pushed from half to three quarters of an inch, are all shrivelled up; and Gooseberries are bad in colour.—W. DIVERS, *Weirton House, near Maidstone*.

Fertility of Oranges.—With regard to the prolific nature of the orange, the crops, more especially in an abundant season, are something really surprising. Twenty thousand marketable oranges from one tree seems almost beyond belief, but, as we have before stated, such is a fact; the branches have frequently to be propped up with wooden supports to prevent their breaking. Risso mentions a tree growing at Nice in 1789, which was more than fifty feet high, and the trunk of so large a girth, that it required two men with outstretched arms to embrace it; this tree usually bore from five thousand to six thousand oranges.—*Food Journal*.

Thinning Fruits.—We do not thin our hardy and tender fruit nearly enough. Apples and pears are not often thinned at all, which accounts for the glut we have one year and failure the next. Standard trees outdoors are not, however, so apt to suffer from overcrowding as trees on walls and trellises, especially under glass. There is need for reform here, for it is common to see peaches trained so thickly as to thatch the trellis, to the almost complete exclusion of the light from a large portion of the foliage. Vines, again, may be seen with not more than six inches or nine inches between the rods, forming, when the summer growth is upon them, a hopeless thicket. It is the same in pine growing. "I like to have plenty of plants, and then I am always sure of fruit dropping in," is a common expression describing a most fallacious practice. Whether it be pines, vines, peaches, or anything else, the same lesson is taught, that crowding in any form is inimical to the production of good crops; and the same may be said of many other things connected with gardening. "What is worth doing at all is worth doing well," is a maxim which, if carried out in practice, will be found to be specially true in gardening.—S. W.

WALL FRUIT PRESERVED.

THE fickleness of our climate has never been more strongly illustrated than within these last few weeks. Up to the end of February we had drenching rains and frosty nights, rendering the whole face of nature in many cases a huge skating ground; then, with the Thanksgiving Day, came a change, and for the first fortnight in March we had May weather; early varieties of fruit trees began to assume their spring garb, some plums in open quarters being a sheet of bloom, and now, the 20th of March, we have sunny days,

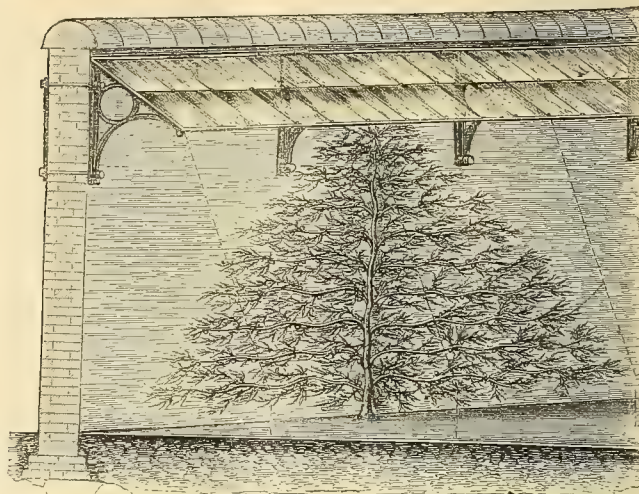


Fig. 1.—Glass and Iron Coping to Fruit Wall.

frosty nights, and dry March winds in all their bitterness. Fortunate is it that such is the case, for a continuance of mild weather, such as we had experienced, would in all probability have ruined our fruit crops. Security in regard to our more tender fruits therefore centres in the word "protection." Schemes of all kinds have been resorted to, from twisted

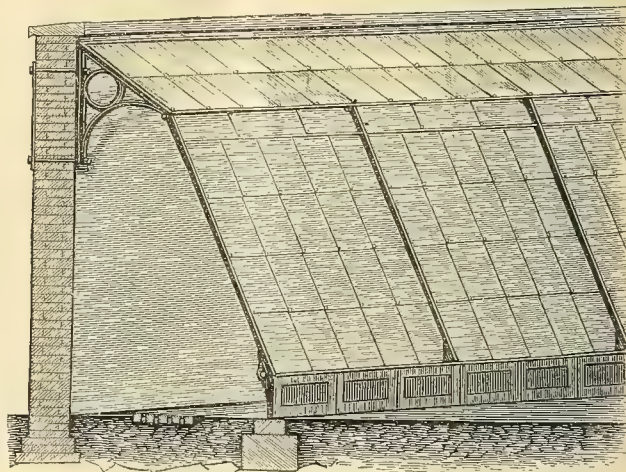


Fig. 2.—Coping converted into a Fruit House.

straw-bands, disused fishing nets, bunting of the most forlorn description, heavy copings of wood or masonry, down to makeshift glass shades, which, projecting but a few inches from the face of the wall, are, to say the least of them, most inefficient. What is worth doing at all is worth doing well, and impressed with this maxim, a gentleman noted for the growth of superior fruit applied to Mr. Ayres for assistance in devising some means of permanent protection, which, while it should be sufficient for that purpose, should not be an eyesore in the garden. The result is illustrated in the accompanying

design (Fig. 1), which is calculated to serve both for use and ornament. It will be perceived that it consists simply of ornamental cast-iron brackets bolted through the wall at certain distances apart, and connected together by purlines recessed to receive the glass, which covers it, and is held in position by metallic clips. These brackets project three feet from the face of the wall, over the trees which they are intended to protect; and this it is believed will be found amply sufficient for protection in the most severe seasons and exposed situations. But this is not all. Mr. Ayres' brackets are prepared to receive rafters, as indicated by the dotted line, so fixed on a centre, that should it be desired a house of any reasonable width may be added in the most simple manner. This is called the "expanding house," and as is shown by the dotted radiating lines, it may be expanded to any reasonable width; and not only that, the expanding part, when the crop is matured, may be taken away and used for any other purpose. Fig. 2 shows the addition merely as a glass case; and in Fig. 3 we see the preserver converted into a permanent erection—a fruit-house of the very best description. We need scarcely say this is a capital idea, the general utility of which will be at once apparent. Many may not be able to build a peach house, but most people can afford to fix their "fruit preserver," and if, a few years hence, there is a desire to add the house, there is the satisfaction of knowing that the necessary provision for that has been made.

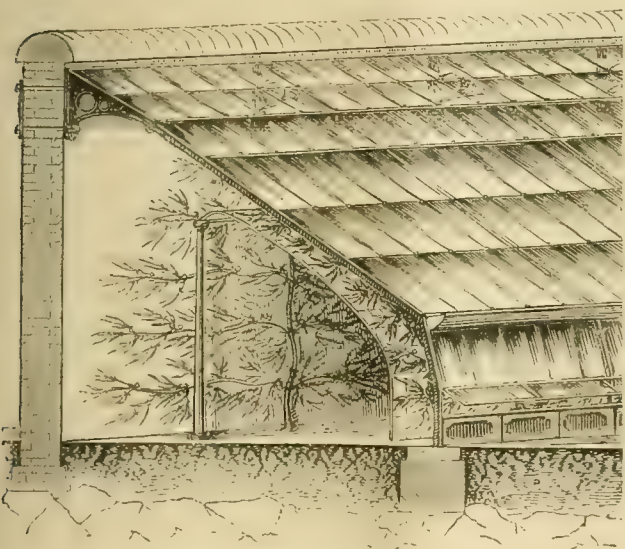


Fig. 3.—Expanding Fruit House.

Nor is this all; for, judged from a practical or scientific point of view, it is fair to infer that a glazed preserver projecting three feet from the face of the tree protected will, under all circumstances, husband sufficient heat to materially affect the early maturation of the crop; thus the house crop and wall crop may be brought closer together; and, by the same rule, the season of the wall crop may be advanced several weeks.

This we regard as an important point in connection with these fruit preservers, as they really appear calculated to answer the purpose intended better than anything hitherto introduced. Frost is said to descend, and if so, give us a wide protector, to prevent its falling upon the trees; but, in point of fact, we have nothing to do with frost. What we want is, to prevent the escape of heat; and as radiation is vertical, the wider a fruit preserver is—that is, the more it projects beyond the surface of the tree—the more likely is it to answer the purpose intended.

As permanent and slightly erections, likely to answer the purpose intended, in the gardens of the wealthy, or to secure the cottage thefruit which will pay his rent, we recommend these fruitpreservers to general notice. They are manufactured by the Imperishable Hothouse Company.

THE FLOWER GARDEN.

NATIVE FERNS AND FERN CULTURE IN IRELAND.

THE letters of your correspondents, giving accounts of the Devonian and Eastern Scottish Border ferns (pp. 376 and 457), suggest to me that some of your readers may care to have a like experience of the ferns which I have found growing wild in the "level plains of Kildare," and also some account of the ferns in an open fernery here. I shall begin with a list of the ferns which I have found in this county, and an indication of their special localities.

The Bracken.—Abundant everywhere.

Lastrea Filix-mas.—Abundant in all hedges.

Athyrium Filix-femina (at least three distinct varieties).—To be found plentifully in many parts, but in glorious abundance, vigour, and variety in the very peculiar locality which I shall describe further on when I come to *Osmunda regalis*.

Polystichum aculeatum.—Abundant in hedges and ditches.

P. aculeatum lobatum.—Abundant in ditches and hedges.

P. angulare.—Abundant in ditches and hedges.

Lastrea dilatata.—Plentiful on bog edges.

Asplenium Trichomanes.—Frequent on old walls.

A. Adiantum-nigrum.—Abundant in the hilly district towards the county Wicklow, and generally, though more sparsely, scattered through the county.

A. Ruta-muraria.—Abundant on old walls. In my own garden it peeps out plentifully through the peach trees, and is respected.

Ceterach officinarum.—Grows freely on the south walls of the ruined church of Bodenstown, and on several other walls; also on the bridge over the Liffey here.

Blechnum Spicant.—In any quantities on the hilly district towards Wicklow; also on bog edges.

Moon-wort.—I once found a single plant of this fern on a cut-away bog near Prosperous. I brought it home, and it appeared to take very kindly to its new quarters, pushing with great vigour the following year, but it was hardly well over the ground before a vicious slug attacked it and sucked its heart's blood. I have got plants from elsewhere since, but the slugs seem so perfectly ravenous for this particular fern, that after trying various sorts of fences in vain, I have had to give up the attempt to cultivate it.

Adder's Tongue.—Abundant in moist meadows. I have frequently given plants of it to friends, who told me afterwards that they had subsequently found it in quantities at home.

Polypodium vulgare.—Abundant on walls and stumps of trees.

Hart's Tongue.—Luxuriant and abundant in all shady ditches; often bifurcated, and approaching to crested.

Cystopteris fragilis.—On the bridge over the Barrow at Monastereven.

Osmunda regalis and *Lastrea Thelypteris*.—I have only found these ferns in one place in this county; the latter I have never seen wild except here. Through a large tract of bog (a branch of the Bog of Allen, between Robertstown and Rathangan) runs a small stream; it has either formed for itself, or taken advantage of, a sort of shallow gorge through the bog of several miles in length, and varying from a few feet to twenty or thirty yards in width. This is clothed with a coarse tufted grass, with here and there tangles of the bog-loving willows and bog myrtle. Let no one attempt to penetrate it who cares how high the black mud covers his trousers; but if any one wishes to see glorious specimens of *Athyrium Filix-femina* of very distinct types, the *Osmunda* growing in profusion, though not in great luxuriance, and the graceful *Thelypteris* struggling with the grass for mastery on every little tussock that lifts it a few inches over the semi-liquid mud, he will find them all there. I have spent hours in that happy valley.

This closes the list of the ferns that I have actually found growing wild in Kildare; but I have little doubt that *Lastrea æmula* and *Lastrea montana* grow in this county, for I have found both in abundance in the adjoining county of Wicklow. At the Seven Churches of Glendalough, the latter is the fern. In the same county, as also in Donegal, Down, and Kerry, I have found the charming little *Hymenophyllum*, of both species. I have found this a most difficult fern to get to thrive in captivity; the Killarney fern is child's play to it. In the fernery here, a spray, as like that of a natural waterfall as may be, has been produced for the especial benefit of these two ferns; and the *Trichomanes* is behaving very decently, but the woodlice appear to take at least as deep an interest in, and to be far more unremitting in their

attentions to the *Hymenophyllum* than I am, the result being that every frond is denuded the moment it shows itself. I have had it do well under glass for several years, but even there it has always ultimately died off, apparently only because it chose to do so.

I cannot say that I have ever found *Trichomanes radicans* growing wild, but I have seen it in its native habitat in the Island of Valencia. I suspect that had I lived within a hundred miles I should not have been shown it. It has the name of being a difficult fern to cultivate, but I have not found it so. It is a *very* slow grower, the life of each frond being several years; but moisture, shade, and drainage are all that it requires. It has fructified in the glass case.

Asplenium marinum I have found at Dalkey, near Dublin, and in abundance in Valencia. I have never tried it in the open fernery; but planted on rockwork under glass, and without artificial heat, except for say half-a-dozen nights in the year, it grows luxuriantly here.

Polypodium Phegopteris I found in the Gap of Dunloe at Killarney, and also on the mountains over Tollymore Park, in the county Down.

Of British Ferns which I have not myself found growing wild in Ireland, but which are growing here in luxuriance in the open fernery, I may mention the following:—

Polystichum Lonchitis, *Asplenium viride*, *Polypodium Robertianum* and *Dryopteris*.

Cystopteris montana.—One of the earliest and most beautiful, now just spreading its fronds of freshest green.

Lastrea rigida and *cristata*.

Allosorus crispus I have, but cannot get it to thrive, though I have tried it facing south and facing north, planted in an open situation and almost buried under a big stone. Whether there is something in the position, or in the ingredients of the soil, that it dislikes, I have as yet been unable to discover.

Asplenium septentrionale is another that lived with me for several years, but each year sent up fewer and fewer fronds, till at last they disappeared altogether. Can any of your correspondents, who have cultivated these ferns successfully, give me any information about them?

I have not mentioned any of the varieties, but some of these are so marked as to bear little resemblance to their relatives, such as *Athyrium Filix-femina* *Frizelliae*, *Polypodium vulgare* *cambricum* and *hibernicum*, *Polystichum angulare* *proliferum*, *Lastrea cristata* *spinulosa*, &c.

Of foreign ferns that are perfectly hardy, being planted out, and having no protection either winter or summer, I may mention the following:—

Adiantum pedatum.—A very lovely fern, delighting in moisture.

Struthiopteris germanica sows itself everywhere about.

Onoclea sensibilis.—Grown in a regular swamp, runs like a weed, producing quantities of tall showy fronds.

Cystopteris bulbifera.—A very free grower from the bulbs which form on the fronds.

Osmunda cinnamomea, *Lomaria alpina*, *Pteris caudata*, *Cystopteris tenuis*.

Lastrea decursi pinnata.—Hardy, but capricious. I am misty about this fern, not knowing whether it is a species or only a variety, and if the latter, of what.

An old tool-house in a corner has had its slates taken off, and glass put on instead; rockwork has been piled up inside, and an abundant water supply provided; there is no artificial heat except one of Hink's petroleum stoves in very hard frost. Here the following British ferns thrive:—

Adiantum Capillus Veneris, *Asplenium fontanum*, *A. marinum*, *Trichomanes radicans*;

besides a host of foreign ones, for which this small amount of protection appears to make all the difference.

Millicent, Naas.

THOMAS COOKE TRENCH.

HARDY AQUATIC PLANTS.

THE WATER LILY.

This noble native plant is one of the many hardy subjects capable of producing the highest effects in our gardens, but to which we frequently fail to do justice. It is not enough to grow a plant, or to refrain from exterminating it, if a wild one. If the subject possesses any character, we should always

ask ourselves, is it so placed that we get the full expression of its beauty?

A well-developed plant or group of plants of the queenly Water Lily, floating its large leaves and noble flowers, is a sight not surpassed by any other in our gardens; but when it increases and runs over the whole or a large part of a piece of water, and thickens together and weakens in consequence, and the water-fowl cannot make their way through it without breaking pathways through the leaves, then even the queen of British water plants loses its charms. No garden water should be without a few fine plants or groups of the Water Lily, and



The Water Lily.

if the bottom be too poor to allow of the free development of the plant, scrapings or rubbish might be accumulated in the spot where it was desired to exhibit the beauties of *Nymphæa*. Thus arranged, it would not spread too much. But it is not difficult to prevent the plant from spreading; indeed, we have known isolated plants and groups of it remain almost the same size for years, and where it increases too much, reduction to the desired limits is of very easy accomplishment, either by cutting off the leaves or getting at the roots in the bottom.

The Water Lily is seen to greatest advantage in a small group a few yards from the margin of the water; but, isolated groups or single plants always look well, no matter where they are placed. It should also be remembered that small groups and individual plants always produce finer foliage and flowers when thus isolated than when crowded together. In many artificial waters the only way to get rid of the excessive growth of the Water Lily is by cleaning out the bottom. Where this is done, one can always leave a few roots or groups, and with each a good heap of soil, to encourage their growth.

THE CHILD-GARDEN.

FROEBEL, whom we do not hesitate to call the greatest man of the nineteenth century, was not the first discoverer of the land of childhood, but he was the first who made a thorough exploration of it. The younger Fichte has recently declared that no man of this age understands human nature so well as Frederick Froebel. After a lifetime of labour as an educator and a reformer of education, Frederick, the head and leader of the "educating family," as the Froebels were called, founded the Kindergarten in his old age, the ripe fruit of a life wonderfully rich in ripe fruit. It was something very different from the so-called kindergartens in our cities, many of which are taught by persons who do not know what a real child-garden is.

Froebel started with the maxim, "The first work of a child is play." So far from repressing a child's playfulness, the wise man, who recognized God in nature, and God's law in nature's laws, declared that the *first work* of a child was to play. This is the business which his nature sets him about. This is God's ordinance for childhood. This is the supreme law of a child's nature. And it is the violation of this law which makes all our primary schools so pernicious. Play, according to Froebel, is not to be tolerated merely. It is to be encouraged, directed, and above all, laid hold of as the chief means of primary education. And so he devised the "child-garden." His own definition of a kindergarten was a "fore-school employment institution." He called all the employments plays, and all the materials gifts; and until the child was seven years of age he did not teach it so much as a letter of the alphabet. But in the kindergarten a child at seven finds all its perceptions sharpened, all its reflective faculties quickened, all its tempers harmonized, and its memory full of information acquired in a way so delightful that the health has not only not suffered, but the body also has been invigorated by the plays of Froebel.—*Hearth and Home*.

MODERN FLOWER GARDENING.

WE have received the following letter from a nobleman resident in one of the home counties, and, as it expresses the sentiments of a good many lovers of gardening nowadays, we give it publicity:—

TO THE EDITOR OF "THE GARDEN."

DEAR SIR,—I haven't a notion of gardening, but am devoted to beautiful flowers. I have lately taken a small place in the country; there was no flower garden when we came to it, so I have had to make one. But, having laid out the beds as I think quite beautifully, I am at my wits' end to know what to put in them. I abhor the formal glaring borders that one sees everywhere, and have a sneaking fancy for what you call the "wild garden," only I don't quite know what it means. I have had the advice of many professional gardeners; but each new one appears to me a greater idiot than his predecessor, as all they can advise is so many thousand bedding-out plants. I hate bedding-out plants, and am sick of them; so I want you, if you will be kind enough, to recommend some one whom you think competent to give me really good advice on the subject.—I am, dear Sir, yours faithfully,

R.

[If you have committed yourself to a formal scheme of beds, a modification of the bedding system, with much variety, and a good deal of "sub-tropical plants" of the most desirable kinds will be best. Wild gardening is only fitted for the rougher and half-kept parts of the place—shrubberies, shady walks, grass walks, spots seldom mown, &c. As you hate "bedding out," endeavour to remove all formal geometrical patterns from the turf near the house, and give yourself an open, verdant foreground. Seek continually for beautiful hardy subjects of all kinds, from tiny bulbs to tall trees; and try to so group and otherwise arrange them, that they may, after being properly planted, prove a continual source of satisfaction. Isolated beds of such noble hardy families as the Lily are usually very beautiful; these will also grow nobly among your *Rhododendron* masses, if you have any. Pay great attention to Roses on their own roots and pegged down, not only growing these in beds, but boldly isolating strong plants on the turf, and in such a manner that no soil may be seen. Take many choice shrubs, such as *Spiræa Lindleyana*, out of the shrubbery, where they are often neglected, and develop them into fine specimens singly on the turf, or group them with such noble subjects as *Yuccas*, *Pampas Grass*, &c. Numbers of fine shrubs are never seen in their best character, from the too common mode of planting them in serried masses. Every family of hardy plants should be searched for embellishments to grace the properly-arranged garden. Such classes of plants as the smaller ornamental grasses, Carnations, Picotees, and Pinks, Clematises, a good collection of climbers and trailers, and rock plants should be in every garden; and a good and properly-prepared mixed border for miscellaneous herbaceous and other plants is also indispensable, not necessarily instead of the more formal flower-beds, but as a charming adjunct them.]

CHAMEROPS EXCELSA.

A HARDY species, with an erect stem, twenty or thirty feet high in its native country, and dark green, erect, fan-shaped leaves, deeply cut into narrow segments. The leaf stalks are from three to six feet long, and are enclosed at the base in a dense mass of rough fibres, and armed at the edges with small, tooth-like spines. This palm is perfectly hardy in this country. A plant of it in her Majesty's gardens at Osborne has stood

out for many winters, and attained a considerable height. It is also placed out at Kew, though protected in winter. On the water-side of the high mound in the Royal Botanic Gardens, Regent's Park, it is in even better health than at Kew, though it has not had any protection for years, and stood the fearfully hard frosts of 1860. If small plants of this are procured, it is better to grow them on freely for some years in the greenhouse, and then turn them out in April, spreading the roots a little and giving them a deep loamy soil. Plant in a sheltered place, so that the leaves may not be injured by winds when they grow up and get large. A gentle hollow, or among shrubs on the sides of some sheltered glade, will prove the best place for it.

THE ROSE SECRET.

THIS, like most other secrets, especially gardening ones, is easily solved, and I am almost surprised that so shrewd an observer as my good friend and neighbour, Mr. Hole, should have been hood-winked and tongue-tied by anything so flimsy. When, some thirty-five years ago, I assisted for a short time in the propagating-house of Mr. Rivers, we considered it no great feat to strike the Tea, Bourbon, and Noisette Roses, from single eyes. These, taken off in a fresh kind of half-ripened state, and planted in sand under the

usual conditions of a congenial earth heat and moist atmosphere, seldom failed to strike root and make good plants in the course of the season.

At one time, when experimenting upon the power of leaves to produce growing buds I frequently rooted independent rose leaves, but never succeeded in getting beyond that. Mr. Taplin has done a good deal to clear the mist from rose propagation; and to prove that the secret is rather an ancient one, I refer your readers to *London's Gardeners' Magazine* of about forty years ago, where they will find an article on the propagation of *Rosa odorata*, in which propagation from the growing wood in the spring is strongly advocated. As I quote from memory I am not sure who was the author; but if it was not Mr. Archibald Gorrie, of the Carse of Gowrie, it was Mr. Ellis, of the Palace Gardens, Armagh. Though I cannot go into particulars, the facts are as fresh in my memory as if they had occurred only a few months ago. With suitable appliances,

to strike roses in the early season in the growing state, the same in July and August, and later on in the ripened state, is not a difficult matter. But we must recollect the conditions under which the cuttings have been produced; for to take cuttings from heat to cold would be just as absurd as to take them from the open air and expect them to strike in a strong bottom heat. These are the points, more than any other, upon which inexperienced propagators fail, more especially with plants that are in any way disposed to be hard-wooded. Take cuttings of Roses any time in September, before the frost has touched them, and cutting them into lengths, insert them in loam, either in pots or a cold frame; protect them from severe frost through the winter, and by spring you may fairly calculate that a very large proportion of them will be rooted plants. If, however, quantity, and strong plants in a short time be the object, then bud grafting upon the *Manetti* stock or briar is the royal road to quantity. Buds can be rooted as independent plants in the soil, but not so quickly and surely as they can upon a healthy, well-established stock. I say nothing as to the desirability of the two systems. Plenty there are who grow the Rose admirably upon its own roots, others are equally successful with the *Manetti* stock, while I think great Rose-growers themselves pin their faith, for show purposes, to the British briar in its second season, a good deep loam, and no "tightness" in the manure market.

W. P. A.



The Hardy Palm (*Chamerops excelsa*).

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Dwarf Yellow Wallflower (*Cheiranthus præcox aureus*).—This charming little plant, growing only about six or eight inches high, is now in bloom around London. It is of a compact and stubby habit, very sweet-scented, perfectly hardy, and of a bright yellow colour. It is most valuable for the spring garden, the mixed border, and also for naturalization in rough rocky places with the common kind.

Delphinium formosum, Phlox Nelsonii, and Iris reticulata.—Two or three little points struck me as I went through your work on "Hardy Flowers"—matters personally known to me. First, *Delphinium formosum* is a garden hybrid, although it reproduces itself from seed as truly as most species. It was raised by the late Mr. C. Moore, nurseryman, East Dereham, in this county. Second, *Phlox Nelsonii* is also a garden hybrid, between *P. frondosa* and *P. nivalis*, raised about twenty years ago by my late father, who was rector of Winterton, also in this county. Third, *Iris reticulata*: my soil may be described as a strong loam, with a brick-earth subsoil not eighteen inches from the surface, and here it thrives amazingly in all positions on the level. A friend gave me about a score of roots ten years ago; I have exchanged and given away since that time more than three hundred, and have now a stock of at least five hundred—all from the original twenty roots. Moreover, I have never seen it do as well anywhere where the soil is lighter and warmer. It does not seed freely with me, though many abortive seeds are formed; but this year I have about twenty seedlings from seed saved last year.—*J. G. Nelson, Aldborough Rectory, Norwich.*

THE PROPAGATOR.

ON PURE HYBRIDIZATION, OR CROSSING DISTINCT SPECIES OF PLANTS.

BY ISAAC ANDERSON-HENRY, ESQ., F.L.S.*

THE following are the rules I observe and the means which I take to insure success in my experiments with reference to this subject:—

1st. I long held it to be of vital importance to have the separate plants intended for the parents in the cross, even though both were hardy, put under glass, and I still recommend it; for, by doing so, you heighten the temperature—an important thing—and you can better secure against the interference of winds and insects; and though Darwin holds the former of small account, I have reason for differing from him there. But in the height of summer pollen may be taken from an outside plant to cross an inside one, and *vice versa*. If the cross is to be made on an outside plant which cannot be conveniently removed, I cover it with a hand-glass or cloche.

2nd. I hold it not enough merely to emasculate the intended seed-bearing flower; I take off every petal, for the petals attract the insects, which seem guided more by their optics than any sense of smell. This act of emasculation in some cases I perform long before the expansion of the bloom; for in many plants—*e.g.*, in the *Papilionaceæ*, some of the *Rosaceæ*, and *Compositæ*—self-fertilization may, and does, often take place in the unopened flower. This is not all. I sometimes put a gauze bag over it; if I do not, the mutilated bloom may not escape that most troublesome of all insect pests, the humble bee, which in his unwieldy flight, may come across it by pure accident. But for the most part now I make clean work of it, and remove all other expanded flowers on the seed-bearing plant, and allow no kindred one to be near.

3rd. Do not be in a hurry to effect your cross; wait till you find that the stigma is fully developed. In many plants this is shown by a glutinous exudation on the summit, as in the *Ericaceæ*, the *Onagraceæ*, &c. In other orders, such as the *Geraniaceæ* and *Malvaceæ*, it is indicated by the feathery expansion and recurvature of its separate divisions.

4th. The next thing is to obtain properly ripened pollen grains from the male plant. This is done by carefully watching when the anthers burst, otherwise the insects may be before you; and so active are they, especially on such favourite food as the pollen of the *Rubus* tribe, that, to get it at all, I have found it necessary to encase the opening blooms in muslin bags till the pollen was ripe, and ready for use. Do not use, as is generally recommended, the camel-hair pencil, which, applied often and indiscriminately, may, and often does, convey, with the foreign, some insidious grains of

native pollen, which, however few, are prepotent, and wholly neutralise the former. Take, where that can be obtained and afforded, the entire bloom of the intended male, and give the slightest brush with all its anthers over the stigma, or all the stigmas, if more than one, of the intended female. I will give my reasons for this by-and-bye. You may use for experiment, in some cases the long, and in some the short, stamens. To those of the proper dimorphic form I have made some allusion elsewhere; they occur in the species of *Primula* and in some of the species of the *Linum* tribe (as to both of which, see Darwin's most remarkable papers in the Proceedings of the Linnæan Society). Such anthers, at least two long and two short ones, occur in the two orders of the Linnæan class *Didynamia*, on which I may have a suggestion to offer hereafter, for I think something interesting may be worked out of this form. In cases where the anthers are few, as in the Linnæan classes *Diandria*, *Triandria*, &c., you may use small pincers—a bit of wire so twisted as to form that implement, to carry in the pocket, is by far the handiest. I have used such an instrument all along, and find it better than any other form. In some tribes, the better to secure against invasion by insects, such especially as in some of the *Rosaceæ* having large discs, a muslin bag may be used, so as effectually to exclude them; I use it constantly in the *Rubus* tribe immediately after emasculation, taking it off and replacing it after the cross, and keeping it on thereafter till the cross has set.

5th. In some cases it is a matter of some difficulty to procure, and when procured of no less importance to preserve, pollen. In dioecious plants—say the *Aucuba*—a friend may have the male and you have, as we all have, the female in abundance. You would like to store that pollen till your female plant, generally later, comes into flower. Many hold that pollen cannot be preserved in a vital condition for more than one or two, or perhaps three, weeks. In a recent publication which refers to this matter, namely, Max Wichura's "Observations on Hybridization," of which a very lucid abstract, carefully digested and translated from the original German by the Rev. M. J. Berkeley, is given in the January number of the *Journal of the Royal Horticultural Society*, that eminent authority holds it as "a fact of great importance that the pollen of willows retains its potency for some time. In some cases pollen ten days old was efficient, while vitality was still further prolonged by steeping it in a solution of honey" (of which I have doubts). "Pollen," he adds, "of *Salix Silesiaca* eight days old seemed almost as potent as ever; in twenty-eight days the traces of vitality were very slight, while that of *Salix cinerea* had become weak in sixteen days." Now, I am not aware that there is less vitality in the pollen of willows than in that of any other family, and, as many experimentalists hold kindred views to those here enunciated by Wichura, I deem it a matter of some importance to give you one or two instances of my own experience. I have carried in my pocket the pollen of *Rhododendron* again and again from six weeks to two months and upwards, and still found it potent. Of the Japanese forms of the genus *Lilium* I have kept pollen effective in the same manner for equal periods. In fact, generally speaking, I have found the pollen of most plants to remain good for similar periods. Having last year got the new and beautiful *Clematis Jackmanii* to flower, and anxious to preserve its pollen as long as possible, I collected and stored it in its anthers in a simple pill-box. On the 4th of July 1866, I so gathered and put it into a drawer of a cabinet in my own sitting-room, where it remained wholly away from damp. On the 5th of June 1867, having first carefully emasculated a flower of *Clematis candida*, I crossed it with the pollen, then eleven months old, and from this cross I have this autumn gathered and sown eight well-developed seeds. Now, both parents are hybrids, with a large infusion of alien blood in them, so that here the vitality was put to its severest test. Subsequent experiments satisfy me that the vitality of all pollen may not be so long preserved, for I have found that of the *Aucuba* inert after being stored about six weeks. But as some bits of stems had got mixed, these may, by inducing damp, have destroyed it. I would therefore recommend it to be brushed off pure and stored in silk paper. I notice this result here (somewhat out of place) to suggest the propriety of storing, and, if needful, of importing, pollen, which, if wrapped up in silk paper, might even, enclosed in a letter, reach this country still potent, by the overland route from India, or, after two or three months' voyage, from all parts of South and North America. Let collectors and friends in distant countries be instructed as to this, and we may soon have an improved progeny of the rarest things, even before such novelties from which they are derived have been obtained from their own seeds in this country.

6th. There is another matter of much consequence to be attended to in the crossing of distant species; I mean the times and seasons for effecting the cross; yet not one of those most experienced in the art, from Darwin downward, has touched upon this point. It has been forced upon my attention for more than twenty years. I

* A paper read before the Botanical Society of Edinburgh, and since revised and added to by the author.

have found that I could, on some few propitious days which occur throughout the season, successfully effect crosses I could not effect with all my care at other times. I have adverted to this in the paper I formerly submitted to you, and I again refer to it. There are some crosses which I have effected at such times, and which I would have tried in vain to accomplish at times less favourable. If you have, say, two plants of *Rhododendron*, one a tiny thing, to cross with a large species, or if you wish to attempt a cross between an Indian azalea and a *Rhododendron*, watch for a propitious time. Such times occur, often few and far between, when there is less of sun than of that latent form of heat, which frequently occurs before thunder, from the air being more than ordinarily charged with electricity. Or they may occur in the spring season, when there is much ozone present, whose influence I have often found to tell most favourably in promoting the germination of long-sown seeds. It was to the presence of ozone, or to some other form of electrical agency, I attributed the almost simultaneous germination of some New Zealand seeds of a shrub which I got from that country under the name of "Black Maupan," a species of *Pittosporum*, which sprang up together on the morning of the 16th March 1863, after they had lain dormant two years and eight months. Such atmospheric conditions, to whatever cause they may be due, I have found not unfrequently to occur with the east winds of March and April; at which times I have seen many other long-sown seeds spring quite suddenly and unexpectedly. Seize upon all such seasons for difficult crosses. As to the time of the day, you may operate best perhaps from ten a.m. till six p.m.

(To be continued.)

PROPAGATING SOFT-WOODDED BEDDING-PLANTS IN SAND AND WATER.

Not recollecting to have seen this mode of propagating bedding-plants notified in your pages, I have thought it might prove useful to some of your readers—amateurs especially—to know that, in comparison with the customary modes of "striking" such subjects in pots, &c., in soil and sand, the way now indicated possesses greater simplicity and despatch, while it also reduces to a minimum the "damping off" contingency, incidental to the old mode. Having now for several years pursued the plan in question with uniform success, more especially with such plants as *Verbenas*, *Petunias*, *Ageratums*, *Coleuses*, *Iresines*, &c., I can recommend it with the greatest confidence.

My *modus operandi* is to fill with moist silver sand common flower-pot saucers, or other suitable vessels; insert the cuttings thickly with the peg, fill up with water, and place the vessels on a shelf or other suitable site in the propagating pit. Shading from the sun I am not fastidious about, so long as the pans contain a sufficient amount of water. As soon as the cuttings have formed a mass of roots, which only takes a few days to effect, I transplant them into boxes or pans of light soil and leaf mould, replace them in heat for a few days, and afterwards gradually harden them off in some cool structure. The pans of sand may be refilled with cuttings repeatedly *ad infinitum*.

WM. GARDENER.

Lower Ealingdon Park Gardens, Stratford-on-Avon.

MAKE-BELIEVE GRAFTING.

THERE is a Rose tree in the Botanical Garden at Ghent, where it was produced by M. Donkelaar, which flowers extensively each year in the midst of an Oak, which causes it to be called by the uninitiated the Oak Rose tree. On first seeing it, it has quite the appearance of being grafted. We think it may prove interesting to show to what extent artifice can be carried. A young Oak was taken, of two or three inches in circumference; by means of a red-hot iron, a hole was bored the entire length of the centre of the trunk, and through this were passed the roots of a young Rose tree. The two plants thus formed into one were potted, and the hole round the extremity of the Rose tree was stopped up. The plant was taken good care of, and it flourished and flowered as though nothing unusual had happened to it. But is this really a graft? By no means, as there is not the slightest union between the two. They are two plants, each having its own roots, struggling and disputing between themselves without ceasing for nourishment, and living not one for and by the other, but separately, the one in the other, until the weaker is strangled by the stronger.—*C. Pott.*

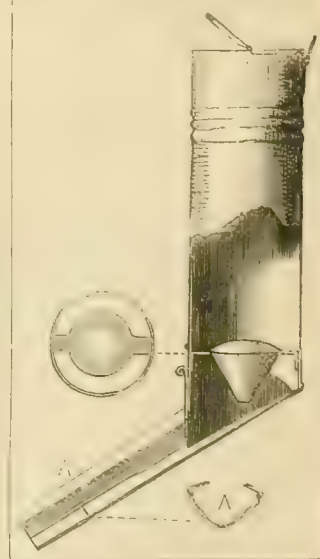
PROPAGATION OF THE IPECACUANHA PLANT.

THE following method of propagating this important officinal plant has been communicated to the Botanical Society of Edinburgh by Mr. M'Nab:—"The *Ipecacuanha* plant (*Cephaelis Ipecacuanha*) has recently been attracting much attention, from the belief that it will become, like the *Cinchona*, a profitable plant to cultivate in various districts of India. The *Cephaelis Ipecacuanha* is a native of the moist woods of Brazil, and was first introduced into British gardens in 1830. It is a plant of remarkably slow growth. The largest now in the Botanic Garden is scarcely one foot in height, although more than thirty years of age. The method hitherto adopted for propagating the *Cephaelis* (as far as I am aware) is by cuttings; but of those not more than one or two can be got at a time, and at very long intervals. By this slow method of propagating the *Cephaelis* must always remain exceedingly scarce. The roots, or rather rhizomes, of the *Cephaelis* are moniliform or annulated. A few of these were taken from one of the plants in the Botanic Garden during the month of August 1869, and after being cut into small transverse sections, they were inserted in a horizontal position over the surface of a pot prepared with drainage and white sand. This pot was placed under a hand-glass in a warm propagating bed and kept moist. A few weeks after, the bits of roots showed buds on the upper side, roots being also sent out from the under surface. The plants are now beginning to grow, each being furnished with two leaves, the largest measuring three-quarters of an inch over. In order to meet the demand which, in all likelihood, will be created for plants of the *Cephaelis*, it is well to know how it can be propagated independently of cuttings, and at the same time without injury to the parent plant."

TOOLS, IMPLEMENTS, &c.

THE SIDNEY GARDEN SEED SOWER.

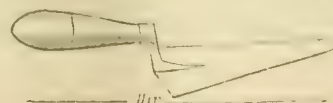
WE have had this apparently very useful little contrivance properly engraved in order to show the way in which it is constructed, and also for the purpose of exhibiting a recent improvement carried out by its inventor, Mr. Cox. This consists in the introduction of the little inverted cone in the middle, which prevents largish seeds from forming an arch, and consequent stoppage, at the base of the upright or main tube. Our woodcut indeed explains the matter so clearly that nothing farther need be said in reference to it. All sorts and sizes of vegetable and flower seeds can be sown in drills, or even broadcast, in any required quantity, by regulating the slide. It is useful also for dusting with tobacco powder to destroy aphides; likewise for dusting sulphur over plants to kill mildew. It will, in short, prove a welcome addition to our stock of handy garden tools and implements. The small size is that best calculated for sprinkling tobacco powder, &c., over plants. The Sidney garden seed-sower is made in several sizes.



Sectional View of the Sidney Seed-sower.

THE BEST KIND OF GARDEN TROWEL.

THE common concave garden trowel is a worthless implement, effective chiefly in wasting time. From its shape the earth clings to it much more than to a flat trowel; it is generally of bad



material, and its concave shape presents no advantage whatever. This shape is given it because it makes a roundish hole; but, as every person with any practice in planting knows, a precise shape

for the hole is of no consequence whatever. The object is simply to make one deep enough and large enough in the shortest space of time, and with the least labour possible. This is best effected by the trowel we now figure, and which we have used for some years; once accustomed to it, one would almost as soon use a piece of an old flower-pot as the common garden trowel. It is of the best steel, and is marked with a crown and W. H. Another reason why a straight form of trowel is preferable, is that the great majority of small plants should be planted against the side of a small cut—a little trench with one firm straight side, for the making of which the concave trowel is of course much less effective than the one here spoken of.

THE TOOL HOUSE.

THE common hoe is perhaps the most troublesome small garden or farm implement to hang up in the tool-room, out of the way when not in use, and still exactly in the way, and so as to be always handy when we want it in a hurry. Vexation is increased at a fearful ratio

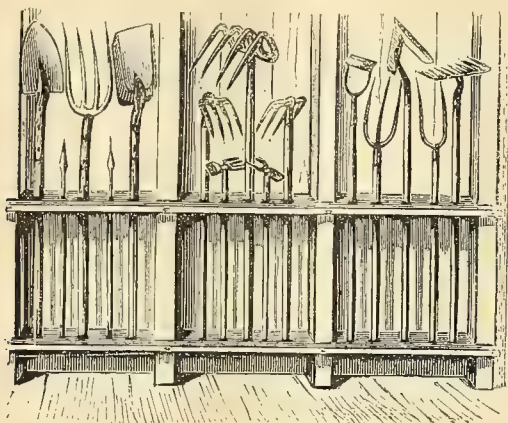


Fig. 1.

if you have a dozen of them. The floor of a tool-room should be kept as free as possible from all obstacles to the sweep of the broom. Very likely in a new room you will hook the hoes over the edge of the plate, or some girt or horizontal timber in the framework, and

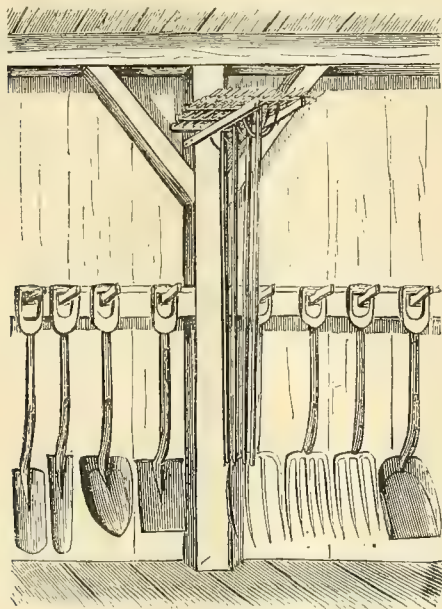


Fig. 2.

think they are nicely fixed. The first time you look for your favourite weapon, two or three others are on top of it, and their centre of gravity is so awkwardly poised that in selecting the one you want you fetch them all clanging down about your ears. A lath

nailed across the upright studding is a little better, but not satisfactory. After many trials I have settled upon this (fig. 1) as the best way to dispose of that large class of implements with straight handles, to which hoes belong.

Upon the wall of the tool-room, within about six inches of the floor, affix a strip of inch-board, five inches wide, shelf-wise. Let this extend twice as long as you think at first you will need, for it is astonishing how the mop sticks, and broom handles, and unfashionable utensils, that you are not quite ready to fling away, will gather upon you when once you have a place to put them. This narrow shelf should have inch-holes, six inches apart, sunk along its centre, through its entire length, bored half-way through the board. Also holes rather smaller may be bored midway, near the edge of the shelf. Above this shelf—say two feet—affix another, six inches wide, with corresponding holes clean through it—the inner ones one-and-a-quarter-inch, and some of them one-and-a-half-inch, for larger handles, the beetle, or the iron bar. If slots are cut in the back edge of each shelf, many things will find a place there, where they will always be in sight and never in the way. The iron wedges, for instance, near the beetle; odd strap hinges and bits of iron or wood, that will be sure some time to be used if where they can be seen in time of need. Such tools as hoes, potato-hooks, garden-rakes, long-handled shovels, spades, forks, and the like drop into their places at once, and they will stay there. The half-hole in the bottom shelf keeps them steady. Shovels, spades, and dung-forks with short handles are well hung, concave side to the wall, upon stout wooden pegs, set in a strip of one-and-a-half-inch stuff cleated to the wall of the tool-room or stable, as shown in Fig. 2.

How to fix pickaxes and mattocks so that a workman coming in tired, with a back-load of tools, would be glad to put them in place,

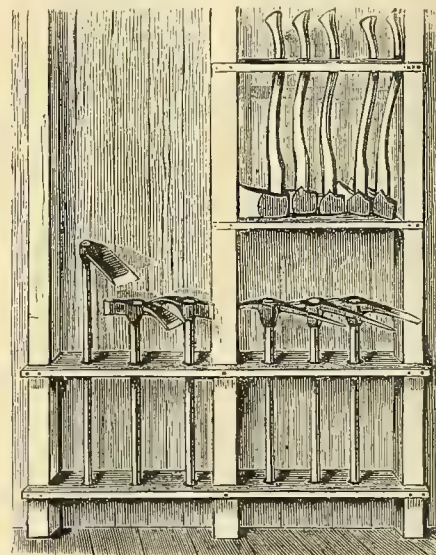


Fig. 3.

did for a while bother me. I finally fell upon the plan described for hand-hoes, making the holes larger, and the upper ones of an oval shape, diagonally, by boring two holes close together with a two-inch auger. Choppers' axes come in well between two studs (fig. 3), resting the head of the axes askew upon a narrow shelf, breast-high, and holding the helms upright by a cleat two feet higher.

Having tools arranged in this way, with variations according to individual fancies or necessities, leads to a precious saving of time and trouble.—Burton Briggs, in "*Hearth and Home*."

THE SOURCE OF GREATNESS.

If we were to be asked abruptly, and required to answer briefly, what qualities chiefly distinguish great artists from feeble artists, we should answer, I suppose, first, their sensibility and tenderness; secondly, their imagination; and thirdly, their industry. Some of us might, perhaps, doubt the justice of attaching so much importance to this last character, because we have all known clever men who were indolent, and dull men who were industrious. But though you may have known clever men who were indolent, you never knew a great man who was so; and, during such investigation as I have been able to give to the lives of the artists whose works are in all points noblest, no facts ever looms so large upon me—no law remains so

steadfast in the universality of its application, as the fact and law that they are all great workers; nothing concerning them is matter of more astonishment than the quantity they have accomplished in the given length of their life; and when I hear a young man spoken of as giving promise of high genius, the first question I ask about him is always—does he work? But though this quality of industry is essential to an artist, it does not in any wise make an artist; many people are busy, whose doings are little worth. Neither does sensibility make an artist; since, as I hope, many can feel both strongly and nobly, who yet care nothing about art. But the gifts which distinctively mark the artist—without which he must be feeble in life, forgotten in death—with which he may become one of the shakers of the earth, and one of the signal lights in heaven—are those of sympathy and imagination. —*John Ruskin.*

THE INDOOR GARDEN.

THE GOMUTI PALM.

(ARENGA SACCHARIFERA.)

This is the Sugar Palm of the Indian Archipelago, where it is very useful to the natives, producing sago from the pith of the stem; and from the flower-stalk is obtained a juice of which sugar is made. The leaves are also found to be useful for thatching, and the leaf-stalks make rafters for huts. From the coarser fibre produced at the base of the stem are made brushes, while the finest is used for stuffing



The Gomuti Palm.

cushions. It is one of the largest of palms, the fronds being often twenty feet in length. When it has attained its full height, it begins to flower from the top downwards. The male and female flowers are borne on separate plants, and are produced in great quantities. It is a fast-growing palm, and is quite out of place in a small house. There is a fine example of it in flower in the Palm House at Kew. J. CROUCHER.

CULTIVATION OF CACTI.

BY J. CROUCHER.

THE majority of Cacti are sun-loving plants, and, as a consequence, the first thing to be taken into consideration is to get your house so situated as to insure the greatest amount of direct light, therefore the best aspect will be due south; a lean-to house is the best, with good clear glass, to which the plants must be as near as possible. The genera *Epiphyllum* and *Rhipsalis* are exceptions to this rule, and prefer a little shade in the summer, as they mostly grow in the forests, but in any house there are always some parts more in the shade than others. The plants are not damaged by the sun but will grow more luxuriantly in the shade. It is not easy to get the house too hot for Cacti in the summer, but they will thrive well in a temperature of from 60° to 80° with sun, and in winter the majority will bear a minimum of 40° with dry air; though the genera *Rhipsalis* and *Epiphyllum* must be kept at 55° to 65°, or they will protest by looking very yellow. As most of these plants are natives of those parts of America lying south of the equator, they, as a consequence, get their warmest season when we get our coldest, which gives them a tendency to grow during our winter; and a predilection for rotting, if not kept perfectly dry.

POTTING, SOIL, ETC.

As above stated, these plants being American, they should not be repotted in early spring, as is the common practice; which practice seems to have originated from the fact of most plants starting into growth on or about that time. I have often thought, that if amateurs and gardeners were to think more on this subject, they would at once see the folly of supposing that all countries had their spring at the same time as we have in England; it matters little with most persons if the plants come from east, west, north, or south, they must be potted in our spring; and as the plants will not grow out of their season, the soil gets stale, and when the roots do begin to grow, they find the condition unfavourable, and the result is stunted growth, and sometimes death; not through a wrong compost, but unseasonable potting. The potting of Cacti should be left until June or July, when they will be on the point of starting into growth. The best compost is loam, with silver-sand and broken bricks, the quantity of sand must be regulated by the stiffness or otherwise of the loam; the object being to make the whole sufficiently porous for the water to pass through freely; as a rule one gallon of sand to three bushels of loam, and one bushel of finely-broken bricks will suit for the genera *Opuntia*, *Echinocactus*, *Echinopsis*, *Cereus*, and *Mammillaria*; for *Epiphyllum* and *Rhipsalis*, a mixture of rough peat and loam, with a little sand and rough crocks, is the best. Such as *R. Cassutha*, *funalis*, *saglionis*, and *mesembryanthemoides* may be grown on pieces of fern stems, in baskets or pots suspended the same as orchids, and very interesting objects they make; *Cereus flabelliformis* and *leptopus* succeed best suspended in a pot, with the ordinary soil; *C. grandiflorus*, *Macdonaldii*, and the other right-flowering species, grow best planted in the back border of a stove with a tolerable amount of moisture in the air; it is not necessary to give them much soil, as they get most of their nourishment from their aerial roots. When the plants are to be potted, the whole of the small fibres of the roots should be cut off; this is a very particular point in the cultivation of this class of plants, as it enables you to get the plants into small pots, and if left on they decay, and so do more harm than good, by making the soil impure; amateurs, as a rule, are very shy at cutting the roots from their plants, but a good cultivator of Cacti has not the least hesitation about the subject; and it is probable that they lose most of their fibrous roots during the dry season in their native habitats. The soil should be made quite firm in the pot and well drained; taking care to put enough rough pieces of soil on the drainage to prevent the soil from getting amongst it, and so defeat the object for which it is placed there. Manure should be specially avoided, as it will cause the soil to get charged with impurities with the least excess of water, which impurities the plants will take up, and though they may look green and healthy, may some day be found quite dead; some persons recommend manure, but after sad experience, I say away with it. I also know persons who grow their plants in nearly all manure, but they are grown for sale, and their profit consists in the death of the same. Others again recommend lime rubbish being mixed with the soil; which practice has originated from the fact of oxalate of lime being found to constitute a great portion of the substance of these plants; but lime rubbish from the debris of old buildings is very different from that found in the natural soil of the plants, and the effect on the roots is to cause them to become stunted, and what horticulturists call "clubbed"; therefore my advice is, if you want your plants to grow well, don't use lime rubbish.

WATERING, ETC.

When the plants have been potted, they should be kept without water until they show signs of growth; never mind if they don't

ask for it until two or three months after potting; don't give it them until they do, for they always contain enough moisture to enable them to start; and until that start is made, the roots have not begun to grow. When the plants have started into growth they may be watered about once a week for the first month; after that twice, with a good syringing every other evening before shutting the house. This treatment may be continued until the end of August, when the syringe must be laid aside; after September, the watering must not be oftener than once in fourteen days. From October till March, the genera *Mammillaria*, *Echinocactus*, *Cereus*, and most of the *Opuntias*, must be kept quite dry. As the *Phyllocacti* flower in the early spring, they must get water about once a month during the winter. *Epiphyllum* and *Rhipsalis* may be moderately dry; but they will not endure so much drought as their more succulent allies. It is not necessary to pot the plants every season, as they like to be pot-bound; some do well in the same pot for five or six years. Should any plant be found to have lost its roots, or show signs of decay, the infected part should be cut clean out at once, and the plant turned up to the full power of the sun, till it begins to show fresh roots, when it may be repotted, and watered with care. This rule of turning the plants up to the sun should be especially attended to with newly-imported plants, as they require all superfluous moisture cleared from them; their roots should be cut off, as when dead they act like string, conducting moisture to the plants. To the neglect of cutting off the dead roots I attribute the many failures to grow the Turk's Cap cactus (*Melocactus communis*); although this species evidently does not increase in size after forming the cap or flowering point, yet it may be kept alive some years.

MODES OF PROPAGATION.

The genera *Rhipsalis*, *Phyllocactus*, *Cereus*, and *Opuntia* are easily increased by cuttings, which should be taken off in May, and laid in the sun until rooted, when they should be potted and watered carefully, though *Rhipsalis* and *Phyllocactus* may be potted at once, and kept dry about fourteen days, when they will be rooted, and may be watered; *Echinocactus* and *Mammillaria* must be increased by offsets; *Echinocactus* requires the top to be cut off, which must be exposed to the sun until rooted, the old plant will throw out young ones, which may be taken off the next season. As a rule, the *Echinocactus* is slow in throwing offsets, and care must be taken not to let the plant get any water until it shows signs of doing so; patience is a virtue in great demand in the propagation of this section of the order. The slender-growing species are often grafted on stronger and faster growers, though care must be taken not to select for a stock one as celebrated for vigour as the scion is for want of it, or your labour will be in vain. As a stock for the smaller-growing *Echinocacti*, *Cereus tortuosus*, or *columbinus*, are the best; for the larger, *C. peruvianus* and *gemmaus*. In grafting, care must be taken to cut the two ends rather convex than concave, as they are apt to shrink a little, which would cause a separation, and so spoil the graft; the scion must be tied firmly to the stock, taking care that the edges meet, or, at least, one of them; the best plan to insure against accidents is to put three sticks into the pot, and tie them together above the plant, thus causing a continual pressure from above. In grafting *Opuntia clavarioides* you may cut a cuneiform notch in the stock, and cut the scion to fit tightly, keep them firm with a stick on each side and a thorn run through the graft. Some of the smaller species of *Cereus*, as *C. tuberosus*, may be made pointed, with a corresponding hole in the stock; in all cases taking care not to disturb the plant when once grafted. When the operation is finished, the plant must be put into a close frame, or the shadiest part of the house, until it is out of danger. *Epiphyllums* are generally grafted, but not necessarily. The common stock used is *Pereskia grandifolia*, and *Bleio*, but *Cereus speciosissimus* and *triangularis* make very good stocks, these plants being stouter, and more in proportion to the scion, though *Pereskia* stocks are more to be depended upon than *Cereus*. Cuttings of *Pereskias* intended for stocks should be put in in spring, selecting the young straight shoots of the previous season, about six inches long, or according to fancy; about September is the best season for grafting *Epiphyllums*. The scion should consist of one or two joints; cut the outer bark off about one inch on each side of the scion, split the stock about the same length, put the scion in, and tie or pin it with a thorn, according to which stock you use; the plants must then be put into a close frame, and laid on their sides until united, which they will do in about six weeks, when they may be placed upright, and gradually hardened off. Most of the species may be raised from seed, which should be sown as soon as collected, if possible, and put into a temperature of 60°. The young plants grow very slowly at first; when potted off they should be placed near the light; it is best to let them remain in the seed-pot until the following season, as they are very apt to damp if they are potted off too soon. Seed collected

abroad should be left in the pulp, which being its natural protector prevents the air acting on it, and drying it up; packed in a small tin box it may be sent any distance without losing its vitality. The best flowering varieties are *Cereus speciosissimus*, and its varieties, as *C. Ackermannii*, *Jenkinsonii*, *splendens*, and others; these are the forms most commonly grown in cottage windows; the genera *Phyllocactus* and *Cereus* contain many fine flowering varieties.

Hybridization may be performed with ease as the stamen and pistils are so very distinct, and the pollen produced in abundance. It may be preserved for some time if kept in a bottle hermetically sealed. I have not met with any successful attempt to cross *Mammillaria* with *Echinocactus*, or *Opuntia* with *Cereus*, though I know of no cause why they may not be, as the differences in the flowers are not differences of structure, but merely degrees of development; such as a greater or lesser number of stamens and petals, or in the absence in some, and lengths in others of the tube of the corolla, excepting that it may be that the pollen tubes might be too strong for the distance they have to grow from the apex of the stigma, or *vice versa*.

CONCLUSION.

The chief points to be observed in the above directions are, the light, time, and mode of potting, taking special care not to be afraid to cut off the roots. The watering, which should be given with a rose on the pot, should be sufficient to thoroughly soak the soil; it is best to hold the pot as high as you can, so that the water may fall on all parts of the plant, which serves the double purpose of washing and watering at the same time. Be sure to give them a good drying in the winter, upon which depends the success in flowering them the next season.

Some few species, as *Opuntia vulgaris*, and *Rafinesquiana*, and *Echinopsis Eyriesii*, are hardy in the south of England; and I have no doubt that many species of *Opuntia* and *Echinopsis* would do very well in cold frames in winter, and the open air in summer. For an amateur, the Cacti are the best plants to cultivate, as they offer the greatest scope for number of species, and require so little attention. In a house twenty feet by twelve feet from four hundred to five hundred species may be grown; in the summer the house can be left night and day with air, and if the owner had no person he could trust, he might lock the house, and leave them a week at a time without fear of harm. In the winter, if he should be obliged to leave home, the only thing would be to get the heat looked after, and his pets would welcome him home with as fresh an appearance as when he left. One often hears the remark from some person who has been disappointed—I bought some in the market, but they soon died; the fact is, these plants are newly potted, and should be treated as advised for fresh-potted plants. Cacti intended for exportation to long distances should be laid in the sun until they begin to shrivel, when they should be packed in some coarse material, as straw, taking care to use enough to prevent the spines of one piercing the other; for if one begins to rot, all will soon become moist, and endanger the whole cargo. Holes must be made in the sides of the boxes, to cause a current of air to pass through, as a safeguard against accidents.—*Student*

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Grevillea Manglesii.—We strongly recommend this plant to all our readers who have to embellish conservatories and winter gardens. A specimen of it which we saw at Glasnevin was about ten feet high, with a peculiarly graceful habit—quite unlike that of any of its relatives, and having a very enticing resemblance in habit to the Weeping Willow. It will probably do for large conservatories what that fine plant does for our pleasure-grounds. It is abundantly covered with white flowers in spring, but the drooping character of its slender branchlets is its chief charm.—*W.*

Triteleia uniflora as a Pot Plant.—I noticed at Chiswick the other day a large quantity of this potted in forty-eight sized pots, about eight plants in each pot. They were beginning to throw up flowers, and will doubtless be found useful for the decoration of the conservatory at South Kensington. For borders this *Triteleia* is by no means to be despised; it seems capable of withstanding the hardest frost without injury, and is therefore well adapted for outdoor cultivation. It blooms freely, and the cut flowers can be mingled with others without the unpleasant smell which unfortunately belongs to them being discernible.—*R. D.*

Hebeclinium ianthinum.—This useful winter-flowering plant appears to be but little known, notwithstanding its being of easy culture and a free bloomer. Its large heads of flowers, which are of a fine purplish mauve colour, are elevated on the points of the branches, well up above the leaves, and thus are shown off to good advantage. An intermediate house suits it best, and it may be grown successfully in a compost of two parts loam, one of leaf mould, one of well-decomposed manure, with a little sharp sand. After the blooming season is past, allow it to rest for a while

then cut it back to within two eyes of the old wood, and place it for a time in a close moist atmosphere.

Salvia splendens.—I have often had plants of this four or five feet high, and as much through, in one season from spring cuttings, and covered with flowers from October till Christmas. Put in the cuttings in February or March; when rooted pot off, and grow on in heat till May, then harden off, and plant them out in the kitchen garden or reserve ground about four or five feet apart. If dry weather sets in, mulch with a little cocoa fibre or short manure, and water them occasionally; sprinkle them overhead in the evening after hot, bright days, pinch in all strong shoots to induce a close compact habit, giving the last pinching about the 1st of August. After this period water more sparingly, but still continue the evening sprinkling. All the growth made now will be flowering growth, and the object should be to obtain short-jointed, moderately strong shoots. About the first week in September cut round the plants with a spade about a foot from the stems, so as to sever all roots that extend beyond that distance. In a fortnight all may be potted, placing them afterwards in a shady position for a few days, and supply them well with water. In potting lift them carefully with balls. The largest plants will require fifteen-inch pots. Secure the strongest shoots neatly with stakes, as the branches are apt to split off if left without support. House them before frost supervenes, and they will form superb flowering specimens.—*E. Hobday.*

THE HOUSEHOLD.

THE "WHY" IN VEGETABLE COOKERY.

BY MRS. WARREN.

Why should Seakale never be boiled in plain boiling water, but in milk and water and salt; or, instead of milk, a little bacon fat, butter, lard, or beef dripping?—Because kale requires to be cooked in soft water and be kept of a good colour. Soda would soften the water, but turn the kale black. Equal parts of milk and water may be used, but then milk is expensive, while by using a little fat in the water the kale is equally good, and is not greasy when served.

Why should Celery for sauce or for stewing be boiled in a little milk, butter, and salt, and with sufficient water to very little more than cover it?—Because it requires soft water to cook it in, and the milk and water in which it is cooked will, after the celery is dressed, serve for sauce if it be thickened with one or two tablespoonfuls of corn-flour mixed with a little milk, and adding it to the celery and liquor it is in. It is then converted into a thick sauce, and served as such, or if for stewed celery the latter can remain in the sauce till wanted, then be placed in a dish, and the sauce strained over it.

Why should Carrots not be split for boiling?—Because the flavour is entirely lost by splitting them. They require boiling in soft water; soda would blacken them. Some fat, as dripping or other fat, should be put in the water when it is put on cold; when it boils fast put in two ounces of salt and the carrots whole or cut across, *not split*, and boil them two hours after they have boiled up. These directions are for boiling carrots in winter.

Why should summer Carrots not be scraped?—Because the delicate flavour would be spoiled. They should be washed clean, be put into boiling water with a little fat and salt, be boiled from fifteen to twenty minutes, then be strained and thrown into cold water. With a clean cloth rub off the outside skin, and throw each carrot as it is done into hot water till the moment of serving.

Why should Parsnips not be split for cooking them?—For the same reason as for carrots—splitting destroys the flavour. They should be boiled as directed for carrots, but only for twenty minutes, half-an-hour, or an hour, according to the size—the largest only an hour.

Why should Soda be boiled with greens, cabbages, broccoli, and turnip greens?—Because the oil which all these vegetables contain more or less the soda extracts, and leaves the greens sweet and wholesome; but the water is, after boiling the greens with soda most unwholesome, perhaps poisonous. How wrong then it is to eat greens not cooked with soda. A piece of soda, filbert size, is sufficient for a very large saucepan of boiling water. Turnip greens have scarcely any oil in them, but are nevertheless much more wholesome for eating when cooked with a little soda. From the seed of cabbage the colza-oil is manufactured.

Why should Vegetables be washed in rather warm water first, then in cold, to cleanse them from sand and insects?—The hot water, which must be hotter than tepid, causes the insects and sand to fall out at once. Insects do not always dislike cold water and salt, but the hot water kills them. It must be understood that only a small handful of greens or one head of cabbage at a time must be washed, and then instantly thrown into the cold water, which crisps and thoroughly cleanses them. Spinach, leeks, celery, and seakale are thus rendered very clean, and, moreover, are very rapidly cleansed. It is worse than useless to attempt to cleanse vegetables in salt and water. The hardness which salt creates in the water prevents all

cleansing properties. The salt may kill the insects (it does not always do this), but they stick on hard and fast; the hot water makes them fall out at once, and the cold water crisps and also blanches them.

Why should Savoy Cabbages, white-heart summer cabbages, and cabbages that have been a long time growing, be cut across the ribs of the leaves, and not lengthways?—Because all cabbages that have been a long time coming to maturity have extremely tough fibres; if these are cut lengthways one has to chop the fibres with the teeth in eating them, and, moreover, such cabbages take a longer time to boil, and are often served a tasteless, overdone, watery mass. If such greens be cut across the stems, in circles of two inches in width, be washed in warm water, then in cold, and be boiled in boiling water with salt and a little soda for from fifteen to twenty minutes, not a moment longer, if so long, the greens are sweet and exceedingly tender and wholesome, purifying the blood and promoting health. A dish of badly cooked greens is enough to create a severe fit of indigestion in those who eat them.

Why should the stems of hard white Cabbages be never cooked with the other parts of the cabbage?—Because they take twice as long to cook as the soft parts, so that the latter is an unwholesome paste before the stalks are done, and if they are thrown away either before or after cooking them it is waste. The stems of cabbages that are crisp should have the soft green part cut from them to be cooked by itself; the stems when stripped from the green be tied in small bundles, cooked for from twenty to twenty-five minutes in plenty of boiling water, salt, and a little soda, and be served with butter sauce over them. Then a dish of seakale is not more delicious. These cabbage stems may be called "chardoons," and will gratify the palates of all who taste them thus cooked. Young spring cabbages, of course, do not need this treatment.

Why should turnips be cut across the fibre in rings of less than half an inch in thickness?—For three reasons: first, the turnip need only be peeled very thin, instead of in the usual manner, thickly and wastefully; secondly, by so cutting them the fibres are cut across, so that however old the turnips, it is never stringy; thirdly, they require only fourteen minutes to boil in plenty of boiling water and salt, and thus the delicate flavour of the turnip is preserved, also they can be more easily mashed. The thinner the circles of turnip are cut, the quicker they cook and the less fibre they will have.—*Treasury of Literature.*

Tomato Salad.—I give you directions for making tomato salad which I learned from an American gentleman in Switzerland last year. Take well mixed English mustard, salt, and pure Lucerne olive-oil; put a spoonful of mustard in the middle of a plate, half a salt-spoonful of salt on it, and mix them with a silver fork; on this pour a little of the olive-oil; stir this round and round until the oil is mixed; pour a little more oil, stirring it round as before, keeping it well together to prevent spreading; on this pour a little more oil, rubbing it round and round with the silver fork; and so on again and again, until the mixture becomes about the size of a small teacup standing on its mouth. Remember it should get plenty of quick tidy rubbing with the fork until each addition of oil is thoroughly absorbed. The mixture will be so adhesive that it may be helped with the fork. In this mixture the sliced tomatoes are placed. They should be red ripe, and perfectly fresh. When sliced, vinegar should be poured on them, according to taste, or not, if preferred.—*E. F. F., in "Lush Farm's Gazette."* [Vinegar is not used with a properly-made tomato salad in America.]

"Red Peppers—try them."—One day when we were in New York I turned into the Fifth Avenue Hotel, on the prowl for something for my inner man, and, feeling the gregarious instinct strong upon me, went and sat down by the only other occupant of the saloon, a long, cadaverous Yankee, just that sort that Tenniel always puts into his cartoons, with stripy trousers and a starry shirt, to typify Cousin Jonathan. I had come across a good many strange vegetables since we landed in the States, but a dish of reddish somethings, which my gaunt neighbour was devouring with apparent relish, struck me at once as a novelty. "May I ask what they are?" "Red peppers—try them." Innocently I accepted the invitation, and the moment I bit one of the things, felt how shall I describe the sensation?—well, as if a red-hot poker had been laid on my tongue. Luckily, just before screaming out, I caught the eye of my cadaverous enemy fixed upon me with a queer, amused, half-malicious look, that told its tale in a moment. He was bent on teaching the benighted Britisher a lesson, and it was the benighted Britisher's bounden duty to refuse him that satisfaction. So, by a severe muscular effort, I strangled all outward facial signs of pain, and slowly chewed my agonising mouthful before my torturer's eyes till it was fairly swallowed. At last he said, rather impatiently, "How do you find the peppers, sir?" "A little warm," I answered, calmly; "but" (forgive me the fib!) "a nice kind of vegetable, decidedly." "You needn't be afraid of the next world, then," he jerked out, and, though evidently disappointed, treated me with decided respect from that moment.—*Macmillan's Magazine.*

THE ARBORETUM.

THE PLANES.

BY GEORGE GORDON, A.L.S.

THE different species of this noble family are natives either of Asia Minor, Western India, the south of Europe, or North America; and are all more or less lofty trees (with the exception of *Platanus cuneata*), furnished with spreading branches, large deciduous palmate leaves, and bark which scales off the stems and main branches in irregular patches annually. None of them, however, attain their true tree-like character or appearance until after being planted about twenty years. The Planes are only valued as ornamental trees or for shade, as their timber is short grained, and soon perishes if exposed to the sun and atmosphere.

The genus *Platanus* constitutes a small natural order called *Platanaceæ*, which is easily distinguished by its globular catkins or round balls of unisexual flowers produced on long pendent axillary peduncles, sometimes six inches in length, and bearing from two to six balls or heads, which generally



Leaf of the Occidental Plane.—Natural Size $9\frac{1}{2}$ inches by $9\frac{1}{2}$ inches, including Footstalk.

remain on the tree until the following spring, when they break up and scatter abroad the seeds. The seeds when deprived of their down are brown, linear, and smaller than those of the lettuce.

I.—THE OCCIDENTAL, OR GREAT WESTERN PLANE (*PLATANUS OCCIDENTALIS*—LINNÆUS).

This kind is much loftier, more open in the head and has longer stems than any of the other Planes. The stems of large trees are smoother, of a lighter colour, and throw off the bark, sometimes in one part and sometimes in another, in larger and more irregular scales than any of the other kinds.

The Occidental Plane is found over an immense tract of land in North America, comprising the Atlantic and Western States, where it grows, along the banks of rivers and in moist situations, to an enormous size. The elder Michaux, in his "*Flora Boreali Americana*," says he measured a tree on a little island in the Ohio River, which at five feet from the ground was forty feet in circumference. The younger Michaux also measured another tree growing on the right bank of the same river, the base of which was swollen in an extraordinary manner, and which at four feet from the ground measured forty-seven feet in girth, and only began to ramify twenty feet from the ground; he also states that he saw several old trees which had not a branch within sixty feet of the ground.

Dr. Mease, of Philadelphia, gives an account of an Occidental Plane which he saw in 1836 growing near Howel's Ferry, on the York side of Broad River in South Carolina, which, for its great size and capacity, perhaps surpasses any one in the United States; its circumference was seventy-two feet, with a hollow sixteen feet in diameter, and which at one time held within that space seven men on horseback. All the large Plane trees in the London squares are of this kind.

The leaves of the Occidental Plane are large, broadly five-lobed or angled, with a few large acute serratures along the margins, and mostly cordate or truncate at the base, and when they first appear are covered all over with a dense, rusty-coloured tomentum or silky down, which sheds off by the time the leaves are fully developed, when they become glabrous, and bright-green above and paler beneath, with a little tomentum in the axils of the veins and on the principal ribs. The flowers, which appear in May, are in close balls or heads, on long peduncles, bearing from two to four on each, and which balls, when fully matured, are in general much larger than those of the Oriental Plane (not smaller, as stated by most writers), and at a much greater distance apart on the peduncles, and with the external elevations much larger and quite smooth, except at the base. The fruit or balls are also less thickly covered with bristly points than those of the Oriental Plane; but these points in a great measure disappear during the winter, so that the round balls appear comparatively smooth before they break up in the spring. The seeds are little things in the shape of a round nail without a head. The American names for this tree are Button Wood, Water Beech, and Sycamore.

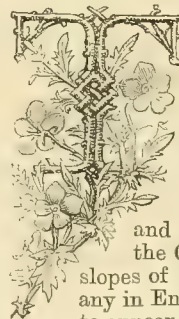
There are several seedling varieties of the Western Plane enumerated in catalogues, but none of them retain their distinctive characters when the tree becomes large, except the pyramidal and variegated ones; the former of these is desirable on account of its erect habit, while the latter, which is by no means permanent in the variegation, is hardly worth preserving.

[This and many forthcoming articles by Mr. Gordon, will be illustrated by engravings of authentic specimens from his rich herbarium of hardy trees and shrubs.]

FAMOUS TREES.

THE GREAT CHESTNUT OF MOUNT ETNA.

("IL CASTAGNO DI CENTO CAVALLI.")



THE Chestnut, in a soil and situation that suits it, often becomes a noble forest tree in this country, and the symmetrical ridges of its peculiar bark render it a very conspicuous and easily recognisable object in our woods. It does not, however, attain its fullest dimensions on the northern side of the Alps; and not till we have passed the mountain chain which separates Spain, Italy, and Greece from Central Europe do we behold the Chestnut in all its glory. On the southern slopes of this mountain chain, much finer trees than any in England, France, or Switzerland already begin to appear, luxuriating grandly in their bright southern aspect; and as the traveller wends his way further southward, he finds this handsome tree still increasing in size and in magnificence of growth; especially in the south of Italy and Sicily. At the base of Mount Etna, and at a certain elevation, commences what the natives call the "*Regione Sylvosa*," that is to say, the woody region, consisting of a great ring of forest that girds the entire base of the mountain. Part of this forest girdle was utterly destroyed in 1755 (the year of the great earthquake of Lisbon) by a devastating eruption from the great crater, consisting not of lava, but of boiling water, which proved fatal to every kind of vegetation in its course. The track of the exterminating torrent is still visible, there being no trees of great size in any part of its course, as at other parts of the forest region.

In the lower girdle of wood, Cork trees and evergreen Oak

OLD CHESTNUT ON MOUNT ETNA.



predominate, often growing actually out of the hard lava; but in the higher portion of the woody girdle, at an elevation of between three and four thousand feet, the Chestnut is the principal tree. The elevation and the soil (consisting chiefly of ashes in an impalpable powder) appear to suit it in a remarkable manner, for the trees of that region attain a truly gigantic growth, numbers of them being far above the average size of the largest forest trees of Europe. The "Castagno di cento Cavalli" is, however, by far the most celebrated, and is actually found marked in Sicilian maps published a century ago, while in all modern charts of Etna and its environs it forms a very conspicuous figure. Its aspect on a first approach is, however, disappointing; the trunk becoming hollow, the weight of its branches have rent it asunder, leaving a considerable space in the centre; and the tree, in its severed state, looks much like a group of five distinct trees partially decayed. Many have, in fact, insisted that the five separated portions never could have formed a single trunk. But there are old men now living, grandfathers of the present generation, who recollect the five huge fragments united in one stem, and who aver that it was regarded in their time as the glory of the forest, and visited by travellers from all parts of the world, though it is now but a venerable ruin.

That it was originally one compact and gigantic tree is partly proved by the fact, that on the inner side of the vast segments of trunk that still stand round the large open space that was once the core of the tree, there is no bark; and the original unity of the tree has been further demonstrated by an excavation made a few years ago by the Canonico Recupero, when it was found that at a certain depth below the surface the five separated portions united in one solid trunk; the entire circumference at the surface being found to be 204 feet, giving a diameter of 68 feet.

The Sicilian historian, Carrera, who saw the tree when in all its grandeur, remarked that there was wood enough in it to build an immense palace.

The native poet, Bagolini, has celebrated in tolerably good Latin verse the grandeur of an enormous Chestnut growing on the flank of Etna, which was probably no other than the "Castagno di cento Cavalli;" so called, no doubt, because a hundred horses could be sheltered from the scorching rays of the Sicilian sun beneath its far-reaching arms and dense foliage.

Bagolini's verses may be thus Englished:—

"Of lofty montes, by far the loftiest,
Prodigious Etna, bore a wondrous tree,—
A Chestnut, whose vast hollow may contain
A numerous band of horse, or flocks, or herds," &c.

It will be seen that these lines were written after the trunk of the vast tree alluded to had split into segments, and left a considerable space in the centre, similar to that of the tree under description; but whether that special tree be the one referred to, or some gigantic predecessor, is uncertain, and, in fact, matters little.

If some other tree be alluded to, it serves to show, as about to be asserted, that Chestnuts of enormous size were not of unfrequent occurrence in those regions. Massa, one of the most esteemed of Sicilian authors, states that though he had himself seen Oaks, sound and solid, measuring more than forty feet round, he had seen Chestnut trees of far greater dimensions; trees which were, in fact, of such a size as almost to exceed belief. One in particular is mentioned by him, the hollow of which was capable of holding three hundred sheep.

There are, indeed, great Chestnuts at the present time in a sound growing state in the Etna Forest, which are of extraordinary size. The largest of these is about a mile and a half higher up the mountain than the celebrated old tree, and is called "Il Castagno del Galea." It rises on an erect and solid stem to a considerable height, when it spreads forth great arms of enormous size, and is, in fact, a much finer object than the venerable ruin of the *cento cavalli*. Two feet from the ground it is seventy-six feet in girth, and twenty-

five feet four inches in diameter; the spread of the massive branches being of fully corresponding extent. Another great tree, of nearly equal size, is known to the Etna guides as the "Castagno del Nave." Both of these, and many others of but slightly inferior dimensions, grow in a deep rich soil formed by the ashes thrown out of the volcano, and are found at an elevation of about four thousand feet; below three thousand feet the heat being too great to permit of the luxuriant vegetation of trees of this class. In our engraving the venerable Chestnut of "the hundred horses" is represented to the left, and towards the centre and right is shown the neighbouring portion of his forest brethren. Near the top, to the right, is the summit of the mountain, with a faint cloud of smoke issuing from the great crater.

H. N. H.

EFFECTIVE TREE-GROUPING.

It is one thing to plant, and almost anyone may in some way accomplish the task; but it is another thing to plant effectively, for it needs a true artist to do this successfully. A wide range of acquaintance with the aspects, habits, and dimensions of plants, their development of special features, times of flowering, alteration of tint, the positions best suited to bring out their beauties, or to be beautified by them, are all matters of importance, and calculated to tax the skill and taste of the most experienced and accomplished.

Grouping is a department of ornamental planting at once the most effective and the most difficult. There is a wide difference, let me observe, between a group and a clump. The latter is usually a mass of planting, formal and monotonous in aspect; whereas, the former should present an infinite variety of form and outline, all the material of which it is composed retaining a certain amount of individuality, and yet blending in happy and graceful unison, free from trim formality, as also from absurd incongruity; and he who would accomplish the art of thus planting, cannot do better than become an earnest student of nature herself, gleaning his lessons from the sky-line of the mountain, the swells and hollows of the forest, and the meanderings of the watercourse. As a rule, groups should be bold and dense; anything like thinness has a mean and poverty-stricken aspect, which should be carefully avoided.

The outlines of groups, both on the ground and against the sky, should be carefully designed; the ground lines should be easy and flowing, free from false curves and anything approaching to rigidity; the sky-line widely diversified, but ever harmonious—here rendered striking by the upshooting of some plant of distinct character, anon merging easily and naturally into lines of smoothness, graceful as those of nature herself. Thus will be secured those exquisite effects of light and shade so full of charm and beauty to the eye capable of their appreciation. These features are of the greatest importance in the immediate vicinity of water, where shadows and reflections are ever changing and ever new. Again, park and other like groups should always be accompanied by a few irregularly-planted trees, such as thorns, &c., especially at their salient points; this happily removes all stiffness, and gives a natural expression to the whole.

The composition of groups should always be ruled by the position they occupy. On the lawn the plants employed should be rich and elegant; in the park, or on the hillside, noble and majestic; near water, partially pendulous; and not only so, but the general aspect of the locality, and the style of house, should also be taken into account, as certain trees are more in unison with wild, and others with sylvan scenery. It is also usually laid down as a rule, that pyramidal forms harmonize best with Grecian and round-headed forms best with Gothic styles of architecture. This rule, however, must be understood as of general rather than minute application, or a most unnatural and monotonous effect will be the result.

Groups may be composed of one or more species or varieties, and, if carefully executed, with equally good results. As a rule, the plants should differ in size, in order that the outline may be more varied; if the group be of irregular form, the larger plants should be placed in its centre and salient curves, it will thus gain in dignity, and be far more natural and pleasing than if faced by a stiff gradation.

Mixed groups should be composed of such trees as harmonize or contrast well with each other. Be it ever remembered there is such a thing as harmonious contrast, and happy is that planter who can produce such effects; he builds for himself a leafy monument that will be admired by succeeding generations.

W. WALTERS.

Yew Berries not Poisonous.—There has been some diversity of opinion on this point; but the learned Professor Clos, of Toulouse, has recently investigated the question, and pronounced yew berries, including the kernels, perfectly harmless. The results of his labours are given in the *Bulletin* of the Botanical Society of France.

* Supremos inter montes monstriosior omni
Monstrosi fatum stipitis Ætna dedit
Castaneam genuit cujus modo cantava cortex
Turmam equitum haud parvam continet atque greges, &c.

SOMERLEYTON GARDENS, SUFFOLK.

THIS fine place lies on the borders of Suffolk, about six miles from Lowestoft. It is mentioned in Domesday Book, and is a place of considerable historical importance. The old mansion was entirely rearranged, extended, and altered by Sir Morton Peto, who formed its grounds, constructed and ornamented its winter garden, and otherwise greatly altered and improved the estate, which he occupied from 1844 until 1862; when it became the property of the late Sir Francis Crossley, Bart., so well known by his munificent gift to Halifax of a public park. Quaint old Fuller ranked Somerleyton amongst the best of the many fine houses in the county of Suffolk, and says that it well deserves its name,—“for there summer is to be seen in the depth of winter”—the grounds being unusually well furnished with evergreens; while the lawns and pleasure grounds in the neighbourhood of the hall are finely undulated, and covered with a thick, velvety carpet of well-kept grass. The park, which is about two hundred acres in extent, contains a large herd of deer and some noble avenues of aged Limes and Elms. Mingled wood and water add to the attractions of the locality, which is purely English-looking, pleasing, and picturesque. Somerleyton is chiefly remarkable for its conservatories, extensive and well-kept flower gardens and grounds, and excellent forcing and kitchen gardens.

The winter garden, the roof of which is lofty, and dome-shaped, covers an area of 100 feet square, and is attached to the north side of the hall. In its centre is a noble fountain, supported on rockwork by four dolphins, and surmounted by a marble statue of “The Nymph of the Lily,” from the top of which the water is thrown through a jet to a height of nearly

fifty feet. Water is also emitted from a number of small jets and from the mouths of dolphins situated near the base of the rockwork. This fountain is surrounded by a basin some fifty feet in diameter. Cool-house ferns ornament the base of this tasteful display of waterworks, among which we noticed *Woodwardia radicans*, *Scolopendriums*, &c.; and in this water are *Callas*, *Valisnerias*, and other aquatic plants. The roof of this winter garden is supported by light iron columns, all of which are covered with climbers, such as *Passifloras*, *Kennedias*, *Fuchsias*, *Tecomas*, *Lapagerias*, *Tacsonias*, *Mandevillas*, &c.; trellises along the sides of the house in front of the glass, and also the rafters, are covered with the same elegant drapery. From the roof are suspended ornamental wire-baskets filled with plants of a suitable character. Marble statues, and vases filled with flowers, stand at regular intervals apart along the passages and other prominent situations. At the middle entrance to the hall are two aviaries, which give life and interest to that part of the building. Surrounding the grand central display of waterworks are beds filled with *Camellias*, *Acacias*, *Tea Roses*, *Brugmansias*, *Hydrichiums*, and similar plants, planted out, the whole fringed with plants in flower in pots. Palms and tree ferns are, however, what would set this house off to best advantage, and for

which it seems in every way suitable. The corridor between the winter garden and the palm house is elegantly draped with climbers. On the right is a small fern grotto and fountain formed in a recess in the wall, which is covered all over with mosses and dwarf ferns. Standing in the door of the palm house, and looking back towards the winter garden one has a grand view not only of the corridor, but also of portions of the interior of the winter garden, with its fountain, statues, &c., the whole reflected in a large mirror, thus doubling the effect, and rendering it at once grand and imposing. The palm house, situated at the end of this corridor, is square, and not very large, though it contains a goodly collection of those noble tropical plants, which are kept in tubs and pots, and have a luxuriant and thriving appearance, Bananas, tall-growing *Dracenas*, *Monstera*s, *Philodendrons*, and vegetation of a similar kind, are also employed in the ornamentation of this house; and along the margins are placed dwarf Ferns, *Begonias*, and other ornamental-foliaged plants. Iron trellises are erected in front of the glass, as is the case in the winter garden; and these, as well as the supporting pillars, are covered with the finer kinds of tropical

Passion Flowers, *Thunbergias*, *Clerodendrons*, *Hoyas*, *Stephanotis*, *Cissus*, *Allamandas*, *Jasmines*, *Bignonias*, and others. These are kept neatly pruned and tied, though not too stiffly; on the contrary, they hang down in graceful festoons. Both the winter garden and palm house are heated by means of a saddle malleable iron boiler, which works with facility the 7,000 feet of four-inch pipes used in warming the two structures. This amount of piping is divided into four flows and four returns; one network the palm house, another passes round the side of the winter garden next the hall; the third the opposite side,

and a fourth set passes along the centre of the house and around the fountain. No difficulty has hitherto been experienced in keeping up the necessary heat, even in severe weather; but should an unusually hard winter occur, provision is made for assistance by means of an upright tubular boiler placed alongside the other, which can be worked in unison with that always in operation. Plant houses for the production of flowers for cutting, specimen soft-wooded plants for summer conservatory decoration, ferns, orchids, fine-foliaged and flowering stove and greenhouse plants, occupy a place near the kitchen garden. Besides these, there is also a span-roofed house for *Oranges*, the plants in which are arranged along the centre; they are in tubs, and exhibit a fine fruitful appearance. Along the front of the orange house is a bed containing coconut fibre, in which various stove plants are plunged, and in which they are growing finely.

In front of the west side of the hall is the Italian garden; and on a lower level is the principal flower garden, geometrically laid out and embordered with box. In the centre of this parterre is a noble sun-dial, gilt with gold and supported on a marble pedestal. This parterre, together with the terraces, and, in fact, all throughout the pleasure and ornamental grounds, is enriched by costly marble statues,



Somerleyton Hall.

consisting of single figures and groups, and likewise many vases of handsome form. There are likewise two beautiful statues on each side of the entrance to the winter garden, some idea of the effect produced by which may be obtained from the accompanying illustration.

(To be continued.)

THE SIX OF SPADES.

CHAPTER X.

The President's Lecture—"Rosa Bonheur."

MY DEAR BROTHER SPADES,—Like a herring-boat astern of the *Great Eastern*, I follow in the wake of grand examples, and commence my essay, as the first essayists of our "times" are wont to do, with a topic very remotely connected with the chief theme of my history. For I have nothing to say concerning that wonderful Frenchwoman, who has painted, to our great surprise and delight "The Horse Fair" and "The Denizens of the Highlands," and have only borrowed her sweet name to serve as my text and motto—*Rosa Bonheur*, *Rose est Bonheur*, the Rose is Happiness, *Felicité Perpetuelle*, a thing of beauty and a joy for ever.

I go back in happy retrospect to the sunny days of childhood. I wander once more in bowery lanes, what time there were hedges in the land, and ere the face of nature was so closely shaved by the Mechian razor of improvement. It is the time of roses—wild roses, blooming fresh and fair, from cold soil and thorny stem, like wisdom and hope, from sorrow; wild roses, lighting up the land with their pure starlike glory, and beautifying the gloom of a fallen world; wild roses, on which Adam looks, as he toils with the sweat on his brow, and yearns at heart for Eden. It is the time of roses; we pluck them as we pass, and make a coronal, "mammy" and I, for my little sister's hair. I see her now, enthroned upon some southward bank, where the oxlip and the violet have watched in their season the slumbers of the fairy queen, smiling through her tears, herself a dewy rosebud; for the briar has pierced her small tender hand, and her spirit has been startled, and has quailed awhile, at the presence and the prescience of pain. Only a moment, for the breeze which gently stirs those golden tendrils, and bears away a crown jewel in that petal which flutters to the ground, is fraught with sweet scents and sounds, with frankincense rising heavenward, and psalms from a thankful quire; and all things young and innocent must needs rejoice. Dear days of sacred gladness, fair hours of guileless love! I never see the wild rose now, but I hear sweet whispers of their "tender grace," and I am wandering once more through the bowery lanes, with my little sister's hand in mine.

And next I remember those roses of the garden, which, few and precious, were the delight of my early boyhood; the glorious Provence (that elegant individual, who first called this blushing beauty "Old Cabbage," ought to have been imprisoned for treason against the Queen of Flowers, and his diet restricted scrupulously to the humble esculent in

question); the grand Provence, which came to us, as our roses now, from the sunnier clime of France, the herald of a great and splendid army, the evening star, which glitters for awhile alone ere all the firmament is thick set with gems. Ah, my brothers, what a sublime astonishment and ecstasy must this rose have caused, when it first arrived in our land! No ambassador, however copper-coloured, no hippopotamus, however far advanced in gestation, could educe such a sensation now. How the French florists must have shouted in exultation, "*magnifique*" and "*tres superbe*;" they who love truth and honesty, rejoicing in the justice of their praise, and they who love to magnify and to gull "*ces Anglais*" (a class which, I am informed by buyers of new roses, is not altogether extinct), annoyed by the difficulties of exaggeration, and moaning over their inability to lie. How the writers and singers of romance must have rejoiced in this fair reality! How gaily, with this flower in his cap, must the troubadour

have touched his guitar! The brave knight wore it in his helm, I trow, the gift of his lady-love, and while his adversary was gazing with wrapt admiration on it, saw his noble opportunity, and stuck a lance into his ribs. Ah, me! what tender tones, what plaintive heart-music, what hopes and fears have been sighed over this rose of Provence! Beauty hath made for it a second sunshine with her smiles, and Memory has shed upon its leaves her gentle rain of tears. How often hath this sweet messenger been made to tell unto loving hearts a language which they dared not speak! How often by lily hands have its petals been plucked and scattered in the wild hours of mistrust or jealousy, as Guinevere suspecting Lancelot,—

"Brake from the vast oriel-
embowering vine
Leaf after leaf, and tore,
and cast them off."

Let us ever, my friends love the Provence rose, not only for its own loveliness and sweetness, not only as the rose *par excellence* of our boyhood, but as having been for more than two centuries the chief grace and glory of our English gardens, the fair favourite (as the rose will

ever be, I trust) in every grade and shire; what time upon holy altars, in the halls of kings, in the grand gardens of the nobility, among the few flowers of the farmstead and cottage, it found a place and throne.

Growing near "the Provence" in our garden I remember next a rose, which came to this country together with it, or shortly afterwards, from Holland; I mean the beautiful Moss; most beautiful, when, like some sweet infant smiling out of its pretty head-gear of lace, or some young girl blushing to show herself before an admiring world, it first displays its loveliness "i' th' bud." You shall infer, if you please, my faithful fondness for this flower from a little incident which occurred to me but a few months ago, and which I will now repeat to you.* I had been a week in London, in the height of the season, and, thoroughly enjoying the pictures and the music and the pleasant society, proposed to remain for a fortnight longer, when one day, as I walked down Regent Street, I was

* I must apologize to those who have read my "Book about Roses" for the repetition of two or three incidents herein recorded.



Entrance to the Winter Garden at Somerleyton.

addressed by an elderly Irishwoman, as a "swate gntleman" (a compliment which I was unable to return), and piously adjured, "for the love," &c., and "for the glory," &c., which, alas! meant only gin, to buy a beautiful nosegay for the girl of my heart. As the locality referred to was not at the time occupied by any young lady in particular, but by a community of beauties, I was about to decline, on account of the quantity required, and the consequent expense to be incurred, when I caught sight of a cluster of Moss Rosebuds, which I had no power to resist. Perhaps their freshness and fragrance were enhanced by contrast with their unhandsome, not to say unpleasant purveyor; at all events, I bought them from her, and they were soon rejoicing in some fresh water, and expressing their gratitude, in the little drawing-room of my lodgings, by the heightened colour of their complexion, and by the unreserved openness and general sweetness of their demeanour. It struck me, as I gazed, how far more beautiful they were than any of the elaborate works of art, for which I had deserted, in mid-summer, the country and the works of Nature; they seemed like messengers gently reproving me as unfaithful to dearest friends; they reminded me of purer pleasures; to be brief, they took me to King's Cross Station, the very day after my purchase, to my own dear roses, and my happy home!

Next in favour to the Provence and the Moss, the sweet little "Fairy" rose (*Rosa Lawrenceana*) gladdened my childhood with its tiny loveliness; and I can see our wax doll, through the powerful telescope of memory, asleep in her miniature crib, with those wee flowerets on her coverlet and pillow. For she was a Royal Princess, you must know, of amazing beauty and of boundless wealth, and rested always on a bed of roses, until she died one day a melancholy death, slowly roasted before the nursery fire by our brother Fred, to spite us. Very pretty are these Pomponé roses; and as at the great poultry shows there are special classes for the pert, charming, and consequential family of Bantams, so should I like to see at our exhibitions, a Liliputian box of these mignons, decreasing in circumference from Ernestine de Barente to the Banksie.

And the York and Lancaster, flaunting in its colours, but flimsy in its substance, like some other gaudy "swells!" It was a delight, I remember, to arrange its petals, few as beautiful, upon a bit of newspaper, place over them some broken glass—(once in a desperate dearth of crystal I attacked an attic window with my battledore, and never since, I give you my honour, do I seem to have done anything half so daring!)—and to call the consummation a "flower show." I thought of those rose leaves and of the broken pane, when it was my privilege to superintend the third national rose show in the Crystal Palace; and I murmured to myself very thankfully, very happily, and, I am afraid, very proudly, "the child is father to the man." Poor old York and Lancaster, it has succumbed to New Village Maids and Billets Parfaits, and to Perles des Panachées and Tricolors of all denominations, and nothing remains to remind us of it now but the Lancashire and Yorkshire Railway.

I can but recall, in addition to the varieties I have mentioned, a white rose, whose name I never knew, but which bloomed in beautiful abundance, and much resembled *Princesse de Lamballe*; the Sweet-briar, whose fragrance we were wont to express, with some precocious insight into the perfumery business, by crushing its leaves with our small fingers; and the Old Monthly, which looked in at our schoolroom window, and tapped thereon with its buds at times, as though inviting us, like the lover of "Maud," to come into the garden, and be glad. How we used to envy those happy flowers, rejoicing in the sunlight, dancing in the summer breeze, unconscious of pothooks and hangers, emancipated from the thralldom of high-backed chairs, perfectly indifferent as to the orthography of the word *cat*, and not caring one dewdrop when who was king of where, or which was capital of what. The bees and the butterflies, when they came to call upon the rose, used to laugh, I am confident, at our bare little legs, dangling from the uncomfortable sedilia just now alluded to; the saucy sparrows twittered at our state; and the blackbirds, eyeing us from a contiguous Laurel, whistled comic songs at our expense.

They are gone, the roses of my childhood, deposed by fairer flowers. Where those six held dominion absolute, six hundred

distinct varieties have unveiled their beauty to the summer moons. They are gone from our gaze, but from our loving memory they shall never fade. I have a group of them, exquisitely painted by the skilled touch of a vanished hand, in a dear old family scrap-book, which I would not give for anything in the Bodleian Library; and I often turn to them with a tender sorrow, a grief which is almost gladness, having a hope as pure and beautiful as they.

S. R. H.

(To be continued.)

GARDENING ROUND LONDON.

(FOR THE PRESENT WEEK.)

PRIVATE GARDENS.

Indoor Plant Department.—In conservatories *Camellias* done flowering, and other evergreens not in blossom, receive copious syringings on bright mornings; air is freely admitted, and a slight shading is afforded during bright sunshine. Tying, thinning, staking, and keeping the plants free from insects, receive daily attention. Plants that have been forced are put out into pits or frames, and gradually exposed to the air. Stove plants growing freely, receive plenty of water at the root, and frequent syringings overhead both morning and afternoon. *Euphorbia jacquiniæflora* and *Poinsettias* that have been started after a little rest since their flowering period are now pushing freely; some of their young shoots are being taken off with a heel and used as cuttings. *Poinsettias* raised from cuttings every year are by many preferred to old plants, which are, therefore, thrown away after a good stock of cuttings is obtained. Free-growing plants not repotted this season are assisted with weak manure water. When *Justicias*, *Eranthemums*, *Franciscas*, and some other stove plants are trimmed into shape, the prunings are made into cuttings, and are inserted in pots of light sandy soil under bell-glasses in a brisk heat, and kept closely shaded. In orchid houses both temperature and moisture are being increased, and during bright sunshine slight shading is applied. Slugs, woodlice, and other insects are now being sharply looked after. Ferns growing freely receive abundance of water at the root; some syringe them overhead every warm morning; others do not, but all endeavour to maintain a liberal supply of moisture in the air, shading from direct sunshine. Filmy ferns are frequently sprinkled overhead with the syringe during the day-time, the hand lights under which they are grown being tilted up except at night, and wiped dry every morning. In addition to the ordinary shade of the fernery a piece of thin green material is thrown over them during the brightest part of the day.

Pits and Frames.—Bedding plants continue to be propagated, and such as are rooted, are potted or pricked into boxes; those a little established are gradually inured to the air, and strong well hardened plants are fully exposed, but still shut up at night. *Pyrethrums*, variegated grasses, *Sedums*, &c., are generally placed outside on well-sheltered borders, where mats can be thrown over them if necessary. Stocks, Asters, and Marigolds are sown on slight hotbeds, and, as soon as up, they are gradually inured to the air. Those up and fit to handle are pricked off into boxes and pans, and kept near the glass. Auriculas require plenty of water at the root; but great care is taken, to prevent water or drip from coming in contact with their flowers and foliage. Carnations are now sown in cold frames. Established plants are shifted into their flowering pots, and those for outdoor decoration are turned out into beds or borders. Heartsease are being sown, and established plants planted out. Bulbs done blooming are placed in frames, where they are kept rather dry, so as to induce them to ripen.

Flower Garden and Shrubbery.—Evergreen trees and shrubs continue to be transplanted, mulching the roots with litter or leaves, over which an inch or so of soil is placed. From conifers all contending leaders are removed, leaving only the most promising; when there is a deficiency of vigour in the leader, it is encouraged by judiciously removing the points of the side branches, or if necessary thinning them. Hardy ferns wintered in pots are now being planted in ferneries out of doors or in other shady spots. Annuals, such as *Mignonette*, *Saponaria*, *Candytuft*, &c., are sown out of doors, where they are to bloom. American Aloes are planted or plunged outside in beds, or are placed on rockwork, or in vases where they are to remain during summer; in case of frost, a mat will be thrown over them. Edgings of the hardier succulents around flower-beds and borders are being made. Hollyhocks, the better kinds of Foxglove, Sweet Williams, and Rockets, are planted out where they are to remain. Gladioli are being planted, Box edgings pruned, and

Ivy clipped. The latter should be cut close in to the wall, even though it should be rendered leafless; in a short time it will be covered with the most beautiful bright green young foliage imaginable. Broad grass walks are being trimmed and swept, and lawns are regularly mown and rolled.

Indoor Fruit Department.—Pine suckers as soon as separated are potted. Vineries are shut up early in the afternoon. Peaches and Nectarines have their shoots tied in and thinned. Figs ripening are kept drier than those swelling, to which water is abundantly given both at root and overhead. Cherries beginning to colour enjoy a temperature of 55° or 60° at night, and 85° or so by sun heat. Melons are carefully yet plentifully watered, no more than can be helped being allowed to touch the necks of the plants. The foliage is syringed freely, superfluous growths are timely removed, and female flowers fertilized. Cucumbers are treated as Melons, except that they receive abundance of manure water. Pinching is preferred to too much thinning at any one time.

Hardy Fruit and Kitchen Garden Department.—Wall trees, from which a fair crop may yet be obtained, are carefully protected. Protections are removed from Fig trees, from which the autumn set crop of fruit is removed, and the shoots are being nailed; except where too luxuriant, figs are not much pruned. Raspberries are cut back to within a few inches of the soil to encourage them to throw up bearing wood. Fruit bushes when damp are sprinkled with fresh air-slacked lime, as a preventive of insects. Asparagus beds are now in full bearing. Beds are being prepared for Vegetable Marrows, some using hot dung frames, now exhausted by being in use for other things; others making them as described under the head of market gardens last week. A second small sowing of Turnips is being made. The main crop of Beet is now sown. French Beans are being put in in warm situations; some are also sown in frames for planting out the first of next month.

NURSERIES.

Indoor Department.—Stove and greenhouse plants continue to be propagated. *Spharogyne latifolia* is struck from pieces of the roots, like a *Dracæna*, as is also *Yucca californica*. *Nephelaphyllum pulchrum* is increased by placing damp moss on the surface of the pot, and tying down so as to come in contact with the moss into which it strikes root. Each eye can thus be made into a plant. *Dioscorea* is cut up into two or three pieces, which by the end of next autumn produce good sized tubers. Cuttings of hard-wooded plants are inserted in pots half-filled with drainage, over which a little moss is placed, then some light sandy mould to within half or three-fourths of an inch of the surface, which is made up with silver sand, the whole being covered with a bell-glass. They are then plunged in cocoa-nut fibre over a hot-water tank; these are kept closely shaded during the day. As soon as fairly rooted, they are taken out of the bed and placed on side shelves to make room for others. Roses continue to be grafted. The stocks (*Manetti*) are potted in small sixty-sized pots through the winter, and are at present plunged outside in cocoa-nut fibre. In grafting, the stock is cut down to within two or three inches of the surface of the pot, and furnished with scions of the young wood. They are afterwards placed in close frames inside the propagating house. Those of previous workings that are well united are shifted into larger pots, and any producing strong vigorous growths are pruned back, unless the shoots are required for cuttings. By sulphuring the leaves, syringing with water in which sulphur has been mixed, and painting the pipes here and there, red spider and mildew are kept in check. Heaths are now being potted in a mixture of the best peat, leaf-mould, and a good addition of silver sand. Young *Azaleas* are also being potted. Orange trees are treated as young *Azaleas* during their period of growth. Tree *Carnations* that have done flowering have their young shoots cut off for purposes of propagation; these make strong flowering plants by September. *Bouvardia jasminiflora*, propagated by means of cuttings, will also make good flowering plants by the autumn.

Outdoor Department.—Grafting may be said to be finished, except in the case of such things as ornamental *Planes*, purple *Beeches*, &c. Young fruit trees are being pruned, and last year's grafts, unless standards are required, are cut back. *Rhododendrons*, *Laurels*, *Acubas*, &c., are being pruned into shape. Conifers sown in frames are now fully exposed during the day. When the finer kinds are grown for sale, whilst young they are lifted after their first season's growth in frames, and pricked into store pots, in order that they may be at any time safely removed. *Deodar* seeds, carefully put in some time ago with the hand, placing the narrow end downwards, are now up and looking well, while a few of the same sown broadcast at the same time have not yet made their appearance. *Araucarias* are sown in the same way in pits.

MARKET GARDENS.

FROM Cucumbers in frames, all male flowers are removed, and too many fruits are not permitted to come forward. Some are now being sown for late succession, and others that are up are being potted singly and kept rather close in frames. Wallflowers that have had their bloom all cut for market are pulled up and thrown away, and the ground is being manured and dug for the reception of Brussels Sprouts. Some of the finest Wallflowers have been left uncut, firmly staked, and retained for seed. Blanched Asparagus is now plentifully procured from ridges in the open air, and Green Asparagus from roots planted between Gooseberry bushes and not earthed up. In alleys between four-foot beds of Radishes, Asparagus plants were planted about a fortnight ago, and now the beds have their surface drawn with hoes into the middle and dug over for the reception of Beet. The surface of the Asparagus ridges is loosened with iron rakes, carefully watching not to injure the rising shoots; this loosening allows the "grass" to come up more freely. Between lines of Gooseberry bushes where they are a good distance apart, are rows of Beetroot; the lines are drawn in the morning, left open during the day, and the seed sown in the afternoon. Beds of Cabbages and Turnips coming up are sprinkled with lime. Onions, Carrots, and other seeds sown in lines have the spaces between them run through with a narrow hoe, and all other crops have the surface of the soil about them stirred rather deeply with draw hoes. Spinach is sown thinly broadcast on plantations of young Rhubarb, and other open spaces amongst slower growing crops, so that it may be cut before they require the intermediate space. Strawberries are now being planted between lines of fruit bushes.

THE THAMES EMBANKMENT.

THE *Scotsman* throws some light upon a question much agitated in London, and which has several times occupied the attention of Parliament, but which is only imperfectly understood in the provinces. It says:—

"The history and position of the property created or improved by the Embankment of the Thames have been told before, but their substance admits of being restated with great brevity. When the Embankment was made, at the cost, and for the profit, of the metropolis, the Government, holding for the public certain property on the banks of the river, came to an arrangement by which it gave up to the body of River Conservators certain portions of that property, in consideration of the other portions being improved or increased in value by the embanking operations. The arrangement between the parties was embodied in an Act of Parliament, and each entered into what at first promised to be peaceable possession of its share of the property. It happened, however, that some people in London became of opinion that a certain piece of the property left in the possession of the Government would make a very nice garden or garden-plot for the use of London people living in the neighbourhood, and that, just about the same time, the Government became of opinion that that piece of property, so belonging to the public, would be extremely suitable as the site of certain new public offices which are urgently required. Thereupon began a struggle virtually between London, or a portion of London, and all the rest of the nation. On behalf of London, it was said, through all the many whom London can influence, that it was not fitting to cover with buildings an open space in the centre of a crowded city like London. The main reply of the Government was, of course, that the property belonged, not to London, but to the nation, and that, however pleasant a little garden might be to such Londoners as happened to live near it, the little garden could not reasonably or honestly be furnished to Londoners at a great cost to the whole country besides. There were additional replies, either given in name of the Government or contributed from other quarters. Thus, it was pointed out that the very people who demanded from Government—that is, from the nation—a portion of national property, for purely local recreative purposes, had just sold to the highest bidder, to be covered by buildings, portions of their own property, quite as well suited for such purposes; in other words, London and the country, having shared the Embankment property between them, London first sold what it could of its own share for profit, and then turned round and insisted that the most valuable portion of the country's share should be reserved for pleasure, which, of course, means for the pleasure of London, or some fragment of London. Again, the corner which it is thus proposed to appropriate is not in a part of the metropolis where air and space are scarce, but is within three minutes' walk of St. James's Park; whilst, on the other hand, the corner affords a site for public offices more convenient than can be obtained anywhere else even at the most enormous cost. It is also worthy of note that, whilst other great English cities provide parks and other recreation grounds for themselves, either through the munificence of individual citizens, or by means of local taxation, London, already enjoying the free use of the magnificent parks belonging to the Crown, is here, and not for the first time—still less, if successful, for the last time—calling out that she should be provided with additional recreation ground at the expense of the country at large. And that expense is out of all proportion to the object—the garden would be very small, and its cost, measured as it must be by the cost of the sites for public offices which would require to be provided somewhere, probably be the greatest ever expended in this world upon so few yards of land."

THE GARDEN IN THE HOUSE.

BOUQUETS FOR THE HAND.

BOUQUETS for the hand should be made of the choicest flowers, gracefully arranged; heavy solid flowers or massive arrangements should be as much as possible avoided. Such bouquets are necessarily brought under the closest inspection of the eye, and should be composed of flowers of delicate structure, or great variety, or exquisite fragrance. The present style of immense size, composed of solid flowers, scarcely if at all relieved by foliage, is only suggestive of some enormous variegated or pied fungus hung with silk fringe or put up in lace paper. When carried at evening entertainments, they frequently appear to be a burden to their fair possessors. For successful effect in floral decoration, much depends upon the judicious arrangement of colour; violent contrasts are also to be avoided, as is also the sameness produced by having too much of one colour. In producing harmonious contrasts of colours it should be remembered that there are only three primary colours—red, blue, and yellow. From these arise what are called the binary, or secondary colours, namely, orange, composed of yellow and red; purple, composed of blue and red; and green, composed of yellow and blue. These form contrasting colours to the primary three, with which they are in harmonious opposition, as the orange with blue, purple with yellow, and green with red. From the combination of these secondary colours arise three tertiary colours—olive, from purple and green; citron, from green and orange; and russet, from orange and purple. These tertiary colours harmonise with the primaries, as they stand in the relation of neutral tints to them, but are in harmonious opposition to the secondaries, from which they are combined. Red, blue, and yellow harmonise with each other, and they may be placed in juxtaposition, but purple should not be near red or blue, as it is composed of these two colours; for the same reason, orange should not be placed next to yellow or red, the rule being that no primary colour should be brought into contact with a secondary colour of which itself is a component part, nor any secondary colour brought into contact with a tertiary colour of which it is a component part. Another rule is that the secondary and tertiary colours, and the neutral hues arising from combinations of the tertiaries, such as brown, maroon, puce, slate, lavender, &c., should be used in the greatest quantities, and the primary colours used in smaller quantity for heightening the effect. If you lack the proper shades for producing the necessary harmonies, and find that two colours do not harmonise well, separate them by a white flower. Again, always place the brightest colours in the centre of your design, and gradually decrease the intensity of the tints as you approach the exterior; and avoid spottiness or patchiness by using as much as possible one prevailing colour.—*Lady's Own Paper*.

HEARTSEASE AS BOUQUET FLOWERS.

THE first time I exhibited in the class for table decorations was at the Crystal Palace, June 6, 1869, when I took a prize for the floral decoration of a wedding breakfast-table. There were five stands, a centre and four corner pieces or bouquets, one of which was formed of white flowers, blue Forget-me-Nots, large dark Heartsease, and different kinds of Ferns and Mosses. It was a pretty little stand; and though some might think that blue and purple would not look well together, I can assure them that they do; the blue of the Forget-me-Not is so bright and pure, and the purple of the Heartsease so dark and velvet-like, that one sets the other off. The Heartsease which I used were nearly black.

The following season, May 1870, I also took a prize at the same place for a bridesmaid's bouquet, made up in much the same style, except that there was no blue in it. In the centre was a large white Camellia; the other white flowers were Azaleas, Stephanotis, Moss Rose-buds, and Lily of the Valley; then I worked my Heartsease into a pattern—they were purple, not very dark, just a rich purple; the only Fern I used was Maiden-hair, and I had plenty of this; it formed quite a lacework round the edge, and I also ran it through the bouquet, as I always like to see plenty of green, which sets off the colours in a way which nothing else does so well. Heartsease certainly, as one of your correspondents remarks, looks well in bouquets or in stands on the dinner-table, but it must be by daylight, as nothing has a worse appearance by gas or under any artificial light than purple or violet flowers of any kind.

The worst of Heartsease is they are such difficult flowers to work up well in a hand bouquet, their heads being too large for their stems, and when they wither in the least they acquire such a curled and shrivelled look; but if they are only wanted to last for a few hours, and to be used by daylight, nothing has a better appearance if mixed with white and green than purple Heartsease.—A. H., *Upper Norwood*.

SOCIETIES, EXHIBITIONS, &c.

MANCHESTER BOTANICAL SOCIETY.

(APRIL 9TH.)

Roses and Orchids constituted the chief features of this meeting, the former principally from Messrs. Veitch, whose bushes were covered with flowers of every possible shade. The same nurserymen also showed the new Clematis, Albert Victor (one of Messrs. Jackman's hybrids), a deep but rather dull purple flower, three inches across, every petal with a singular central streak of brown that produces the effect of a great star. In addition to Orchids, Messrs. Veitch also had some charming representatives of that good old-fashioned plant, the *Primula cortusoides*, long laid aside; but now, in its new Japanese forms, restored to favour. The variety *amœna*, of which they had a very handsome specimen, has of late become tolerably familiar. Not so the variety *lilacina*, which in its class was unquestionably one of the prettiest things exhibited. The nearest idea we can give of it is that of a lilac-blue *Polyanthus*; but in texture and complexion far more delicate. From M. Linden came the beautiful *Masdevallia Lindenii*. Nothing could be finer in their way than Mr. Wrigley's contributions of Orchids, a class of plants which were also shown in great variety and beauty, by Messrs. James Brooke & Co.

Mr. R. S. Yates had an *Odontoglossum Alexandra*, from underneath the charming flower-spikes of which peeped forth the azure-flowered Forget-me-Not. Nothing could well be prettier than the combination thus produced between the dainty and peerless Orchid of New Granada and the simple denizen of our European woodlands. Mr. John Shaw showed some nice Orchids, and a specimen of the new *Primula japonica*, the magenta-coloured flowers of which grow in successive tiers up the stem—the most remarkable known plant of its race. From Mrs. E. Cole & Son came some beautifully bloomed *Ixoras* and other plants. Mr. W. Bury, of Accrington, sent the snow-white Lady's Slipper, *Cypripedium niveum*, with a couple of expanded flowers, one of the choicest things in the show. Mr. Toll sent some good Orchids, including *Ada aurantiaca* and *Oncidium sarcodes*. Dr. Ainsworth had a new white fragrant *Dendrobium*, not yet named; and Mr. Stevenson, of Timperley, a plant of the remarkable *Cymbidium pendulum purpureum*, very attractive from the singularity of its half dozen pendulous racemes, two feet long, of red-brown flowers. The gardens at Old Trafford supplied a capital display of succulents, all rare and curious; also an *Angræcum sesquipedale*, and some other Orchids.

This closed the series of spring shows, and gave assurance that with their renewal next autumn the support they deserve will be even more cordially awarded.

ROYAL HORTICULTURAL SOCIETY.

(APRIL 17TH.)

THE chief features of this meeting were Azaleas, Rhododendrons, Auriculas, and other spring flowers; miscellaneous plants were also furnished in good condition, as were likewise Orchids, especially a collection from Mr. Denning, gardener to Lord Londesborough, at Grimston Park, Tadcaster. Fruit and vegetables were but sparingly exhibited.

Azaleas were shown mostly in the form of pyramids, though there were a few dwarf standards with compact heads of flowers. In a group from M. Louis Van Houtte, of Ghent, were many of fine form and quality. First-class certificates were awarded to John Gould Veitch, Mlle. Marie Van Houtte, and S. Rucker. Some specimens with flowers of good form and distinct in colour were exhibited in Messrs. Veitch's miscellaneous collection of plants. Of Azaleas for competition nice collections came from Messrs. Lane, Lee, and Turner; and among groups from amateurs were also some good plants.

Rhododendrons in pots, in excellent condition, were shown by Messrs. Lane, who also staged a fine box of cut trusses of bold well formed flowers of the same useful shrub. We missed the presence at this meeting of one of the best features of spring shows, viz., Roses in pots; cut blooms were, however, shown in boxes, one of which, from Messrs. Kelway & Son, was wholly filled with *Marechal Niel*. To this an extra prize was awarded. There were seventy blooms all from one plant, from which last week four hundred blooms had been cut for market, besides a goodly number earlier in the season. Auriculas were in admirable condition, both show kinds and alpine being equally good. Amongst the best, which came from Mr. Turner, of Slough, were Miss Giddings, Smiling Beauty, Competitor, Incomparable, Cantab, Maria Chapman, Catherina, Colonel Champneys, Metropolitan, Alderman Wisbey, and Alderman Charles Brown. This section was well represented by amateurs. Heartsease in pots and also in the form of cut blooms were exhibited by Messrs. James, Hooper, and Ware, the last of whom also showed some good Auriculas and hardy spring flowers. Amongst the latter we noticed the beautiful *Cypripedium Calceolus*.

Fine groups of well-bloomed Clematises in pots were exhibited by Messrs. Veitch and Mr. Noble. Palms, *Dracenas*, variegated Pandanus, and other plants, came from Mr. Bull and Mr. Wimsett.

Amongst Orchids four *Masdevallias* were brought under notice, viz., M. Lindenii, Veitchii, Harryana, and ignea, all extremely interesting and beautiful, and from the fact of their being cool-house Orchids and easily grown, they are very desirable plants, especially for amateurs. Besides these there were many others, conspicuous among which was *Arpophyllum giganteum*, a fine plant bearing fourteen spikes of lovely blossoms. To *Odontoglossum Phalanopsis* a special medal was awarded.

Dark-coloured fern-leaved Maples were amongst the most noticeable plants in the miscellaneous collections. These withstand, it is said, fully better than most plants the atmosphere of our smoky cities.

Amongst other things were excellent plants of *Anthurium Scherzerianum* with large well formed flowers. Interesting collections of cut blooms of *Narcissi* were exhibited by Messrs. Barr & Sugden, Messrs. Backhouse & Son, York, and by the Rev. Mr. Berkeley.

First-class certificates were awarded to *Croton lacteus* from Messrs. Veitch, a fine broad-leaved species, with the midrib and side veins boldly marked with pale yellow; to a pretty little compact green-leaved Ivy named *Hedera conglomerata*, from Messrs. Ivory; to a nicely variegated form of a hardy British evergreen fern called *Polystichum angulare confluens variegatum*; to the Erica *Neitneriana*, noticed last week, from Messrs. Rollisson; and likewise to a graceful species of *Rhopala*, called *elegantissima*, which promises to be a grand addition to our stock of decorative table plants. This came from Mr. B. S. Williams, Holloway.

Forced vegetables consisted of Asparagus, Seakale, Green Peas, French Beans, New Potatoes, Cucumbers, Mint, Cauliflowers, Young Carrots, and Mushrooms; these were shown by Mr. Clarke, gardener to J. C. Brown, Esq., Horsham, Sussex, and by Mr. T. Batters, gardener to J. W. Fleming, Esq. Mushroom Spawn, and also a boxful of excellent Mushrooms gathered from beds five months in good bearing, were shown by Mr. E. Bland, Gordon House, Isleworth. A basket of new grapes (Black Hamburgh) in good condition was shown by Mr. Baldwin, Streatham. Keens' Seedling Strawberries came from Mr. Miller, Worksop; Lemons, Limes, and preserved Chestnuts were contributed by Mr. Domenico Piccirillo.

THE BOTANIC GARDENS IN THE REGENT'S PARK.

THEY are arranged, says the *Telegraph*, as completely as possible in opposition to the Italian style; and we can imagine no prettier picture than an early spring fête day at the Regent's Park. Once inside the gate, you are lost in the mazes of a miniature park. No tall houses frown at you on three sides of a complete square. Stucco and brick, mortar and chimney-pots, are carefully and completely hidden from the eye. Flirtations are not carried on in a scorched Sahara, and lovers are relieved from the comments of domestic servants in the attics of fashionable mansions. It may be in London; but, at any rate, this is a true garden. No stern laws or sterner gardener warn you off the grass; for all the pleasure of the fête consists in strolling along the yielding turf, sitting about, and listening to the Life Guards' band. Here are trees and mounds, and nooks and peaceful retreats. Mount where you will, a house or a chimney-pot cannot be found. Primrose Hill will be discovered at one turn, and the rise of Hampstead farther on. Here is a lake with wild fowl and rustic bridges, and there serpentine paths winding among trees in blossom, and bushes white with may. It is for this old love of ours we would plead an excuse for fickleness. Knowing the pleasure of the horticultural fêtes, and appreciating the stern art of the garden at South Kensington—valuing, as we all must, the peace and beauty of the stately terraces at Sydenham—we would still confess to a guilty retrogression as we wander in the spring-time about these old gardens in the Regent's Park.

NIGHTINGALES IN GARDENS.

THE cuckoo is usually said to be "turned down" in this neighbourhood on the 14th of April, and the nightingale will arrive about the end of this week. Our hedges and copses in the proper season abound with nightingales, which like our pure air. They cannot endure smoke. Before London overran the pleasant Thames side westward, nightingales were nowhere more numerous than in the market gardens at Mortlake and Barnes. They appeared to court the society of a suburban audience, wherever the neighbourhood was not thickly sprinkled with chimneys. But the plantations of fruit trees which sheltered them have been cut down, and crossed by railways, and the air is no longer pure enough in many spots for the inspiration of nightingales. It is not so very long ago (May 28, 1667) that Pepys, Addison, and Sir Roger de Coverley heard the nightingale at Vauxhall and Raneleigh Gardens; and on the 20th May 1712 the same sweet songster and a "chorus of birds were heard upon the trees" in the same fashionable place of resort. The gardens at Kew, and even Kensington Gardens, will doubtless presently be joyous with the song of the nightingale.

Hellingley, Sussex.

H. NEWLANDS.

Succulents.—In my enumeration of Cacti at Kew, I only mentioned five genera. Had I given all, the collection at Kew would have been 344, against 592 introduced, exclusive of hybrid varieties of *Epiphyllum* and *Phyllocactus*. Mr. Scott sets Prince Salem, of Dyke's collection at about 800; but, on reference to his catalogue of 1849, the number enumerated is only 412. The Bedford collection is now very poor, and contains old plants under new names. I also think that Mr. Scott has set the Canary Island *Sempervivum* too high. I have studied them at Mr. Wilson Saunders's after the importations of Dr. Bolly, and at other

places, and I have only detected twenty species. *Mesembryanthemums*, when at their best, at Mr. Saunders's amounted to 234, with twelve not described. Loudon enumerates 291—among which there are, however, many synonyms. After studying them closely for twelve years, I am of opinion that, when well named, 220 would include the whole. Kew possesses 157 *Aloes* of all sections. Names, I am of opinion, have often been given to introduced plants that would not have been applied had the authors studied the plants instead of consulted books. If Mr. Scott could put me in the way of finding more *Sempervivums* than are mentioned in my list, I should be obliged.—J. CROUCHER.

Repotting Agaves.—I have noticed for some time that Agaves lose their roots about this season every year, and that they make new ones, which begin to grow in June. As the old roots do more harm than good, and as by the mode which I adopt, a pot costing—say twenty shillings—is saved, I can, with confidence, recommend my plan as safe and useful. Where a collection of Succulents has to be repotted, it is not always practicable to wait for a bright morning in May. Roots of Succulents, I repeat, may be cut off or shortened when repotting with advantage. If your correspondent, "*Sempervivum*," will examine one of his plants three months after potting, I think he will find the roots which had been shortened dead.—J. CROUCHER.

"Fennemore and Others v. Spice."—We observe in your impression of last Saturday a report of the trial of this cause, taken from the *Times*. The result of that trial was not, as stated by you, the withdrawal of a juror, but a verdict for the defendant. The *Times* subsequently has acknowledged the error.—WILKINS, BLYTH, & MARSLAND, Attorneys for the Defendant.

ANSWERS TO CORRESPONDENTS.*

RICHMOND (our notices of Kew are delayed a little to enable us to complete full-page illustrations of the nobler structures there).—S. S. (the tender little carrots you allude to are grown in the market gardens round Paris, and imported for Covent Garden).—T. WARD (there are at least a dozen species and varieties of *Scilla* well worth a place in a choice collection of hardy plants).—R. A. P. (*Sedum reflexum monstrosum*).

COVENT GARDEN MARKET.—April 19th.

Flowers.—Plants in pots consist chiefly of *Pelargoniums*, Heaths, Pinks, Fuchsias, Tea and other Roses, Azaleas, *Cytisus*, *Gardenias*, Orange Trees, and others; together with a great variety of hardy spring flowers. Amongst cut flowers, in addition to those of the plants already named, are Golden-rayed Lily, *Stephanotis*, Orchids, *Heliotropes*, *Imantophyllums*, *Spireas*, *Rhododendrons*, *Narcissi*, &c. Of Ferns, too, there is no scarcity. Bouquets have invariably as a centre flower a white Rose or Camellia, around which are placed *Stephanotis*, *Pelargoniums*, *Mignonette*, Azaleas (mostly white), spring Heaths, blue *Cinerarias*, &c.; the whole enlivened by sprays of white *Bouvardias*, Lily of the Valley, Orchids, and Maiden-hair Ferns.

PRICES OF FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples 1 sieve	2	0 to 4	Pears, kitchen doz.	2	0 to 4
Chestnuts bushel	10	0 20	" dessert doz.	4	0 12
Filberts lb.	0	6 1	Pine Apples lb.	6	0 10
Cobs lb.	0	6 1	Strawberries oz.	1	0 2
Grapes, hothouse lb.	15	0 25	Walnuts bushel	10	0 25
Lemons 100	7	0 10	ditto per 100	1	0 2
Oranges 100	4	0 10			

PRICES OF VEGETABLES.

Artichokes per doz.	4	0 to 6	Mushrooms pottle	1	0 to 2
Asparagus per 100	4	0 8	Mustard & Cress, punnet	0	2 0
Beans, Kidney per 100	1	6 2	Onions bushel	2	0 4
Beet, Red doz.	1	0 3	" pickling quart	0	6 0
Broccoli bundle	0	9 1	Parsley, doz. bunches	3	0 4
Cabbage doz.	1	0 1	Parsnips doz.	0	9 1
Carrots bunch	0	6 0	Peas, Continental, quart	3	0 5
Cauliflower doz.	2	0 5	Potatoes bushel	2	0 3
Celery bundle	1	6 2	" Kidney do.	3	0 5
Chilies per 100	1	6 2	Radishes doz. bunches	0	6 1
Coleworts doz. bunches	2	0 4	Rhubarb bundle	0	6 1
Cucumbers each	0	6 1	Salsafy do.	1	0 1
Endive doz.	2	0 0	Savoy doz.	0	9 1
Fennel bunch	0	3 0	Scorzenera bundle	0	9 1
French Beans per 100	1	0 3	Seakale basket	1	0 2
Garlic lb.	0	8 0	Shallots lb.	0	4 0
Herbs bunch	0	3 0	Spinach bushel	3	0 4
Horseradish bundle	3	0 4	Tomatoes small punet	3	0 0
Leeks bunch	0	2 0	Turnips bunch	0	3 0
Lettuce (Paris cos) each.	0	4 0	Vegetable Marrows, doz	0	0 0

All communications for the Editorial Department should be addressed to WILLIAM ROBINSON, "THE GARDEN" OFFICE, 37, Southampton Street, Covent Garden, London, W.C. All letters referring to Subscriptions, Advertisements, and other business matters, should be addressed to THE PUBLISHER, at the same Address.

Readers who may find it difficult to procure THE GARDEN regularly through the newsagents, may have the numbers sent direct from the office, at 19s. 6d. per annum 9s. 9d. for six months, or 5s. for a quarter, payable in advance. All the back numbers may be obtained through all newsagents, at the railway book-stalls, and from the office.



"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*


NOTICE.

The Conductor of THE GARDEN will shortly commence a tour of observation through the Gardens of England, beginning with the counties of Warwick, Worcester, and Stafford. Correspondents will greatly oblige by forwarding to him, at THE GARDEN Office, 37, Southampton Street, Covent Garden, London, W.C., information as to interesting gardens, remarkable trees, and other objects of horticultural interest in any of these counties.

HOME LANDSCAPES.

GARDEN BEAUTY IN APRIL.

(AT BELVOIR CASTLE.)



REAT advances have generally been made in spring vegetation as we approach mid-April. The garden begins to assume a more varied and, in many respects, richer aspect than in March, though the eye is no longer gladdened with the gold and purple cohorts of the Crocus tribe, and the brilliant yellow of the wind-defying Daffodils is somewhat dimmed. But we have gained equivalents, and more than equivalents, in the far greater variety of floral beauty rife in April; for in addition to many of the fine March flowers that still continue to delight us with profuse bloom we have a whole host of novelty bursting into luxuriant blossom, which was only in embryo during the less congenial temperature of March.

The March garden which I most enjoyed, and which I attempted to describe in the last number of THE GARDEN, formed the surrounding of the suburban retreat of one of the wealthy industrials of the great Warwickshire metropolis. It was a modest but very delightful specimen of home landscape-making, but on a very small scale; and in that respect a striking contrast to the extensive flower gardens and ornamental woods at Belvoir Castle, the present aspect of which I have adopted as a type of garden beauty which is attainable in April. The sheltered glades and flower gardens of Belvoir occupy a charming site for spring gardening, and clothe with beauty a large portion of the noble slopes, upon the highest crests of which the castle is situated.

As our party drove over from the station at Grafton, the first near glimpse of the castle, seated on the very crown of the hill, is very grand and imposing; and although I prefer the architectural aspect of several others which I could name among our baronial halls, I know of none that can compete with Belvoir in nobleness of site. The castellated façade and flanking towers rise far above the loftiest trees that clothe the steep sides of the hill to right and left, and present a sky-line, as the architects have it in their expressive jargon, which is artistically fine in a very high degree.

But it is with the lovely flower gardens, nestling among the shrubs and trees of the undulating slopes that our interest chiefly lay; and we hastened to claim as our guide the Duke's head gardener, Mr. Ingram, who responded to our call with the alacrity of a true lover of his art. Under his guidance we advanced for some distance along shrub-sheltered walks, now rising, now falling, according to the sinuosities of these charming slopes, catching at every turn enchanting glimpses of the more distant landscape between the lichen covered trunks or great gnarled branches of the forest trees, whose bases were far below us, while their crests rose high above our heads. Sometimes these glimpses were enriched with groups of wild cherry in full bloom, and sometimes with dark green masses of Yews and Pines; while the Elms were beginning to be covered with a bead-work of tender buds "as green as emerald."

At last great masses of vivid colour began to appear in front of our path, gleaming brightly between the shrubs by which they were still partially concealed. The sky, April fashion, was dark and leaden between the short gusty storms of rain and sleet, but those masses of bright flowers seemed positively shining with a light of their own in the mid-day twilight of that stormy April day. They were not like the young German lover when he compared himself to a prisoned gem, as he sighed in his love-verse,—

"I am the gem, in gloomy place,
No splendours round me flinging;
Thou art the sunshine on my face
Bright hues from darkness bringing."

These grand patches of flower colour, on the contrary, were not of the kind requiring sunshine to set them off, for they seemed to emit a light of their own—a very bright and glowing one—in the dullness of the lowering April weather.

Among the thickly-wooded slopes, the first group of beds of the forest flower-garden of Belvoir formed richly glowing spaces, delightful to look upon; while similar constellations of flower-light, seemingly as beautiful, glimmered through shrubby interruptions at every turn of the path, to right, to left, both above and below. Nothing can be imagined more charming than this series of picturesque flower gardens among the wild slopes, to the different and capricious levels of which rocky stairways lead in many directions; while masses of rock lie in front of the shrubberies or within them, covered with golden Stonecrop and many other alpine plants, not omitting, of course, the great yellow Wallflower, for which the gardens of Belvoir are celebrated.

It is difficult by words to convey any sort of idea of the charming effect produced by these varied and picturesque flower beds, which are literally crammed to repletion with plants in luxuriant bloom, just as we sometimes see Primroses in some sheltered lane covering a bank that exactly suits them so closely that neither space nor speck is left uncovered; or as Wood Anemones often make a closely packed crowd of beauty in some lonely dingle, of which they have long claimed and held undivided possession.

The only way to describe these masses of fair spring flowers so as to give some slight idea of their charm, will be to resort to individual portraiture. Happy contrast of colour has been, above all things, well considered in the distribution of the plants, and we therefore get effects of the following kind:—A large mass of Alyssum, for instance, forming a compact mass of bright yellow blossom, is placed in close juxtaposition with a still larger patch of purple Aubrietia; and beyond, there is a group of deep orange Oxlips, telling out against a clump of deep brown Wallflowers, the whole composition blended and united by means of pretty plants in which delicate green foliage predominates over their flowers.

In another bed, crimson Daisies with variegated leaves are the chief feature, relieved by the great lilac flower-bunches of Saxifraga cordifolia, whose large heart-shaped and fleshy leaves give it the aspect of some tropical plant that ought to require a southern sun to bring its massive beauties of flower and foliage to perfection.

In another bed, masses of Myosotis sylvatica make a carpet of celestial blue, mingling their soft hues with double white and double yellow Primroses; the whole blended together by the deep green of a mossy Saxifrage dotted sparsely over, with its sparkling white flowers that shine like little stars.

Another set of combinations consists of wide-spreading tufts of the lovely Omphalodes verna, with its flowers as blue and as pretty as Forget-me-Nots, peeping out thickly from its dwarf forest of deep-green leaves. These masses are divided by great tufts of Arabis albidia, with flowers of dazzling white, that well deserve the popular name of Mountain Snow, by which the plant is known in some parts of England. To vary the height of the plants, a few specimens of the taller-growing Fleabane are introduced, whose composite flowers of ochreous yellow, balanced on their slenderly branching stems, have a graceful effect; while, to complete the composition, a touch or two judiciously introduced of some deep-flowered Polyanthus, or a tuft or two of the lovely Scilla verna, with delicately tender tones of azure, are made to form the climax of colour.

In some of the beds the gold-leaved variety of the common Lamium maculatum, is made to form telling patches of a peculiar orange tone, varied by others of the yellow-leaved Feverfew; among which plants of blue, purple, and tricolored Pansies form conspicuous touches of magnificent and effective colour; varied here and there by three or four flowers, in groups, of an early dwarf Iris, the blooms, which are pearly white, blotched at the tips of the petals with a single broad mark of the deepest purple. These are but a few among the hundred combinations in this fairy-like flower garden; each one seeming more successful than the last; and then, a number of other flowers are profusely introduced, the mere names

of which would convey no definite idea to those unacquainted with the plants themselves; yet one or two beds, formed principally of varieties of *Epimedium*, should not be passed over without note, for the peculiarity and elegance of the flowers, especially that of *Epimedium rubicunda*, is so remarkable, and the plant is so hardy, that it ought to be in more general cultivation as one of the very choicest of our early spring flowers.

Then there are in the shrubberies the large yellow bunches of *Berberis* flowers, of several species; and *Rhododendrons* already threatening to burst into bloom on the slightest invitation from a more genial temperature; and the double flowering Peach is in full flower in sheltered places, where its blooms look like miniature Roses. But at Belvoir, in April, it is the flower beds among the woody dells that make the garden beauty of the place. A beautiful display of bloom has been enjoyed there from the beginning of February, and all from hardy denizens of our gardens that the poorest cottager may grow.

NOEL HUMPHREYS.

NOTES OF THE WEEK.

— We are glad to hear that exertions are being made for the preservation of Clapham Common. We hope it may share the fate of Wimbledon, and be secured to the public for ever.

— The *Australasian* reports that gardeners in Victoria, for the best situations near town, get from 45s. to 55s. per week; ditto, for the country, 45s. to 50s.; inferior hands for the country, 12s. 6d. to 18s. per week with rations.

— The *Manchester Examiner and Times* of April 2nd gives an account of a grand marine aquarium which it is proposed to build at Manchester, and which shows the interest which is felt in scientific studies in the northern capital.

— At the first annual meeting of the British Gardener's Mutual and Self-Supporting Society held recently at Bristol, it was reported that 105 members had been enrolled during the past year, and that there was a balance of £32. 6s. 6d. in hand. Officers and members of the committee for the ensuing year were appointed.

— THE Markets Committee have reported to the Court of Common Council, recommending that the Farringdon Fruit and Flower Market should be reconstructed as proposed, at a cost not exceeding £150,000. The rents, it is anticipated, will be increased from an average of £712 a year to £9,592, and the tolls and casual lettings from £507 to £4,000. The council have adopted the report, and given the committee authority to apply to Parliament for the requisite powers, and to raise the necessary sum.

— We have just received from Mr. Richard Nisbet, Aswarby Park Gardens, Falkingham, a magnificent sample of Lady Downe's Seedling grape, six months cut from the vine, and preserved in bottles of water ever since. Surely, this, among other recent examples in the same way, proves more than ever was claimed for the system. If grapes can be kept in perfect condition for six months after being cut, no grape-grower need allow his houses to be encumbered and his time lost by preserving his grapes through the winter hanging on the vines.

— Two years ago, says F. Barillet, in *Revue Horticole*, one of my friends, who was suffering from toothache, thought he would try the effect of cutting a piece of the stem of the *Araucaria imbricata*; and taking some of the sap (resin), which has the appearance of a white paste, and which is compact, he made a little ball of it, which he placed in the hollow of the tooth. Some hours afterwards the pain ceased, and the substance which still remained in the tooth answered all the purposes of the best stopping. Since that time the sap (resin) has become very hard, not only has it never moved, but my friend has not since experienced the last pain.

— THE Wimbledon Common Committee having by the passing of the Act fully accomplished the purposes for which it was formed, viz., the securing in perpetuity for the public enjoyment the whole of Wimbledon Common, Putney Heath, and Putney Lower Common, open and unenclosed, Mr. John Murray, on Wednesday evening, to celebrate the event, entertained the following members at dinner in Albemarle Street:—Mr. Alderman Besley, the Rev. Dr. Huntingford, Messrs. Benecke, Burrell, Devas, Dryden, Du Buisson, Du Cane, Hardwicke, Hussey, Jackson, Peek, Pollock, Reeves, and Williams. In the course of the evening the committee presented to Mr. Peek a silver cup and cover of most elaborate workmanship, bearing the following inscription:—"Presented by the Committee for the Preservation of Wimbledon and Putney Commons, to Henry William Peek, Esq., M.P., their chairman, as a mark of their sense of his zeal, energy, and liberality, which effectually contributed to the successful termination of a long and obstinate struggle, and thereby secured the use of the commons, free and open, to the public for ever. 1871."

— YESTERDAY we had the pleasure of seeing a meadow to the north of London dotted over with the gracefully suspended bells of the snakeshead *Fritillaria Meleagris*, one of our most beautiful native plants. In a cultivated state it may be often seen in cottage gardens, but it is far too often absent from large places. In its several varieties we know of no more beautiful ornament of spring, and, in consequence of the pendulous character of the flower, it does not suffer from bad weather, as many other spring flowers do.

— THE opening of the People's Gardens (pleasantly situated at Old Oak Common, near Willesden Junction, and upwards of fifty acres in extent), for their third season, is announced to take place on Saturday, the 4th of May. During the winter several important improvements, both in the buildings and gardens, have been carried out, which will add greatly to the comfort and accommodation of visitors; while the train accommodation is also largely increased, trains continually arriving at the Willesden Junction from all stations on the Metropolitan and district lines, and also from the Euston and Broad Street stations of the North-Western line.

— THE Duchy of Brunswick, M. Kock informs us in his "Wachenschrift," intends to publish statistics of the gardens in that part of Germany. The information that will be furnished will be, first, the name of the present proprietor and that of his predecessor; second, the date at which the garden was made; third, the name of the gardener who traced and put into execution the plan of the garden; fourth, the extent of the land cultivated; fifth, the number and extent of its glass houses of all kinds; sixth, minute details as to trees and rare shrubs, as well as their approximate dimensions, ages, and origins; seventh, information of another kind of which it is impossible as yet to give an idea.

— ONE of the most agreeable promenades of Paris, combining at the same time science and amusement, is without exception that of the Garden of Acclimatisation in the Bois de Boulogne. The late events caused it to be closed, but it is again open to the public at the same hours and regulations as before. A great part of the damage done has been repaired, and already there are many animals in the park. The ornamental and horticultural part has not been neglected, and the work is being actively carried on, so that in a short time all will be again in order. Amongst the greatest novelties lately introduced, and one which merits particular attention, is the *Cerasus Lannesiana*, lately sent from Japan by M. Lannes de Montebello.—*Revue Horticole*.

— THE authorities of California have engaged a professional arboriculturist, at a salary of 15,000 dollars per year, to attend to the setting out of forest trees in different parts of the State. They never, says the *Rochester Express*, did a wiser thing. Our forefathers found two fancied enemies when they landed on this continent—the Indians and the forests. They at once proceeded to exterminate both, and their fury, transmitted to their children, has been nearly successful. We may never regard the Indian as a friend, but our feelings towards the forests have changed. We want trees judiciously distributed everywhere—on the mountain side, in the fields, along country roads, in front of city residences, in parks and gardens; everywhere some, nowhere too many.

— "NATURE" records the death of *facile princeps* the most eminent of vegetable physiologists, Professor Hugo von Mohl, which took place on April 1st, at Tübingen. Von Mohl was born at Stuttgart in 1805, and in 1835 was appointed professor of botany and director of the Botanic Gardens at Tübingen, a position he has held ever since. Conjointly with Schlechtendal, and since his death with Professor de Bary, formerly one of his pupils, he has been editor of the weekly "Botanische Zeitung" since its commencement in 1843. He was one of the foreign members of the Linnean Society, having been elected as long ago as 1837. Von Mohl has been a copious and most accurate writer on subjects connected with vegetable anatomy and physiology.

— THE Neil Bequest—in the gift of the Council of the Royal Caledonian Horticultural Society for the time being—has been voted to Mr. Andrew Turnbull, gardener to the Earl of Home, Bothwell Castle. We believe it amounted to the sum of £65. The late Dr. Neil bequeathed the sum of £500 to be invested, and the interest to be voted either biennially or triennially to a distinguished horticulturist or botanist. Scotch gardeners have long known and appreciated the worth of Mr. Turnbull as a man, and his abilities as a practical gardener. His success as a cultivator of heaths, and as the raiser of some of the most valuable and decorative among them—chief among which are *Bothwelliana alba*, *Marnockiana*, *Turnbullii*, &c.—entitle him to the highest honours which it is in the power of horticulturists to grant. He has been upwards of forty years in the service of the Bothwell Castle family, and is in every way well worthy of the mark of distinction thus conferred on him.

THE FLOWER GARDEN.

THE ALPINE GARDEN.

(Continued from p. 464).

In numbers of gardens an attempt at "rockwork" of some sort has been made; but in nine cases out of ten, the result is simply ridiculous; not because it is puny when compared with Nature's work in this way, but because it is generally so arranged that rock plants cannot exist upon it. The idea of rockwork arose at first from a desire to imitate those natural croppings out of rocks which in temperate and cold countries are frequently covered with a dwarf but beautiful vegetation. It is strange that the conditions which surround these, and their texture and position, should rarely be taken into account by those who make rockwork in gardens. Numerous places occur in every county in which a sort of sloping stone or burr wall passes as "rockwork," a dust of soil being shaken in between the stones, and the whole so arranged that, if you do cover it with suitable plants, they perish speedily. In others, made upon a better plan as regards the base, the "rocks" are

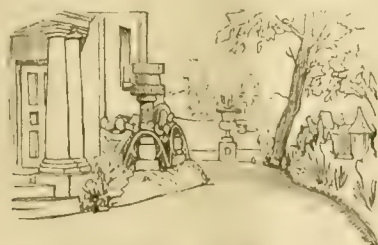


Alpine Plants growing on the level ground.

all stuck up on their ends, and so close that soil, or room for a plant to root, is out of the question. The best thing that usually happens to a structure of this sort is that its nakedness gets covered by a *Cotoneaster*, or some friendly climbing shrub, or some rampant weed, of course to the exclusion of true rock plants; but in most cases the rockwork is a standing eyesore.

In moist and elevated districts, where frequent rains and showers keep porous stone in a continually humid state, this straight-sided, stone-wall-like rockwork may manage to support a few plants; but in by far the larger portion of the British isles it is quite useless, and always ugly. It is not alone because the mountain air is pure and clear and moist that the *Gentians* and like plants prefer it, but because the elevation is unsuitable to the coarser-growing vegetation; and our alpine plants have it all to themselves. Take a healthy patch of *Silene acaulis*, by which the summits of some of our highest mountains are sheeted over with rosy crimson of various shades, and plant it two thousand feet lower down in suitable soil, keeping it moist enough and free from weeds, and you may grow it to perfection; but leave it to nature in the same neighbourhood, and soon the strong grasses and herbage will run through and cover it, excluding the light, and finally and quickly killing the hardy and vigorous but diminutive Moss Campion.

Although hundreds of brilliant alpine flowers may be grown without a particle of rock near them, yet the slight elevation



"Rockwork" against a house at York. Sketched 1871.

given by rockwork is very congenial to numbers of the most valuable kinds. The effect of a tastefully disposed rock-garden is very desirable in garden scenery. It furnishes a home for many pretty native and other interesting plants, which may not safely be put elsewhere; and therefore it is most important that the most essential principle to be borne in mind, when making it, should be generally known.

The chief mistake generally made is that of not providing a feeding-place for the roots of the plants that are to embellish the rockwork. On ordinary rockwork even the coarsest British weeds cannot find a resting-place, simply because there is no motherly body of soil or matter into which the descending roots may penetrate, and find nourishment sufficient to keep the plant fresh and bright and well in all weathers. It is not



Alpine Plants growing in level sandy border. June 1871.

only those who make their "rockwork" out of spoilt bricks, cement, and perhaps clinkers, that err in this respect, but the designers of some of the most expensive works in the country. At Chatsworth, for instance, and also to some extent at the Crystal Palace, you see rockwork not offensive so far as regards its distant effect in the landscape; but, when examined closely, it might well be imagined that rockwork and rock plants were never intended for each other's company, so bare are many of these large works of their proper and best ornaments. They are generally pavements of small stones, huge masses of rock, or imitation rock formed by laying cement over brickwork, and in none of these cases are they adapted for the cultivation of high mountain plants.

It is quite possible to combine the most picturesque effects of which rockwork is capable with all the requirements for



Properly formed Rockwork, suited for bold and luxuriant types of Vegetation.

plant-growing; but, in the case of extensive rockwork-making for the sake of its picturesque effect, the owner must either call to his aid a landscape gardener of some skill in this way, or possess much taste and knowledge of the work himself. It is easy to use the largest stones and make the boldest prominences, and leave at the same time rather level intervening spaces of rocky ground in which rock plants may luxuriate.

(To be continued.)

A PROTEST AND A SUGGESTION.

Who is an ardent amateur, and has not suffered from the insatiable appetite for gathering garden flowers which possesses most of the fair sex?

Whilom he was wandering among his favourites, here prostrating himself on hands and knees before a precious alpine, unveiling its beauties for the first time in his possession, or there tending to the wants of some more stately foreigner; his heart fails beneath his dusty waistcoat to hear the ominous click of the garden wicket, and enter—in broad-brimmed hat and tan gloves, with gaping basket and hungry scissors—the fair form of the destroyer. If it is in the warm spring season, he shall endure the crueler pangs; for snip, snip, snip, goes the ruthless steel among the fair spring

flowers. See how the tender blue of that favourite clump of Grape Hyacinths disappears before her; bright Tulips fall apace; even the humble Dog's-tooth Violet is not spared. All are ravished to linger out a few dark hours in the dry twilight of the sitting-room or the greasy steam of the dining-room. It is in vain he tremblingly hints that they are far more beautiful springing from their native mould, rifled by the bees, than languishing in a gaudy jar among the incongruous ornaments of a modern drawing-room. "Oh, you grizzly bear! how can you be so selfish?" or some such affectionate reproach makes him feel as if he were the evil-doer; he sighingly turns away, and dares no more. If it be summertime, he rejoices to see how long she lingers among the gaudy bedding-plants; he cares little how many of them she takes—"tis their vocation, Hal." But see, she turns her steps this way. No, no, unhappy man! in vain you interpose your portly form between that new bright Larkspur and her brighter eyes; it is in vain you hurry past yon opening Rose, and try to withdraw her from the corner where your last investment in Lilies fills the air with fragrance. If, indeed, you are fortunate in exacting a tardy assent to let them blow a little more, you know too well that when next she goes on a raid you may not be there to stay her hand.

"But are we to have no flowers in the house?" will rise to the lips of any lady who has read thus far. So you shall, so you ought; but instead of having nothing but dying bouquets, let some of them be living. Some flowers seem made for cutting, and are better thus than otherwise; and all are better for cutting in moderation. Who would willingly forego bunches of Violets, Primroses, and Wallflowers in spring? or vases of Roses in summer? But, oh, for a little judgment, a little moderation, a little of the real love of flowers which makes the hand pause in time, and when it does cut offers a half apology for the assault.

And here is a simple plan, which will prove a boon to the owners of small gardens, and be to some extent a substitute for cut flowers, especially in spring, when flowers are so short-lived. It is this: Arrange now in pots the roots of spring flowering plants, so that they may flower together, and may be moved into the house for a few days when in the height of their beauty. They will require no protection in winter; only let the pots be plunged to the rim in sand or cinders to prevent them cracking in frost. If this is carefully done, if those plants which flower together are carefully grouped, charming living bouquets may be produced, and a succession be kept up for a constant supply to the house. Thus, for a February pot we may have a variegated Arabis in the centre, surrounded by purple Crocus, winter Aconite, pink and white Dog's-tooth Violet, and a carpet of the golden-tipped Stonewort. A month later we may have a pot of Canadian Bloodroot, Grape Hyacinths, yellow Alyssum, alpine and other Primroses, and Erica carnea. The combinations are endless, and of endless interest and beauty; and, by substituting hardy Stonewort for Lycopod or Selaginella, might well be adapted for the mode of table decoration recently proposed.

So may we have fresh garden flowers in any quantity in the house, without spoiling the beauty of the beds.

SALMONICEPS.

THE ROSE SECRET.

As the Rector of Caunton has vowed not to divulge his secret relating to the propagation of roses, we may now make a selection from the articles that have appeared in THE GARDEN on the subject, as to the mode that is likely to suit amateurs and gardeners best. Nurserymen and gardeners, who have plenty of glass erections with bottom heat, can doubtless strike and grow great quantities of roses from buds or cuttings; but for amateurs and others without glass, the plan of striking rose cuttings in October in the open border will be found to answer best. The extract from a French work on a way to propagate roses from cuttings, given by Mr. T. A. C. Firminger in THE GARDEN (page 457), points out a new way of inserting the cuttings in the ground, and may be tried by those fond of experiments. I never, however, find any difficulty in striking rose cuttings without their shrinking or dying away, if properly made and inserted pretty deeply in a light sandy soil in October, and protected a little from severe frosts during the winter and spring months. With regard to the limited quantity of rose cuttings I generally strike every year to grow

on their own roots, I find the following mode answers best:—From six to eight cuttings are inserted in pots in October, and the pots are kept in a cold frame till the spring, or are placed at the bottom of a wall, where they can be covered over with some litter in severe weather. When they have made shoots two or three inches in length, and all danger from frost is over, they are planted out of the pots with their balls entire in well-prepared soil. This prevents their roots, which are very young and brittle, from being broken off, and in the summer they spread them all round from the old ball of earth and form fine strong plants, which are lifted singly in the autumn for potting or planting out as desired. It may not be generally known to amateur gardeners that they may strike plenty of young apple and pear trees from cuttings like roses by putting them in October in the open border in rows. If a small heel of the old wood is attached to each cutting, it will strike sooner and make the stronger plant. Some kinds of apples of the "Burr" variety will grow when large branches are planted and will bear a crop in the second year after being planted.

WILLIAM TILLERY.

[Mr. Hole has not the nurseryman's permission to make public the new mode of rapidly striking roses. Of "Y.'s" secret we cannot speak; but we are authorised to say that none of our correspondents who have sent so many excellent hints as to various modes of striking roses, have touched upon the mode in question.]

SPRING FLOWER GARDENING.

I HAVE thought many times lately that it would not be a bad idea if, now that one's spring beds are at the height of their beauty, every gardener who has such beds would furnish you with an account of what combinations and arrangement of colour and beauty had been most attractive and most admired with him. We should thus hear of many things with which some of us are at present unacquainted; and all of us would learn something to our advantage about our favourite pursuit.

I will begin by describing, as best I can, a few of my beds. Two corner beds here have been for a month past a blaze of beauty. They are round, and seven feet in diameter. There is a nine-inch wide ring next the grass of Cerastium tomentosum; next a nine-inch wide ring of purple Aubrietia; then the body of the bed is of the common Primrose and scarlet Duc Van Thol Tulip, plant for plant, with a yellow Pottelbakker Tulip in the centre. Bright and beautiful indeed they have been, and are. The two next beds to them are round ones, the same width in diameter, and are drawn out in pentagons. In the centre, which consists of Pansies and Golden Prince Tulip, is one plant of Vermilion Brilliant Tulip. The lines of the pentagon are marked out by means of variegated Arabis—two very neat and pretty beds. The next bed has the centre much raised; the edge begins with a ring of Sempervivum californicum (too dull in colour, its brown tips being too much the colour of the soil, for effect); next a ring of Golden Feather Pyrethrum; then the body of the bed is carpeted with Purple Aubrietia and Proserpine Tulip growing through all over it. Inside the ring of Golden Feather is a ring of Grand Vainqueur Hyacinth. This combination and arrangement makes up a very striking bed. One bed here has an edging of the most beautiful mixture of colours imaginable, obtained by means of two common flower-garden plants—purple Aubrietia and variegated Arabis planted alternately; these make the most charming edging to a large bed which it is possible to conceive. The centre of this bed is rather a failure; it is too cold. Next the edging is a line of Viola lutea and common Duc Van Thol Tulip, plant for plant; then the body of the bed consists of Cliveden Blue Pansy and White Snow Tulip. This arrangement is too cold. There ought to have been some scarlet alternated with the Blue Pansy and White Tulip. We have another long bed which is rather difficult to describe. It forms the segment of a circle, backed up by evergreens, in front of which are red Wallflowers. The bed itself is vandyked and carpeted with Myosotis dissitiflora and with Sedum acre aureum, through which grow Golden Prince Tulip, and Roi Cramoise (scarlet), and the edge next the grass is double red Daisies.

N. H. P.

SPRING MIXTURES.

MY best mixture for spring beds is an irregular combination of something approaching to plant for plant of the common Primrose and the lovely Myosotis dissitiflora. I call it irregular, because it is actually so; no exactness as to distance being aimed at. But the varying sizes of the plants render it still more irregular. It is, however, none the less beautiful on that account. Here a long path of Forget-me-Not spreads out and predominates over the Primrose; and anon a fine Primrose, with a head all flowers, has the

mastery over the blue. Neither is the mixture the worse for a dash of a third colour; reminding one of the flavour of hyson in a cup of souchong. Many of the early flowers of the *Myosotis* have a dash of purple, which merges finally into blue. This purple gives a certain piquancy to the pale tint of the Primrose on its first appearance, and finally merges into blue, leaving but two colours in the mixture.

These two common hardy plants are admirably adapted for balancing each other, and bringing one another out into higher beauty. The relative proportions of each may be varied in various ways. For instance, the ground may be covered with Forget-me-Not, and the Primrose dropped in regularly or irregularly, in single plants or grouplets, for effect. Or the relative position of the two may be reversed, which, however, is hardly so striking. Or, again, irregular masses of each may be placed side by side, or be made to run out and in amongst each other, as if an erratic March wind had scattered them out of its guinea-a-bushel dust measure.

It is astonishing what magnificence and grandeur come of the massing of common things, on the principles of harmony or contrast, or by the massing alone. And such an aggregation of the force of numbers is by no means unnatural. On the contrary, it is nature's method. She masses almost everything, from the green grass upwards. Look at that moor or mountain, a-glow with furze or flaming with high-coloured heaths. Place one, two, a dozen, in little coteries, how poor and tame; gather them into aggregates of thousands, tens of thousands, millions, and they grow into a grandeur and magnificence beyond the reach of words. But this apology can hardly be needed to vindicate my spring mixture. There are many other spring plants equally or more effective. The great points are congruity of habit and simultaneity of flowering. To all in search of a new sensation in spring gardening, I can with confidence recommend my mixture, in any proportion that is preferred, of the common Primrose and the *Myosotis dissitiflora*.

Perhaps the next best plant for mixing or grouping with the primrose is the charming navelwort, *Omphalodes verna*, being smaller and wholly different from the *Myosotis*; the blue is darker, and perhaps more lovely. It does not make such a brilliant display, as there is more leaf in proportion to flower; but the flower has an elegant beauty and a colour wholly unique. A groundwork, not too thick, of common primroses, with a few plants here and there of the *Omphalodes* creeping about over and among it, is charming. Perhaps this plant is even more effective planted in the same way among any of the varieties of white *Arabis*. The *Aubrietias*, again, are lovely against or mixed in with white. One of the best spring mixtures I have seen was composed of *Aubrietia* and white violets. The variegated *Arabis*, again, makes a splendid carpet on which to exhibit either the Forget-me-Not, *Aubrietia*, or blue Violets. Again, the grand old plant *Iberis sempervirens* never looks so snowy white as when matched with *Myosotis dissitiflora*. Again, if you want to see the *Alyssum saxatile* in all its golden glory, place it near a great patch of blue sky; the same Forget-me-Not. I offer one more example of spring mixture; the ground carpeted with blue Violets, *Nemophila insignis*, or, better than either, *Myosotis dissitiflora*, and say ten thousand golden Daffodils towering over it—a golden cargo on an azure sea.

D. T. FISH.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Linaria genistæfolia.—Among hardy garden perennials that will grow on almost any soil, there are few more ornamental and desirable than *Linaria genistæfolia*. It forms a compact bush, about two feet high, covered with broadly lanceolate glaucous green leaves. About July it is completely smothered with bright yellow, long-spurred flowers, which continue to cover it with golden beauty as long as the autumn frosts hold off. This species of *Linaria* is, I believe, a native of Austria. It seeds profusely, and may easily be increased by means of cuttings or division of the root. —H. HARPER CREWE, *the Rectory, Drayton-Bauchamp, Trin.*

The Golden-rayed Lily.—Mr. Vick, of Rochester, New York, directs attention to the long time during which this noble hardy Lily may be had in flower. He says it is one of the earliest Lilies to flower, and also one of the latest. About the first of July the first buds opened, and to-day (September 1st) I have hundreds in full bloom, with almost ripened seeds, perfect flowers, and half-formed buds, in the same row. For some years I thought this was due to the fact that the bulbs were imported, some of them being dried or otherwise injured or retarded on the passage from Japan. This idea I have abandoned, as several hundreds that have been in my grounds for three years show the same habit. What a glorious thing it is that with a dozen or so of bulbs we can have this Lily in flower all through the summer!

Buckinghamshire Orchids.—I know well the locality described by Mr. Elliot in *THE GARDEN* at p. 456; and most of the plants which he names are likewise well known to me as growing there. I suspect, however, some error as to *Listera cordata*; and *Epipactis purpurata* is doubtful. For *Pyrola media*, *P. minor* should certainly be read; and the *Habenaria bifolia* belongs to the form known to botanists as *H. chlorantha*.—JAMES BRITTON, *British Museum*.

Dwarf Scabious with large Double Flowers.—This is deserving of notice, not only on account of the dwarf and exceedingly free-flowering tufts which it forms, but also for its flowers, which are larger, fuller, and more double and rounded than those of the old dwarf kind. Sufficient attention is not paid to these plants, which grow without trouble in any soil, and flower profusely all the year through; the flowers are particularly well adapted for bouquets on account of their agreeable perfume, their lasting qualities, and their lively and diversified colours.

Buttercups and Geese.—Many of the richest pastures are yellow with buttercups every spring, and yet everyone must acknowledge they are injurious weeds. Injurious in themselves, they take up the room of good grasses. I once heard a person strongly contending that all pastures in which they abounded ought to be broken up, well cleaned, and resown with grass seeds. I think few practically acquainted with valuable pasture would be inclined to take this strange advice. But there is one enemy of the buttercup which is often a welcome guest at our tables, and that is the goose. The goose is very fond of buttercups, and shows great determination to get at their roots, the only part it eats. Believing, as I do, that no other poultry pay so well for keeping as geese, it often surprises me that more are not kept. Is it because their utility as weeders of our pastures is not generally known? Who ever saw a buttercup on a common fed by geese?—J. R. Pearson, in "Field."

FERULAS, OR GIANT FENNELS.

THESE belong to the same large natural family of Umbellifers as the *Heracleum*, and it will be at once evident, by a glance at the illustration on next page, that if the Giant Cow Parsnip be taken as an example of stately vigour and development, to this must be assigned the more chaste attributes of elegance and refinement.

View the plant as here represented of *Ferula communis*, no artist's fancy, as some may suppose, but a veritable specimen of nature printing, indebted, no doubt, to the skilled hand of the artist for the airy gracefulness and feathery lightness of the verdant cushion, from whence arises the erect branching panicle of blossoms to a height of fully six feet, charming in its rigid, finely-chiselled angular divisions, and rich in contrast with the feathery foliage below. We would add a descriptive touch, which the artist cannot give without the aid of colour; and, to complete the picture, you must imagine that the foliage does not represent one uniform tint of green, the gradations from light to dark colour being almost as numerous as the leaves themselves, and so intermingled and blended by the interlacing of the segments, as almost to defy the most skilful colourist to depict. Nor is the flower-stem deficient in this respect. In its young state, it is suffused with a tint of greyish colour, that vanishes with the touch, like the bloom on the grape.

The flowers, borne in beautifully radiating umbels, though not large nor individually conspicuous, are of a yellowish colour, and are succeeded by a goodly crop of fruit—first of a golden yellow, and, as it approaches maturity, deepening in colour to a brown. It might be supposed that a flower-stem of this magnitude would, of necessity, require some artificial support, if not when in blossom, at least, when weighed down by the bountiful harvest of fruit. But, no; nature has made a wise provision in the solidity and strength of the main stem.

Unlike the generality of Umbellifers, the stems of all the *Ferulas* are perfectly solid and woody, and when fresh cut, just as the fruit is beginning to ripen, they are of enormous weight compared with those of any other herbaceous plant.

Fragments of the leaves, when fully matured, are admirably calculated for decorating a vase of flowers. I say when fully matured, as when young they soon become flaccid; and even when in the state recommended, care must be taken that they all have access to the water, else they soon lose their shining beauty; for this reason, they are not adapted for hand bouquets, however elegant in appearance they may be. But methinks I hear some of my fair readers taking exception to an imaginary attribute conveyed in the name, "Giant Fennel;" and saying, "What about the smell?" I grant you at once that

such a peculiar and monopolising odour as the herb Fennel possesses would be a most undesirable ingredient in a bouquet, however desirable in a sauce or a salad; but our plant possesses no smell whatever—at least, in the leaf. Indeed, it belongs to that section of the order characterised by yielding gum resinous matter from the root; whereas, the Fennel belongs to the carminative and aromatic section.

These remarks, with the assistance of the illustration, will, I trust, awaken a wish in every person possessing a garden, and who has not yet become—if I may use the term—personally acquainted with our plant, to at once obtain one; and, presuming such will be the case, before I give a brief detail of several known and desirable species, it will perhaps be as well to anticipate sundry inquiries that may suggest themselves to anyone who has carried out my presumption, such as—Where am I to plant it? how am I to plant it? and by what cultural processes shall I be likely to attain the most perfect results? and I may here add that these cultural directions are equally applicable to all the species to which I shall allude hereafter.

First, what is the best position? Not unfrequently do we find this plant occupying a somewhat unfortunate place in



Ferula communis.

the mixed herbaceous border, where, by the way, its vigorous growth usually enables it to hold its own amongst its neighbours; and possibly it is more frequently the sinner than the sinned against. At other times it is met with in the front of a shrubby border, where, robbed of its food by its more vigorous neighbours, it usually drags out an existence in a manner neither creditable to itself nor satisfactory to its possessor. The proper place for it is on a slight grassy knoll in the centre of a nice sheltered bay or harbour indented into the coast line of shrubbery, which may be said to surround the verdant sea of grass to be met with in every well-designed and well-kept garden. Here, sheltered in some measure by the adjacent shrubbery—yet fully exposed to light on all sides—it will thrive luxuriantly, and be “a thing of beauty,” and, I had almost added, “a joy for ever;” but this reminds me that, roused into life early in spring (at the time I now write its verdant plumes are well unfurled), it has one failing—say rather, a natural sequence, that of losing its leaves about the month of August.

This is certainly a drawback to its otherwise adaptability to the conspicuous site I have given it; but, surely, a moment's consideration will suggest some plants to occupy its place.

Say a trio of the old, but much neglected *Agapanthus*, grown in large pots, which will form an admirable group, so arranged, as regards position, as to leave the crown of the *Ferula* clear.

As to the second supposed query—How am I to plant it? my reply is that a circle of, say, four feet in diameter should be marked out, and the first spit of natural soil dug out and set on one side; if the subsoil be gravel remove it to a depth of three feet, replace the top spit in the bottom of the hole, and add a good barrow-load of well-rotted manure; mix these up together, and then fill up with any good garden soil, leaving the circle well raised in the centre; if the subsoil be clay it need not be removed; but, after the surface soil is removed, let the manure be well dug in and incorporated with the clay below, returning the fresh surface soil, with some leaf-mould and sand mixed therewith. All the *Ferulas* are deep rooters and strong feeders, making in the course of years a root stock six or seven inches in diameter. In selecting your plant do not get an old stump; failing to obtain a moderately strong plant with a good tap root, choose a seedling, even though small, its progress will be more rapid and certain.

As to after management little need be said; a judicious selection of the plant, and careful planting, are the two stepping-stones to success; leave the rest to nature, and if the locality be dry, assist occasionally by a good supply of water, accompanied by a little liquid manure.

As to the species which are cultivated in our botanic gardens, I would enumerate the following:—

FERULA COMMUNIS.—Often named *F. Ferulago*, which may be looked upon as the typical plant of the first section—characterised by very finely divided supra-decompound leaves.

FERULA NEAPOLITANA.—Grows to a similar size, but has less compact foliage, and is slightly suffused with a glaucous hue, especially marked on the footstalks of the leaves.

FERULA CONSPICUA.—A Himalayan species, I believe, that has recently been introduced, and is said to be more of a giant than either of the foregoing; what its distinctive features are the immature state of my plants do not yet enable me to judge.

FERULA GLAUCA and the following belong to the second section, in which the divisions of the leaves are much larger, the alternate pinnæ being almost laciniately lobed. In this species the leaf-surface, of the deepest green, shines as though it was varnished. The foot stalk and the back of the leaf, but more especially the flower stem, which rises to a height of eight feet, is covered with glaucous grey, whence its appropriate name; this is so distinct in general appearance that where two only are grown it should be one of them.

FERULA TINGITANA.—Closely allied to the former, is similar in appearance, but dwarfer in habit and more branching in the flower stem.

FERULA PERSICA.—Is even less divided in the foliage than either of the foregoing; it is a very scarce plant; and when I say that it is one of the sources of the Gum Assafœtida, which is obtained as an exudation from the root, I think that the mention of the name in my brief enumeration of species will be sufficient.

JAS. C. NIVEN, *Hull Botanic Gardens.*

CITY VIOLETS.

FAIREST of Spring's fair children,
Babes of the flowery year,
Violets with dew-sprènt eyes,
Deep hued as midnight skies—
What is it ye do here?

To thousand, thousand workers
In labour's serried ranks,
Bright breezy thoughts ye bring
Of meadows white with spring,
Green crofts and sunny banks?

And therefore, Spring's fair children
Babes of the flowery year,
Violets with dew-sprènt eyes,
Deep-hued as midnight skies—
Thrice-welcome are ye here.

—*Chambers' Journal.*

THE INDOOR GARDEN.

THE LONTAR PALM.

(LIVISTONA SUBGLOBOSA.)

A most elegant Palm, worthy of being set in an isolated position, where its noble head of leaves can be seen to advantage. Its foliage resembles that of *L. chinensis*, but is compacter, and the plant itself is not quite so hardy as that kind. Its stem is corrugated and very regular in size. As will be seen, the head forms nearly a globe. The leaves



The Lontar Palm.

are used in Java, where it grows naturally, for basket-making, for thatching, and for hat-making. When they are intended for thatch, or for making fences, a use to which they are sometimes put, they are placed flat on the ground in layers, often with weight upon them to assist in flattening them. The thatch formed of them does not last, it is said, longer than two years, nor is it so handsome as that made from plaited coconut leaves. The selection of a few fine-looking palms such as this, giving them room so as to fully develop their beauty, is better by far, especially in private establishments, than having quantities crammed in a mass. This plant may be classed with those that will grow in the warm end of a conservatory. It acquires only a moderate size, and is easily cultivated.

J. CROUCHER.

THE CULTURE OF THE CYCLAMEN.

BY JOHN WIGGINS, ISLEWORTH.

CYCLAMENS are the most beautiful of all winter-flowering greenhouse plants. Their purity of colour and singularity of form make them universal favourites, and the early season at which they come into bloom invests them with additional interest. I have at present about twelve hundred established plants of Cyclamens, besides seedlings from last December's sowings. Of these, some eight hundred are about fifteen months old, the remaining four hundred being a year or two older. As a rule, I like the bloom which I obtain from plants of the first and second year best; but those of one or two years older produce flowers in greater abundance than younger plants. We have at Worton Cottage a lean-to house, measuring forty feet by twelve feet, which is at present filled with the different varieties of Persian Cyclamen, nearly all of which are in thirty-two sized pots, and each plant is bearing from one to two hundred flowers. I have among my plants, too, from twelve to sixteen distinct colours, such as pure white, crimson, carmine, lilac, salmon, and rose of distinct shades, &c. These and other colours in good Cyclamens should always be in themselves pure and unspotted, not "beautifully spotted and striped," as some describe plants at exhibitions, such spots and stripes being entirely the result of keeping the plants in cold, damp houses. To obviate such defects, maintain a continual, though slight artificial, heat in the house in which your Cyclamens are growing, and, at the same time, allow a free current of air, regulating it as to amount according to the state of the weather. This prevents that damp and stagnant atmosphere so much dreaded by all good Cyclamen-growers.

About the first of March we begin fertilizing the flowers, placing such plants as are retained for that purpose in a house apart from the others; and in furtherance of this end we select equal numbers of all the colours, omitting any possessing the least deficiency in size, form, or purity, and adopting flowers only that are perfectly uniform in shape, with broad blunt petals, each averaging about $1\frac{1}{2}$ inch in length, and having a well-defined base. The foliage, too, should be finely marked, and the plants should possess strong constitutions and quick-growing properties.

Some contend that Cyclamens may be successfully raised from seed, and bloomed in nine or ten months, in forty-eight sized pots; but this I feel certain cannot be done. To have good plants, the seed should be sown in December, in a temperature of 50° , and the young plants should be pricked off in spring into forty-eight sized pots, placing ten in each pot; and when big enough, they should be potted singly in small sixty-sized pots. When these are well filled with roots, which will be by the end of June, they should be potted into forty-eight sized pots, in which they will flower the following spring. After this shift they should be placed in a cool, sunless house, and well watered both at root and overhead. All stimulants, in the way of manure or guano-water, should be avoided, and nothing used except pure soft water, otherwise the flower-stalks become drawn and weak, and the strength of the plant expended in the production of foliage.

By this treatment, strong blooming plants may be obtained by March, a period of fifteen months from the time of seed-sowing; and in less time than that I find it impossible to obtain well-flowered plants.

Some assert that they can grow good Cyclamens in cucumber beds, but judging from my own experience, such is impracticable. I always find it best to allow them some two months to germinate, then to keep them cool, and to bring them on gently. By this treatment they do not grow so quickly at top, but they form large bulbs underneath, and that much quicker than they otherwise would do, were they subjected to a higher temperature.

Much has been written respecting the compost best adapted for Cyclamens; some recommend a little peat, others a little decomposed cow manure, mixed with the soil employed for them, and this latter I have myself recommended, but I now find that its effects are more injurious than beneficial, inasmuch as it serves to breed worms and other insects that prove hurtful to the plants. Finding such to be the case, for the last four years I have used nothing but two-year-old rotted

turf and good leaf mould in equal quantities, with a liberal admixture of silver sand.

In potting, I keep the bulbs about three-fourths out of the soil, carefully avoiding the old plan of placing them under the surface, so that the flowers may come up clean, without danger of damping or rotting off.

As regards two-year-old bulbs, it is customary with many to dry them off in winter in by-places, keeping them without water until every root has become dead, consequently the leaves die. When it is wished to start them, they are repotted and watered, which is all but labour lost. Some of the bulbs push freely, but others break but feebly, drag out a miserable existence, and, after a time, die. I generally find it best to keep old plants in cold frames during their period of rest, and sufficiently damp to keep the roots in a healthy condition. Most of the plants shed their foliage, and those that do not, continue to grow throughout the season, and are the earliest to bloom.

Much has been said about growing *Cyclamens* close to the glass; but, where they form a part only of things that are benefited by such treatment, it is impossible to supply all with such a position; therefore, amateur growers of *Cyclamens* will be pleased to know that such is not absolutely necessary.

The stages in our houses are from six to eight feet from the glass, and I find no difference whatever between those grown on these and others grown nearer the glass. In the case of amateurs who generally grow *Cyclamens* along with miscellaneous plants, they should, however, select a stage as near the glass as possible, and in a cool or sunless part of the house.

Should the plants become infested with insects, I find it best to dip them two or three times in a mixture of soft soap and water, and when thus cleansed, they pass through their blooming season unharmed. By a free use of the syringe, I manage to keep them free from red spider and thrips.

As regards showing *Cyclamens* for competition: I object to the lateness of the season at which they are generally required. For instance, prizes were offered this year by the Royal Botanic and Royal Horticultural societies for them in the middle of April, when there is not a perfect plant of this charming family to be found. Two years ago I took the first prize at the Royal Horticultural Society's meeting for the best collection in April with an exhibition of two hundred plants, amongst which, on account of the lateness of the season, not one was perfect. January or February is the time to see *Cyclamens* in perfection. Let us therefore hope that managers of exhibitions may see reason to invite growers of this lovely winter and early spring flower to exhibit in the right season, and not when it is deficient in quality, and other things are plentiful.

FORCING MAY.

"It seems so odd to see May in February; but how charming!" was the remark of a lady on first seeing Paul's Scarlet Thorn in the beginning of last year. It forces admirably, and, as "G. S. W." says, everybody likes it. The foliage, too, is large and exquisite under glass. I have no doubt the commoner single ones will force equally well. All the doubles are as free as the scarlet. The double white was simply inimitable from February till the end of March—one sheet of spotless white. The Mays make fine standards or pyramids, and as such impart quite a new charm to the conservatory, drawing-room, or staircase. Few plants are better adapted for the latter or bold landings, and they may be had any height. The pink is very delicate under glass. Next year I intend to force the single pink or scarlet, one of the most showy of all thorns. Unfortunately the double Mays are not so sweet as the single ones, that is the only drawback. The single flowers don't stand so long as the double, neither outdoors nor under glass.

Few plants can be of more service for cutting. Anyone with the least taste could extemporise a bouquet in a few moments with a stock of white and scarlet May, with the charming foliage of the latter; while for wreaths for the head they are inimitable. In small vases or flat dishes, again, May is admirable, while branches of forced May would make the dinner-table glow with summer beauty in the depth of winter. I hope this will suffice to send all your readers a-Maying for forcing next November. Don't attempt it too early, nor push on too hard at first. The plants are sulky till the new year dawns, and they don't like higher excitement than a temperature of 60° at top and bottom.

D. T. FISH.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Sarmienta repens.—Kindly say how I am to treat this singular climbing Chilean plant.—J. ELLIS.—[It requires cold greenhouse temperature (50°), and should be planted in a mixture of sphagnum, loam, and peat.]

The Corn Marigold.—*Chrysanthemum segetum*, or Corn Marigold, a cornfield weed, probably of Mediterranean origin, but now common all over Europe, except the extreme north, is a showy and welcome novelty in our greenhouses in the early spring. At that season flowering plants of the same type are rare. If plants of it are lifted from the open ground in August, and placed under glass, they will flower freely, and, on account of their bright colour, prove good acquisitions to our stock of flowers at a period when other things are scarce.

Outside Shading for a Conservatory.—My landlord having just built me a lean-to, with a south-west aspect, but without any heating apparatus, I wish to put up a roller-blind, which will answer the double purpose of preventing scorching in summer and keeping out frost in winter. The house is twenty-four by twelve, and seven feet higher at the back than in front. What is the best material to get for the blind?—TYRO.—[We fear your landlord has only provided you a source of trouble, for if you expect to preserve tender plants without some special means of heating the house you will most certainly fail. A blind that would be a protection in winter would be a source of darkness in summer, and therefore unsuitable. The cheapest and most satisfactory thing that you can do will be to provide some means of heating the house, or otherwise devote it to Roses and other plants, such as will not be injured by frost. With Ferns, half-hardy American plants, Roses, and some choice half-hardy herbaceous things, you may make it very interesting.]

Mildewed Roses.—Two months back I had a small house made against a south wall, which was nearly covered by a Marechal Niel. I have several roses in pots and two planted out. They all started growing, are covered with buds, and until last week looked well; they were then attacked by mildew. I applied flour of sulphur; but it has not stopped it. The ground is high and well drained, and there is no soil at the back of the wall. I syringe about twice a week, admit plenty of air, and occasionally give weak manure water. The house cannot be heated. Can you give me any advice as to what I had better do?—AMATEUR.—[Mr. George Paul, to whom your question has been submitted, says:—Withhold nearly all water; the syringing will supply almost sufficient moisture to the root, at least until the buds are swollen and commencing to change colour; as no pipes are in the house, and consequently no sulphurous steam can be produced, the foliage had better be dusted frequently and freely with powdered sulphur, washing it off the next morning with the syringe. The treatment seems correct, but on cold or windy days give air more sparingly, and in such a way as to avoid draughts.]

THE ARBORETUM.

JEFFREY'S BRITISH COLUMBIAN CONIFERS.

(Continued from page 464.)

SOILS FOR CONIFERS.

PICEAS generally succeed best when growing in deep heavy rich loam, or loam naturally mixed with peat, particularly many of the soft and blunt-leaved species, as *Picea nobilis*, *P. amabilis*, &c. While the generality of the prickly-leaved species, such as *Picea cephalonica*, *P. Pinsapo*, and the other allied species recently introduced, appear to be totally different plants when seen growing in a limestone district. At Craigro, in Forfarshire, *P. cephalonica* and *P. Pinsapo* far eclipse all other specimens planted in other places at the same time, except in those localities where limestone exists, a stratum on which they are accustomed to grow in their native country. I have no hesitation in saying that *Picea numidica*, *P. bifida*, and *P. Cilicica* will grow much better on limestone than they now do in the loamy soils so well adapted for many other species of *Picea*. The finest tree of *Abies Menziesii* to be seen in Britain is the one in the Keillor Moor Pinetum in Perthshire. This tree is growing in deep peat soil, and, judging from its vigour, one would almost fancy it to be a distinct species from the plants of *A. Menziesii* generally seen growing under ordinary circumstances. The *Picea Pichta* is another tree totally changed in appearance when growing in soil of a peaty nature, where it assumes a remarkably pyramidal habit, while in ordinary loamy soils it is more or less bushy. The subject of soils is so very important that every scrap of information we can obtain will be serviceable to parties wishing to plant on the soils they possess, such kinds of trees as have already been proved to grow freely on similar soils. *Picea nobilis*, as I have said, is one of the trees which luxuriates in soil naturally composed of peat and loam. Although I have often tried the artificial mixing of peat and loam for this tree, also for several other species of conifers, they never assume the luxuriant appearance of those growing in the natural mixture.

MANURE FOR CONIFERS.

It may not be out of place to state, that many conifers, indeed I may say all, luxuriate in loam mixed with very old decayed horse manure. It throws a vigour into them almost equivalent to the natural peaty mixture. This is particularly noticeable with all the blunt-leaved Piceas, particularly the *Picea nobilis*, *P. amabilis*, *P. Lowii*, *P. magnifica*, &c. Many are much averse to the use of manures for conifers, and many are the questions put to me regarding the use of such stimulants. In a rough or fresh condition manure is by no means satisfactory, but totally different in a decomposed state, as is generally procured from old hot beds. While using manure it is necessary that it should be thoroughly mixed with loam before putting it round the roots of newly transplanted conifers; and for established ones, such as *Arancarias*, &c., the opening of a trench round the plants and filling it up with the mixture alluded to, will soon tell on the branches of the trees. I have never found guano or liquid manure equal to old decomposed horse manure, as a stimulant for conifers.

THE CYPRESS TRIBE.

Of this several interesting species were received from Jeffrey, and several names have to be corrected. *Libocedrus decurrens*, which may be ranked amongst his best introductions, was sent out under the name of *Thuja Craigana*, and I find it is still cultivated under that name. This *Libocedrus* grows to the height of forty feet, with a stem nine feet in circumference. It must be grown in deep rich loam, in a somewhat sheltered situation, as it is very liable to be destroyed when fully exposed to the wind. It propagates freely by cuttings, and makes excellent plants, but it takes time to do so. Instead of forming roots at once, a rounded ball, about the size of a hazel-nut, is often produced at the extremity. If the cuttings are lifted, and portions of the outer skin of this small brown swelling cut off, roots will soon be given out from the edges of the cut extremities. Without this manipulation the cuttings will lie a long time in the ground in a fresh condition with no appearance of growing. This *Libocedrus* is likely to form a noble plant for the warmer districts of England and Ireland. One standing on the lawn in the Worcester nursery is eighteen feet high, with a stem two feet six inches in circumference at the base. The tallest specimen in the Edinburgh garden is fourteen feet, and the habit is quite that of the Irish yew. Grafted plants were sent from the Continent some years ago, and named *L. decurrens divaricata*. When first received, the branches had a peculiar diverging aspect, probably owing to their free-growing nature, on account of being grafted. Such plants are now quite as upright as any of the original seedlings. A *Thuja* raised from seed, and which has turned out to be the true *T. gigantea*, is another acquisition, first sent home by Jeffrey. When raised, the seedlings had much the appearance of *Thuja occidentalis*, and little attention for a time was paid to it. After a few years it began to assume an upright habit, and has gone on rapidly increasing. The largest specimen is twenty feet high, and eighteen feet in circumference of branches. Numerous plants introduced by other collectors, under the name of *Thuja Lobbii*, *T. Menziesii*, and *T. Craigana*, appear only to be varieties of *T. gigantea*, and although not as yet taking the rapid upright habit of this tree, they are very closely allied to it. This tall species of *Thuja* is perfectly hardy, and is readily increased by cuttings. From its peculiar upright habit, and standing the wind well, it will form a great acquisition to pleasure grounds; and as the timber of it is said to be good in quality, it may some day or other be grown for forest purposes. Although the habit of the plant is that of an upright-growing shrub, it will lose its lower branches, like the ordinary evergreen conifers, when growing close together. Another *Thuja* was raised from Jeffrey's seeds by Messrs. Backhouse, of York. This plant has a very distinct habit of growth, resembling in some respects the *Thuja gigantea*. It pushes up a strong loose branching leader, having all the side branches more or less pendent, the points of all turning upwards, and each of the lower ones assuming the appearance of a leader. This variety was sent out by Messrs. Backhouse under the name of *Thuja Craigana*, as it happened to come up in the pot in which the *Libocedrus decurrens* seed (then called *T. Craigana*) was sown. This peculiar variety is now extensively cultivated under the name of *T. Craigana*. It is readily propagated by cuttings, and is easily distinguished in habit from all other species of *Thuja*. The largest plant growing here is fifteen feet high. A most interesting tree of this section I must not omit to record, is the *Cupressus Lawsoniana*. Although Jeffrey had not the credit of introducing the seed of this beautiful tree, he certainly deserves the credit of discovering it. I have stated that after the death of Jeffrey, all his effects that could be procured were sent home, including a large number of dried plants, amongst which were found several sheets of carefully dried specimens of what is now called *Cupressus Lawsoniana*, in excellent preservation. No seeds, however, were found. The specimens must have been collected fully

a twelvemonth before any seeds of the plant were sent to this country. The first importation of the seeds was in the autumn of 1855, and the plant was then named *Cupressus Lawsoniana*.

PINUSES.

Of the genus *Pinus*, Jeffrey was successful in introducing some new and interesting species. Perhaps the finest of all is *Pinus Jeffreyi*, which is stated to grow to the height of 150 feet, with stems twelve feet in circumference. In this country its habit of growth approaches that of *P. Laricio*, and, like it, the whorls of branches are proportionate to the age of the tree. This tree has a peculiar whitish green colour, and has been very extensively introduced into many nursery establishments, and ought to be planted in forest groups by some of our enthusiastic arboricultural proprietors. The largest specimen in the Botanic Garden is now nineteen feet high. It was introduced in 1853, and has seventeen whorls or branches. *P. Balfouriana* is another new and remarkable growing pine. In its native condition, it grows to the height of eighty feet with a stem nine feet in circumference. In this part of the country it seems inclined to be dwarf. It retains a leader, and regular side branches. The leaves are arranged round the branches exactly like bottle brushes. Although introduced during 1852, the tree in the garden here, notwithstanding its symmetrical shape, is scarcely three feet in height. In peaty soil, and in a more southern climate, I have no hesitation in saying that the result would be different. Very few seedlings must have been raised, as few of the original plants are to be met with. Grafted ones only are to be had in nursery establishments. *Pinus flexilis* is another of Jeffrey's introductions. It is a diminutive tree, growing in its native habitat to the height of forty feet, with stems three feet in circumference. Being a mountain pine, it is inclined in this country to assume more the appearance of a large shrub than a tree. Like *P. Balfouriana*, it is very rare in collections, and, like it, few seeds must have been raised. Grafted plants under this name are to be had in nursery establishments, some of them however totally different from the original *P. flexilis* sent home by Jeffrey. *Pinus Murrayana* is another of Jeffrey's introductions. Of this tree the seeds must have been mixed, as two distinct varieties came up—the one having an upright growth and of a beautiful light green colour; the other of a scrubby habit and dark green, very different from what Jeffrey describes it, viz., a conical growing tree. One of the finest specimens of the upright variety that I have seen, is growing at Borthwick Hall, near Edinburgh, the seat of Charles Lawson, Esq. Jeffrey also sent home seeds which he called *Pinus tuberculata*. This is a very interesting tree, having a large globular head of a light green colour, and very hardy. In this respect it is different from the plants previously cultivated under that name, and originally sent out by a London nurseryman. These plants had more of a tree growth, with thicker leaves of a dark green colour. The latter were entirely destroyed here during the winter of 1860-61, while Jeffrey's stood uninjured on the same piece of ground. Besides the foregoing species of *Pinus*, Jeffrey also sent home seeds and cones of several kinds previously introduced, such as *P. Lambertiana*, *P. monticola*, *P. Benthamiana*, *P. ponderosa*, *P. Sabiniana*, and *P. Coulteri*.

Jeffrey's seeds were divided into 281 lots, and were sent all over Europe, and even to America. Other species of conifers than those here noticed may have been raised, the owners probably imagining that they must have been grown by other parties as well as themselves.

JAMES McNAB.

THE DWARF ALMOND.

(*AMYGDALUS NANA*.)

Nobody who knows *Amygdalus nana* will contest the fact that it is one of the most beautiful of early-flowering shrubs. How comes it, then, that it is not to be found in every garden? The fact is the more surprising as it thrives in almost any soil and situation, and that its small size permits it to find a place anywhere—in the smallest garden as well as in the most extensive. It forms a bush, which in March and April is covered with flowers, which vary in colour from pale pink to a deep red. Sometimes, but rarely, there springs from seed a variety bearing white flowers. Of this we have sown the stones, but they have always reproduced a plant with red flowers. Others may, however, have had a different result. In *Amygdalus nana* the colour is deeper than in any of the other sorts; but its chief merit consists in the long time in which it continues in flower. It is a healthy, strong shrub, with medium-sized deep red flowers. It is increased by means of seeds or suckers. The former should be sown in the autumn in which they are gathered, and the young plants will appear the following spring; in the autumn, such plants as are strong enough can be put in their places. If this cannot be done before winter, it should be done in spring, before the plant commences to shoot up. Varieties which

it may be desirable to keep, ought to be multiplied by dividing the root, by separating the suckers, or by means of root buds. It is not only as an ornamental plant for private gardens that we recommend the cultivation of this dwarf almond, but as a market plant in pots.

There are no varieties of *Amygdalus nana* that have double flowers, red and white, as is mentioned in some books. Such guides are apt to mislead, because not only have we never seen the varieties of the dwarf almond with double flowers, but all our colleagues to whom we have spoken have affirmed that they have never existed except on paper.—*Revue Horticole*.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE HEART-LEAVED HAWTHORN (*CRATÆGUS CORDATA*).

This forms a handsome, vigorous, close-headed, small tree, from ten to twenty feet high, which flowers very late in the season, and retains the greater portion of its fine dark glossy leaves, and numerous clusters of small coral-like fruit on it till mid-winter, and in mild seasons may be termed sub-evergreen. It is a native of North America, where it is found plentifully in hedges and rocky places, from Canada to Virginia. It was first introduced in 1738.

The leaves are alternate, ovate pointed, cordate at the base, irregularly lobed, quite smooth, of a deep shining green above, but pale beneath, and on long slender footstalks, and, according to the age and vigour of the plant, from one and a



Group of Leaves of *Cratægus cordata*.—Natural size, 3 to 3½ inches, including Footstalk.

half to three and a half inches long, and from one to two and a half inches broad, with the lobes deeply angled, largest towards the base, and irregularly and coarsely toothed along the margins. The branches are slender, deep brown, and sometimes furnished with a few straight spines, frequently more than an inch in length. The flowers are small, white, and produced in great abundance in the end of May and beginning of June, in loose, terminal, many-flowered corymbs; fruit, very small, bright red, and with two or more hard bony seeds in each.

This is a very distinct and desirable kind, which is well suited for small gardens, or for planting singly on the lawn, on account of its retaining its leaves and fruit until very late in the season.

It has the following synonyms:—*Cratægus populifolia* and *acerifolia*.

THE BLACK CYTISUS (*CYTISUS NIGRICANS*).

This forms a small upright deciduous shrub, from three to four feet high, in any good garden soil, and produces flowers in great profusion in June and July, and sometimes again in the autumn; but when grafted standard high on the *Laburnum*, it forms an elegant, compact, round head, of which nothing of its kind can be more beautiful in summer, when loaded with its long spikes of flowers, which are so brilliant that the eye is at once arrested by them. It is a native of

Bohemia and Piedmont; it is perfectly hardy, and is easily increased either from seed, or by grafting on the common *Laburnum*. It was first introduced in 1730. The leaves are trifoliate, stalked, and deciduous, with the leaflets elliptic, and clothed with closely pressed soft hairs beneath. The branches are round, slender, twiggy, and downy. The flowers are pea-shaped, bright golden yellow, and produced in elongated, terminal, erect, simple spikes or racemes, containing from twenty to thirty flowers each. The calyx is downy and bractless; the pods are many-seeded, downy, and black when ripe. The specific name "*nigricans*" was given to this kind on account of its turning black in drying.

NOTES ON HARDY TREES AND SHRUBS.

Trees for Churchyards.—What are the best trees for planting in a churchyard? I do not wish the most desirable kinds as regards habit, but those that strike their roots downwards rather than horizontally.—F. G. H.—[Plant planes, oaks, chestnuts (both kinds), sycamores, and, to some extent, limes. The best deciduous trees are planes and chestnuts, and the best evergreens are yew and holly.]

The Largest Araucarias in the British Isles.—Can you kindly state where I can find the finest specimens of *Araucaria* in Britain?—L. U.—[The two finest we have seen are those at Woodstock, in Ireland, and at Dropmore. The Dropmore specimen was on January 23, 1871, fifty-one feet high, and five feet ten inches round at three feet from the ground, the spread of the branches being twenty-eight feet in diameter. It is taller than the Woodstock tree, but is not so large in the bole.]

Large Copper Beeches.—I have two copper beeches I am inclined to be proud of. One is 50 feet 7 inches high, 10 feet 1 inch in girth at 3 feet from the ground, and 243 feet in circumference of branches. The other is a little taller, but not so thick in the stem. The largest tree I believe to be fully 200 years old. I should be glad if any of your numerous correspondents would state if they know of any larger specimens.—L.

Prairie Planting.—Senator Hitchcock's Bill "to encourage the growth of timber on the Western Prairies," proposes a gift of a quarter-section of the public lands to any person "who shall plant, protect, and keep in a healthy, growing condition, for five years," not less than 120 acres of timber; provided that no more than one quarter in any section shall be so acquired. Moreover, any person taking a quarter-section under the Homestead Act shall obtain a patent therefore (without waiting five years for it) on due proof that he has planted not less than ten acres with timber, and has had the same growing not less than two years.

The Magnolia Holly (*Ilex latifolia*).—We have just seen a specimen of this at Mr. Coombe's, Cobham Park, which, a little distance off, looked exactly like one of the pyramidal specimens of *Magnolia grandiflora* that one sees in the south-west of France, and occasionally in choice gardens about Paris. It is one of the handsomest evergreens we have ever seen, and as unlike the common type of holly as any evergreen can be—the leaves being from four and a half to six inches long, not measuring the stalk, and from two to three inches broad. The specimen is one of many fine trees planted at Cobham Park by Mr. Stevenson, the able gardener there.

GERALD MASSEY ON "SPRING."

WHEN Spring herself is here, in vain we look
To find her likeness pictured in a Book!

For Memory can only catch a gleam
Of all the glory trembling through her dream,
As vainly, year by year, the Poets try
To arrest the Eternal as it glimpses by
In evanescent visibility.

We feel so much more than we ever see:
See so much more than we can sing or say.
Spring comes, with all her young things all at play,
And breathes her freshness through this life of mine,
Freshness divinely fresh from the Divine!

The spirit of life ascends in flame and flush,
Thro' every blade and blossom, briar and bush.
As winter fires die out, so fades all thought
Of Spring before her miracle newly wrought.

The little slip of Spring that wavers by
In smiling shape of the first Butterfly—
The earliest Snowdrop, youngest Violet,
Wear all the wonder of the first Spring yet.
The Cuckoo comes each year with spell to start
The blithe glad leap of Childhood in the heart:
As fresh to-day the springing of the Lark
As when he gusht up heavenward from the Ark.
Wood-hyacinths quivering in a breath of blue,
The night-bird's old sweet song, are always new.
Springs fleet and fade away, but Spring dies never!
The rainbows pass; the Rainbow lives for ever.

—Good Words.

NATURE'S TREE-GROUPING.



DRANKS of nature are nearly always pleasing, and even symmetrical, in the highest sense of the term; but the pranks of art, except in the rare instance of being the aberrations of real genius, as in the case of Turner, for instance, are nearly always detestable failures. But it is more especially in horticulture, whether landscape gardening or flower gardening, that the eccentricities of so-called art become most offensive to the judgment of such as have trained their taste upon the teachings, ever new and ever charming, of the varying lines and masses and endless combinations of nature—lines and forms which, where least expected, are continually greeting the cultured eye with some kind of pleasant surprise, forming accidental juxtapositions of objects, such as the premeditated arrangements of art, can never match in the grace and freshness of the effect—for art is continually

but his knows how to seize, and translate into art, with such unerring truthfulness.

The little sketch that has suggested these remarks is but a mere fragment—an utterly insignificant scrap—a stray shred of beauty from an ordinary lane and ditch, and yet it would be difficult, even in the most carefully planted “grounds,” where art has done its utmost, and expense and skill been freely lavished, to find a little *morceau* more carelessly charming than this half-dozen yards of a deep-rutted lane; a spot seldom, if ever, seen except by the unappreciating eyes of the waggoner or ploughman, wending their way to the long day’s drudgery, without a thought about the grouping of the trees before them—or, perhaps, without even noticing the glorious carols of the lark overhead, who sings to them unheard.

Grouping in gardens is almost entirely neglected. Although the writer lives in the midst of gardens, he could not find a group so pretty as this roadside one; and, of course, this does not arise from lack of material, but simply from want of taste and knowledge. We have ample materials in our gardens for forming groups in infinite variety and of the most charming character.

H. N. H.



Tree Grouping—A Sketch from Nature.

repeating itself; nature never. In the accompanying sketch, three elms, nearly in a row, two of them rising from a dark and tufty thicket in the corner of a field, and one from a sparse tangle of low brushwood outside, form, by some mysterious sleight-of-hand of nature, a ready-made picture—one for the earnest student of true effect to study and to admire; and then, as though it were done expressly for the purpose of completing the picturesque combination of forms and lines, come three pollarded willows, each leaning its gnarled and knotted trunk exactly the right way to balance and give variety to nature’s improvised picture—a picture which is what in art would be called a complete composition, though it consists but of two self-sown elms in the hedge at the waste corner of a field, another on a low ridge at the side of a cart track, and three pollarded willows on the rough bank of a shallow ditch. This little picture of nature’s improvisation is one for even a Birket Forster to study—such a one as that truest delineator of English landscapes must have often lingered over in delicious pencil-pondering, while teaching his hand its fascinating power to detect the secrets of all the quiet sweetness and shaded beauty of our country lanes—which no hand

The India-rubber Supply.—The fear lest the yield of caoutchouc by the Brazilian forests should fail, consequent upon the destruction of the rubber-trees in the process of collecting the juice; and the neglect of the natives to plant others, is to a certain extent confirmed by our Consul at Para, who, writing on the condition of the industrial classes in Brazil, describes the collecting of rubber as one of the principal occupations of the natives. “An expert and steady Tapuzo, the class chiefly employed in extracting rubber, will collect about eight pounds English per day, which on an average is worth eight *neilreis*, or about 13s. 4d., *i.e.*, 1s. 8d. per pound. In a good rubber district men are known to extract even an ‘*andba*’ of rubber, or thirty-two pounds English per day; but about eight pounds is the average collection per man. The method of extracting the milk from the rubber-tree is primitive, and still more primitive and rude is the manner of smoking or curing the rubber milk, over smoke issuing from a funnel, under which is fixed an oily nut (fruits of *Attalea* and *Cocos*). Already the more accessible rubber districts are becoming very much exhausted, and give a much less yield than in former years, yet the rubber-bearing country is so vast that the constantly newly-discovered sources more than supply the deficiency occasioned by the exhaustion of the old. The people are as yet unimbuéd with the necessity of planting the rubber-tree or caring for its growth.”

THE PROPAGATOR.

ON PURE HYBRIDIZATION, OR CROSSING DISTINCT SPECIES OF PLANTS.

BY ISAAC ANDERSON-HENRY, ESQ., F.L.S.

(Continued from page 481.)

APPEARANCES IF THE CROSS HAS SUCCEEDED.

We shall suppose the cross now performed. Your next anxiety will naturally be to find out whether it has taken. Almost all experimenters have noticed that soon—I would say from six to ten days—an alteration is observed on the stigma and style. You will find the viscid matter on the former dried up, while the latter has begun to shrivel. You will naturally conclude that it is all right, and that the fertilizing pollen has now passed down into the ovary, and in some cases you may be right. But these appearances are deceptive, especially if you find the style maintain an erect position. And singularly, as I now write, I find, on glancing at the *Gardeners' Chronicle* of the 19th October, 1867, that this state of matters had been observed last summer by the learned editor of that publication and described in his leading article of that day. He there observes, "We have ourselves, in following some experiments on cross-breeding this season, noticed that the stigma becomes changed—withered, almost immediately after contact with the pollen, even if no perfect seeds be produced." Now that gentleman is quite right; but I did not note the withering effect to be just so immediate as he had observed it, though it might have been so in the *Epilobium* tribe, to which his experiments refer. Another effect I particularly noted last summer was that, in attempting to cross an Indian azalea with a rhododendron (which, however, in that instance failed), not only did the stigma and style decay, but the divisions of the calyx took on a purplish tint, and a honeyed secretion continued long to exude from the disc. Another still more misleading condition often arises, as is noticed in the same leading article of the *Chronicle*: "The ovary will swell, the fruit will set, in some cases without any contact with the pollen at all, though of course no embryo is produced." Wichura has noticed the like result, and the following degrees of failure noted by him have so often occurred in my own experience, that I cannot do better than cite them in his own words, from the Rev. Mr. Berkeley's translation already alluded to, which I only alter according to my own experience:—1st. The organs submitted to hybridization (the stigma and style) soon wither, but do not in all cases soon fall off. 2nd. The ovaries swell and ripen, but do not contain a trace of seed. 3rd. The ovaries may seem filled (I say may seem partially filled), having in some instances the small protuberant swelling outside as if seeds were within, and yet no seed be there. 4th. Seeds are present, but small, languid, and incapable of germination. 5th. Seeds apparently perfectly developed which do not germinate. 6th. Seeds which germinate, but the young plants are weak, and wither in a short time, dying off oftentimes after developing the seed-leaves. I have had all these conditions and results amply illustrated; and of the second of these results I had, last summer, mortifying proofs in a muling operation I tried, by fertilizing a flower of the new *Arabis blepharophylla* with my still newer *Draba violacea*. The cross, to all appearance, had taken; the seed-vessel swelled better than the others where no experiment was made, and while the valves of the silicles of these last opened and showed no trace of seed in them, the silicles of the former remained closed, showing by outward development that two seeds were certainly within. But I found on opening the ripe seed vessels that there was no perfect seed in the interior, but only an abortive production. While Wichura's accuracy in the above degrees of failure is consistent with what I have myself had ample experience of, I cannot, from like experience, endorse the views he has formed on some of his successful results. At page 72 of the above article in the *Journal of the Royal Horticultural Society*, Mr. Berkeley, commenting on Wichura's paper, observes:—"Gartner, indeed, supposes that in genera which are rich in species, there are some which have a prepotent influence when hybridizing, so that in some hybrids the type either of the male or female prevails. Amongst the various hybrid willows, though the genus is so rich in species and so prone to hybridizing, Wichura has never seen a prepotent type, and doubts Gartner's statement, especially as he makes it in very qualified terms." Mr. Berkeley very judiciously remarks that it is not very easy to determine, "by examination of types, whether a hybrid is more like the mother or father—the perfect distinction is subject in many cases to great difficulties, since very much depends on the subjective view of the observation; for, in consequence of the frequent intermelting of both characters, the one observer finds in a hybrid the maternal type, while another thinks the paternal type prevalent." By which I regard Mr. Berkeley as very modestly dissenting from

his author. And further on, at page 78 of the same *Journal*, Wichura speaks out still more absolutely. "When both parents," says he, "belong to the same species, we cannot tell what part the male and female parent take respectively in the formation of the progeny. But dissimilar factors are united in hybrids, and an intermediate form is the consequence. The products which arise from reciprocal crossing in plants, unlike those which are formed amongst animals, are perfectly alike." I regret to differ from so great an authority as Wichura, and must venture to demur to the doctrine in more decided terms than Mr. Berkeley does. I have had so many instances of hybrids taking sometimes to one side and sometimes to another—but most frequently to that of the mother—that to those who, like myself, have made experiments with many genera, it would be needless to give instances. The converse is the rarer case—i. e., where the paternal type comes out most marked. Yet I remember one eminent instance of a seedling *Veronica*, from the batch of seedlings from which I obtained *V. Andersonii* (*V. salicifolia*, *V. speciosa*), being so like the male parent *V. speciosa*, that I presented it to a friend in the belief it was purely and simply the latter species; but when it bloomed, it showed, by the longer spike and lighter and brighter colour of the flowers, and by their being a bright crimson instead of very deep purple, which is the colour of the flower of the *V. speciosa*, that the blood of the *V. salicifolia* was there. I can well understand that, as respects the family of willows, from their being so attractive to bees, and from their being naturally so prone to intermix (insomuch that few can tell what is a species and what is a hybrid), Wichura has not much overstated the fact, and that a distinct intermediate form may generally be reckoned on.

I must dissent still more strongly from what Wichura lays down in continuation of the above passage at page 78, as to reciprocal crossings. "The products," he says, "which arise from reciprocal crossing in plants, unlike those which are formed amongst animals, are perfectly alike. It is of no consequence which is the male and which the female parent. It is, therefore, a mathematical necessity that the pollen-cells must have just the same part in the act of generation as the ovules." And, based mainly on this doctrine, he follows up and amplifies it in a series of aphorisms which, he admits, are to be "considered conjectural, and require to be submitted to proof," an admission for which he is to be commended, and all the more if he submitted to the like test the dogma on which they mainly rest. It humbly appears to me that his statement had been suggested from his experience among the *Salices*—of all plants the most mongrel in a state of nature. Now, in all this, Wichura appears to me to imply that if a distinct intermediate may be formed, and is formed, by crossing A on B, so may an exactly similar intermediate be reciprocated by crossing B on A. And M. Naudin, in his experiments among the *Daturas*, enunciates the same belief, and holds "that there is not a sensible difference between reciprocal hybrids of two species." That distinguished observer, like Wichura, seems to have confined his experiments to herbaceous or soft-wooded plants. But, from a long and large experience among both hard and soft wooded plants, I demur, 1st, to the capability of the parents being in all cases made subject to such reciprocity; and, 2nd, to the statement where such reciprocity does hold, that the progeny are perfectly alike, whether A or B supply the pollen.

In my various crossings I have experimented on many hard as well as soft wooded genera—in particular, I would here instance among the former the species of rhododendron. In these I have again and again been baffled to reciprocate a cross which on one side was comparatively easy to be effected. When the lovely and fragrant Rhododendron Edgeworthii first bloomed in this country, all were eager to see its beauty and perfume transfused into dwarfier and harder forms. Some tried the cross by making R. Edgeworthii the female or seed-bearer, others by making it the male. I tried it in both ways, but all my efforts failed where I attempted the cross on the R. Edgeworthii. But while it would not be brought to bear hybrid seed, I had no great difficulty in effecting a cross from its pollen on R. ciliatum, another of Dr. Hooker's beautiful Sikkim species having all the desirable requisites of hardiness, dwarf habit, and free-flowering tendency; and, singularly, just as I had obtained and sent off blooms of this brood to lay before the committee of the Horticultural Society of London, Messrs. Veitch, of Chelsea, anticipated me in having a plant of this identical cross first exhibited before that committee, which is now well-known and generally cultivated under the name of "Rhododendron Princess Alice." Now, neither I nor anyone who ever tried it, so far as I know, ever effected the inverse cross of R. ciliatum on R. Edgeworthii; and if they did, the progeny would long ere now have appeared in nursery catalogues. There is yet one other instance I may notice as an illustration of what I am now contending for. In my former paper I noticed, as an exception to a

rule I had found almost general—viz., that European had great aversion to cross with Asiatic species—that I had, notwithstanding, effected such a hybrid by crossing *R. eleagnoides* (another of Dr. Hooker's acquisitions, a tiny Sikkim species) on the European *R. hirsutum*, and of having sent the survivor of the two plants which came of it to Kew, of which, by the way, Dr. Hooker writes me, that it dwindled away and died after being a few years in their hands; but by no possible means could I invert that cross, or get that same very interesting tiny yellow-flowered species, *R. eleagnoides* (a form of *R. lepidotum*), to submit to a cross from any species whatever.

I shall now advert to the second point which Wichura lays down as a fact—viz., that the progeny of reciprocal crossing, whether it is A on B or B on A, are precisely alike. While my past experience goes with what I observed last summer, it may perhaps suffice to give the latest instance. Having, through the kindness of Dr. Hooker, obtained seeds of a beautiful new Californian *Arabis* (*A. blepharophylla*) with large fine rose-tinted flowers, I felt desirous to infuse that colour into some of the other kinds I possessed. After trying it on several, especially on *A. albidia*, in vain, I at last effected a cross—a reciprocal cross—between it and *A. Soyeri*, a white-flowered species from the Pyrenees, something like *A. albidia*, but with glabrous foliage. Of the cross *A. Soyeri* on *A. blepharophylla* I have raised six plants, the product of two very largely developed seed-pods. These plants are alive and healthy, and promise an improved vigour over either parent. That the cross was sure, I had the best proof, from there being no seeds in the normal pods of the seed-bearer. Of the inverse cross from one weakly seed-pod I raised one plant, which, after maintaining a sickly existence for some two months or so, has died off. But while this last cross was equally certain as the others, like it, the plant had more of the mother than the father in it. In fact, I have oftener found the maternal type most marked in hybrid progeny. I have various crosses effected between distinct species of *rhododendron*, where, while the male manifests his presence, the female type prevails. I have it in *R. Jenkinsi* crossed by *R. Edgeworthii*, *R. caucasicum* by *R. cinnamomeum*, and the hybrid from this latter cross crossed again with *R. Edgeworthii*, and especially the Sikkim species *R. virgatum* crossed with another of my hybrids, *R. ciliatum* by *R. Edgeworthii*—all having more the foliage and the aspect of the mother than the father.

I have another hybrid of the same *R. virgatum*, the female parent crossed, I believe, by *Rhodothamnus chamæcistus*, a tiny procumbent plant of three inches, but all set with flower buds—not, as in the male parent, at the tips of the shoots, but, as in the female, at the axils of the leaves. I have stated my belief that the *Rhodothamnus* is the male parent, but I cannot do so confidently, from the tallies having got into confusion—the specimens being planted out. But as some plants were obtained from that cross, and as this is the smallest, I regard it as likeliest to be the true progeny; and the cross being an extreme one—a mule, in fact, it is open to question. But as I have this season effected still more extreme—certainly more unlikely—crosses in that family, where there could be no miscarriage, you may, I think, take it as true in the meantime. I could overwhelm you with proof. Darwin, at page 333 of the last edition of his "Origin of Species," has observed the above tendency. "When two species," he says, "are crossed, one has sometimes a prepotent power of impressing its likeness on the hybrid; and so I believe it to be with varieties of plants."

Naturalists of the highest note—Gartner, Kolreuter, Naudin, and Wichura—are far from being at one on the subject of variability, as Darwin has shown, especially as relates to crosses, 1st, between species and species; 2nd, between species and varieties; and 3rd, between mongrel offspring. But this is a complex subject, and when such high authorities are not at one, and Darwin admits that he cannot reconcile them, it is manifest that the case is still open to further probation. In dealing with the views of Gartner, to whose testimony he deservedly accords great value (page 331), Darwin says that Gartner, whose strong wish "it was to draw a distinct line between species and varieties, could find very few, and, as it seems to me, quite unimportant, differences between the so-called hybrid offspring of species and the so-called mongrel offspring of varieties. And, on the other hand, they agree most closely in many important respects. The most important distinction is, that in the first generation mongrels are more variable than hybrids; but Gartner admits that hybrids from species which have long been cultivated are often variable in the first generation; and I have myself seen striking instances of this fact. Gartner further admits that hybrids between very closely allied species are more variable than those from very distinct species, and this shows that the difference in the degree of variability graduates away. When mongrels and the more fertile hybrids are propagated for several generations, an extreme amount of variability in their offspring is

notorious; but some few cases, both of hybrids and mongrels, long retaining uniformity of character could be given. The variability, however, in the successive generations of mongrels is, perhaps, greater than in hybrids." So reservedly does Darwin deal with a subject on which the opinions of others could be brought to bear; but as they are not all concurrent, and not unfrequently conflicting (which they may well be from the various subjects experimented on) he has said, with commendable moderation, all that can be said on the subject.

(To be continued.)

RE-GRAFTING PEARS.

THERE has been a good deal of unsettlement in past years in the list of pears regarded as worthy of general cultivation, and some that were highly lauded at first have proved of little value. This may be partly owing to a difference in soil and climate, as a fruit which succeeds well at one place is sometimes worthless at another. A few that gave high promise are found to be liable to mildew and cracking, and they must give place to better varieties. Nearly every man who has now an orchard of pears, would like to change some of his trees for other sorts. Fortunately, the operation of re-grafting is remarkably simple and easy with pear trees, and by the insertion of twenty grafts, more or less, on each tree, properly distributed, a new and perfect bearing head may be obtained in two or three years. Instead, therefore, of digging up and throwing out such trees as do not bear good pears, and leaving undesirable vacancies where they stood, they are readily changed to the very best. The first thing to do, after having secured the grafts, is to prepare the trees for re-grafting, by trimming the branches of most of their fruiting spurs, and cutting out any not wanted where they happen to be too thick. Then cut them off so as to form a regular pyramid, by leaving the bottom ones longest, and gradually tapering to the top. If the branches are small, they may be whip grafted, but usually they will be much too large and will require cleft grafting. We have seen large numbers of dwarf pear trees which were eight or nine years old when worked over, that in three years were as perfect trees and as abundant bearers as those which had not been thus changed. An active grafter will work over twenty or thirty such trees in a day, setting a dozen or twenty grafts on each.—*Cultivator*.

ROOT GRAFTING APPLES.

APPLES may be grafted successfully as follows: Seedlings grown on rich loamy soil, either one or two years old are lifted when there is no frost in autumn, cleaned and stored in sand, in a cellar, and not so damp as to be liable to mildew. The scions should consist of the previous summer's growth. Cut them into four or five inch pieces, each having from four to six good, sound, perfectly formed buds. The lower end of each of these pieces should be cut, as in ordinary grafting, and the roots cut about four inches long. The best piece is the one at the collar. At the upper end of each piece of root make a vertical cut upwards, forming a flat surface into which, from the upper end, cut a slit forming a tongue, which will fit a corresponding slit previously made in the scion. With a little practice, anyone can make the bark of the scion and that of the root on the ends where the flat surfaces are formed fit so closely that the sap of the one can flow into the other and produce the granulation or healing process without failure. The fitting can be done so that the union will be quite strong; but to make the matter doubly sure, the best way is to tie with a string which has been saturated with hot grafting wax. Pears, plums, and cherries, may be grafted in this way, only the root should be left longer, and only the collar cut used. The next important matter is the proper care of the grafts. I have been most successful by packing them upright in a shallow box, say one inch deeper than the grafts are long, after dipping one-half of the roots into a puddle made of clay and fresh cow dung, and filling up with sand, leaving about an inch of the scion above the surface. The boxes of grafts should then be stored in a dark part of the cellar until frost is over and the ground is quite ready to receive them.—*American Farmer*.

MINIATURE BERRY-BEARING AUCUBAS.

A few days since, when visiting the plantations of the *Fleuriste de la Ville de Paris*, amongst many other interesting matters, we observed a method employed by M. Lorry, head propagator of that establishment, for obtaining *Aucubas* laden with fruit in very small pots. This is effected by cutting from strong plants branches bearing berries which have arrived at their full size, and striking them as cuttings. Treated in this way in November and December, and even in January, in about six weeks one can have miniature

plants well rooted, laden with fruit, and apparently several years old. We should not be surprised if this mode of propagation is soon practised on a large scale, and becomes the foundation of a very important branch of commerce.—*Revue Horticole*.

THE ART OF GRAFTING.

(Continued from page 467.)

GRAFTING WITH DETACHED SCIONS.—GENERAL DIRECTIONS.—The stock is a perfect plant, or almost so, for we shall sometimes use a branch cutting or a piece of a root. It is grown either where it is to remain or in the nursery, or else it may be grown in a pot in order to be grafted under glass with the air partially excluded. Perfect stocks are usually grafted where they are intended to remain; sometimes in the case of graftings made during the repose of the sap, the stocks are taken up in order to graft them, and laid in a trench or under a shed. The scion is a branch or part of a branch, bearing at least one eye, and from two to six inches in length. The shorter scions are used in the case of kinds with closely set buds or expensive varieties. In a cold climate they must be of a greater length. The scions may be taken from the parent plant, when the sap has gone to rest, for spring graftings; they should be kept then in the shade of a building or tree, with the ends buried in fine sand. If they are not required to be used until the sap begins to flow they should be kept in a cool cellar entirely covered with sand. Evergreen scions should not be detached from the parent tree until immediately before they are grafted, and the leaves should be left on them. Deciduous kinds grafted in summer should be cut from the parent within twenty-four hours before grafting, and their leaves at once cut off. It will matter little to the success of the operation whether the upper bud of the scion be a terminal or a lateral one. A shoot if too long may be shortened, and, if required, may furnish several scions. In order to facilitate the joining and cohesion of the two parts, the scion is more or less cut at the base in a sloping direction or splice cut. It should also be so placed on the stock that a bud of the latter may be on a level with the graft, either opposite to it or on one side, in order to draw the sap, and thereby promote the cohesion of the parts. The different sections of branch grafting are side-grafting, crown-grafting, grafting *de precision*, cleft-grafting, English method, and mixed grafting.

SECTION I.

SIDE-GRAFTING.—The term side-grafting might be applied to a vast number of processes of grafting in which the head of the stock is not cut away. But we have limited the term to those cases in which the scion is inserted into the side of the stem, or on a branch of the stock, either between the bark and the alburnum, or into the alburnum itself, the bark in no case being removed.

SIDE-GRAFTING UNDER THE BARK.—GENERAL DIRECTIONS.—When it is desired to graft a branch on the side of a stem and under the bark, the stock must be in a state of vegetation, and the operation is performed either in April or May, at the flow of the sap, when it is said to be done with a shooting bud; or from July to September, when it is termed a graft with a dormant bud. In the first case (with a shooting bud), we use scions of the previous year, which have been laid in at the north side of a wall or in a cellar, to preserve their vitality, and the sap being in motion at the time they are used, the graft will develop itself in the course of the same year. In the second case (with a dormant bud), in which the graft will not develop itself until the year following, scions of the current year are used, cut on the day of grafting. If they are deciduous kinds, the leaves are cut off. We have said before, that scions of evergreens should not be cut till the last moment, and are not to be stripped of their leaves. In both of these methods the tops of branches with a terminal bud form excellent scions. We know two systems of side-grafting under the bark, one in which the scion is a piece of a branch pure and simple; in the other, it is a branch cut from the parent, with a heel or strip attached to the base.—*Charles Ballet's "l'Art de Greffer."*

(To be continued.)

THE FRUIT GARDEN.

GLASS AND IRON COPING FOR FRUIT WALLS.

I NEVER before registered such a day as Sunday last, April 21st, with the pears, plums, cherries, gooseberries, currants, and raspberries in full flower, and the snow quite covering the flowers and foliage for a few hours. The morning commenced dull, with a frosty north-east breeze, and soft snow began falling at nine a.m., which continued for four hours, covering the ground to the depth of an inch. Heavy rain afterwards set in, and when it cleared up in the afternoon, the melted snow and rain registered one inch and twenty-one parts by the rain gauge. The effect of such weather on the blossoms of fruit trees must be very injurious, and shows that in our fickle climate means of protection must be taken by all gardeners so as to have a supply of wall fruit every year. The glass and iron coping to fruit walls, of which you gave illustrations last week (p. 476), seems to me to be an excellent mode of answering such a purpose, and with the coping converted into a regular fruit house, it must be still more effectual. A south wall covered with such a coping would be just the situation in which to set good crops of apricots; and then, by covering them with the glass lights in the summer, fruit could be had of the finest flavour and size. The apricot, it is well known, will not bear forcing much, or set its fruit well, unless it has plenty of dry spring air wafting amongst its blossoms in February and March. The permanent glass erection manufactured by the same company, named their expanding fruit house, is evidently another excellent plan for preserving the most choice and valuable of our wall fruit. Having had the management of a similar erection for some time, I can speak from experience of the many uses to which such cases can be put, such as growing salads in winter and hardening off bedding plants in the spring, as well as growing the finest peaches, nectarines, plums, and cherries in the summer.

Welbeck, Worksop, Notts.

WILLIAM TILLERY.

ROYAL HORTICULTURAL SOCIETY'S FRUIT COMMITTEE.

WHEN this was first formed, I, among others, thought we should gain some practical information from it; but, except to the few who have opportunities of attending its meetings, it is a blank. I remember committees being formed all over the country for the purpose of naming fruits and obtaining general information respecting them, but now we never hear a word about them, a fact which leads one to suppose that they have been broken up. I remember a certain worthy doctor at Turnham Green once telling me that science and £. s. d. would never agree, but that practice and £. s. d. would work well together. The latter, therefore, being the order of the day, I say practical information is the sort wanted. Now, for me to foreshadow anything like a comprehensive plan by which this object might be attained, would be assuming more than I have a right to do; nevertheless I may perhaps be allowed to throw out a few hints for the consideration of the fruit committee. What we cultivators as a class want to know is this, What kinds of fruit do best, and what sorts are unsatisfactory, in different localities? This surely might be got at by the Society instructing its pomological director to make a tour (but not by rail) throughout the country in different directions, and publishing the result. For example, Flemish Beauty Pear is really good at Chiswick, while at Arundel it is perfectly useless; on the other hand, Beurré d'Arenberg is bad at Chiswick, but first-class at Arundel. At Frogmore, Knight's Monarch is perfection itself, but at Blackmore, Essex, though in the best soil I ever put a spade in, it is simply useless. At Thoresby, in Nottinghamshire, Winter Nelis does well, while here it refuses to grow larger than a walnut, and is quite useless in flavour. At York, Swan's Egg is very fine, while in the south of England it is bad. The same holds good with Apples and other fruits. I may be told that, as gardeners, we ought to know all about these matters. So we do in our own localities; but we are such a migrating race that to day we are here, while in a month we may be one hundred miles away, and be called upon at once by our new employer to replant or make new fruit gardens—a critical matter when we are strange to the locality. If the information was given the necessity for which I have so imperfectly tried to point out, we should be in a better position to fulfil such a duty as that just alluded to. Much might be done in the matter by gardeners themselves, if we could only persuade them to state their experiences in reference to the fruits they find to succeed best; but so many say, "I cannot write"; to such let me say, Fear not, give the Editor of THE GARDEN your ideas, and leave the rest to him.

R. GILBERT, *Burghley*.

ASPECTS OF VEGETATION.

MADAGASCAR ORCHIDS.

Our gardens are indebted to the Rev. Wm. Ellis, of Hoddesdon, for two fine kinds of *Angræcum*, viz., *A. superbum*, a fine variety of *A. eburneum*, bearing blooms of large size, and of ivory whiteness; and *A. sesquipedale*, a wonderful plant, certainly one of the finest of its class. The way in which these and some other orchids grow in Madagascar is thus described by Mr. Ellis:—

"Orchids were abundant, and often occupied positions in which the growers of these plants in England would little expect to find them, but in which they gave an indescribable singularity and charm to the landscape. The limodorums were numerous in parts of the road, and formed quite a ball of interlaced roots at the base of the bulbs. A small species, resembling in habit and growth the *Camarotis purpurea*, but quite unknown to me, and bearing a vast profusion of white and sulphur tinted flowers, often enlivened the sides of the road along which we passed. But the *angræcums*, both *A. superbum* and *A. sesquipedale* were the most abundant and beautiful. I noticed that they grew most plentifully on trees of thinnest foliage, and that the *A. sesquipedale* was seldom, if ever, seen on the ground, but grew high up amongst the branches, often throwing out long straggling stems terminating in a few small, and often apparently shrivelled, leaves. The roots also partook of the same habit. They were seldom branched or spreading, but long, tough, and single, sometimes running down the branch or trunk of a tree, between the fissures in the rough bark, to the length of twelve or fifteen feet; and so tough and tenacious that it required considerable force to detach or break them. Many of these plants were in flower; and, notwithstanding the small, shrivelled appearance of the leaves, the flowers were large, and the yellow colour strongly marked. On more than one occasion I saw a splendid *Angræcum sesquipedale* growing on the trunk of a decaying or fallen tree, as shown in the accompanying engraving, and sending

its tough roots down the trunk to the moist parts of the vegetation on the ground. I found one decayed tree lying on the ground almost overgrown with grass and ferns, on the rotten trunk of which the *A. sesquipedale* was growing most luxuriantly. The roots which had penetrated the soft trunk of this dead tree were white and fleshy, while the leaves were longer and comparatively soft and green. There were neither flowers nor flower-stalks on any of the plants growing in the rich vegetable mould furnished by this old dead tree.

"The habits of the *superbum* were quite different. Of these the fleshy roots formed a sort of network at the base of the bulb. During the journey I occasionally noticed both kinds growing not only on the branches of living trees, but very often high up on the bare barked trunks of the dead trees. Sometimes in the angle formed by the junction of an arm with the trunk of a large naked tree, apparently without a fragment of bark adhering to the trunk, a bunch of moss, or a cluster of orchids, or both mingled together, would be growing apparently with great vigour, and often in full flower. More than one tall bare trunk, twelve or eighteen inches in diameter, and thirty feet high, stood surmounted, or surrounded near its summit, by a cluster of *angræcums*, with their long, sword-shaped, fleshy leaves; or, what was more beautiful still, a fine specimen of some species of birds-nest fern. The contrast between the white, shining, barkless trunk, and these verdant clusters of plants on the top, was sometimes very striking; especially as the orchids were often in flower, and by their growth altogether suggested the idea that by the decay of their own roots a receptacle was formed for the moisture or the rain by which the plant was nourished. This combination of life and death, growth

and decay, presented one of the most singular aspects of nature which my journey afforded."

In some parts of Madagascar numbers of Orchids are to be found growing luxuriantly in most picturesque positions.

We are indebted to Mr. Ellis's interesting work, "*Madagascar Revisited*," for our excellent illustration of tropical vegetation.



Strichnos Tree, with Orchids (*Angræcum superbum*) growing on the Trunk and Branches.
Sago Tree (*Cycas circinalis*) in the distance.

SOMERLEYTON GARDENS, SUFFOLK.

(Continued from page 490.)

LET us advert once more to the glasshouses at this fine place. Their elegance as regards construction will be made apparent by our illustrations, and it will be seen that they are amply ornamented with statuary. Amongst the conservatory corridors, of which there are several, the one we have selected for illustration is perhaps the most striking. It is a hundred feet long, and of proportionate height and width, terminating with a noble statue, of which we have given a separate illustration somewhat magnified. Grand and costly statuary, indeed, forms a conspicuous feature in the embellishment of this princely establishment; for, look where you may, your eyes are sure to rest on some magnificent work of art of this kind; nor is this the case in the conservatories only, for in the flower gardens, pleasure grounds, and, in fact, everywhere in the immediate vicinity of the mansion, statues abound. An elegant drapery of climbing plants, it will be seen, decorates the pillars, trellises, and arches of the corridors in such a natural and enchanting way as to set their beauties off to excellent advantage. All the climbers here are grown in borders, where their roots are allowed to ramble comparatively unrestrained, a plan greatly superior to that of confining them in pots. Vases, some sixty or so in number, tastefully filled with suitable plants, also give additional charms to this structure. The seats which line the side of the corridor, as seen in the illustration, may be either used as resting spots or as stands for pots or vases.

The Palm House is entered through a noble archway, in front of which is a magnificent marble statue of "Hymen," by Byström. Behind this fine piece of sculpture will be seen the tall and graceful forms of *Dracænas* and Palms, together with other types of a noble and luxuriant vegetation. The Palms are clothed with a fine and healthy foliage, and even those whose pots are raised some feet above the ground are well furnished with leaves.

The kitchen garden is devoted solely to the production of vegetables and herbs, with the exception of a herbaceous border along both sides of the centre walk. It contains no fruit trees, for which provision is made elsewhere. In size it is a little over an acre, and is surrounded on all sides by high brick walls. The whole of the south aspect of the wall on the south side of the garden is covered with glass, under which peaches and nectarines are grown. This house is crossed in the centre by a walk which runs through it at that point into the kitchen garden. Its front has a height of six or seven feet, and has a wide trellis inside, on which the trees are trained; the back is also covered with fruit trees. The west side of the east wall is covered with lean-to houses, in which vines and figs are grown to perfection. The south side of the north wall is also covered by lean-to houses, which, instead of being

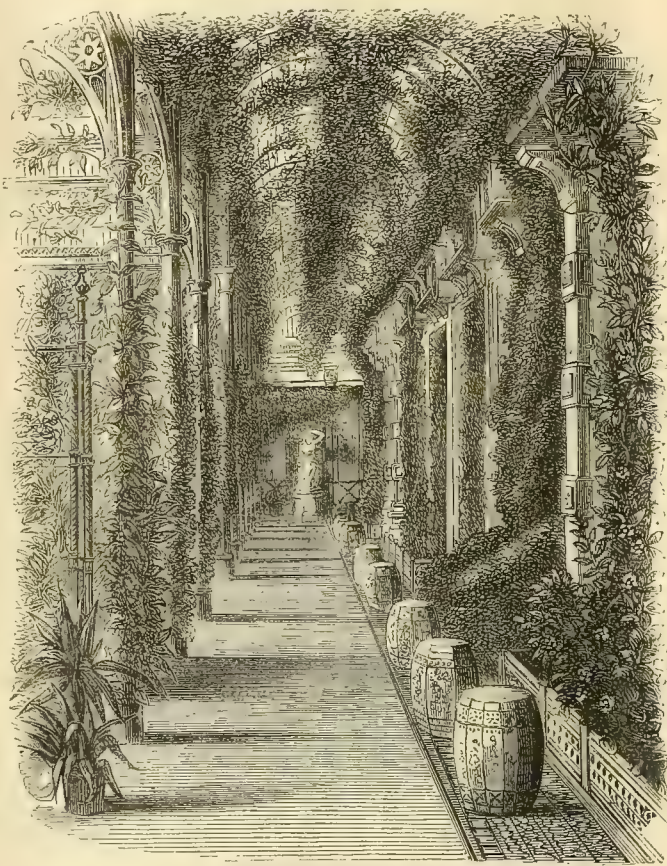
glazed in the ordinary flat manner, are on the ridge and furrow system; but as this system exposes the roof more to the action of wind than a flat surface, it is not considered so good as ordinary glazing. These houses are divided, like the others, into various compartments, each being devoted to the culture of vines and peaches, under the shade of which bedding-plants, &c., are grown. The vines are mostly young, and very promising. Their roots are planted inside the house, the borders for which are separated from one another by means of slates, which divide them into separate compartments from the surface to the drainage, so that no communication whatever exists between the roots of different sorts. By this means should any accident befall one plant, the root could be examined and, if necessary, removed, and the border renewed without any damage being done to the others. The peach houses in this range are filled with some fine old trees in capital condition, and loaded with fruit.

One division alone is filled by Noblesse peach trees, the others are planted with Royal George, Late Admirable, Téton de Venus, and other peaches, together with various kinds of nectarines. Both sides of the west wall are covered with fruit trees. At the back of the north wall are the mushroom houses, and other buildings usually to be found there. A few yards farther north are ranges of forcing pits for asparagus, pines, salads, and other vegetables; also for bedding plants. These pits are all heated by hot-water pipes.

Contiguous to this is an apple orchard of about two acres in extent, in which the trees bear heavy crops of good fruit. The ground is uncropped with any kind of vegetable; but nevertheless it is dug every year, and throughout the summer kept neat and clean by means of the hoe and rake. Close pruning is not so much practised here as in many places, for Mr. Hopkirk, the gardener, considers that by otherwise carefully attending to the trees, removing from them useless and un-

productive branches, and keeping them in a condition easy of access for fruit gathering—a method similar to that pursued by the market gardeners—he reaps a more plentiful harvest than by otherwise using the knife so severely as is generally done. Apart from this is a pear orchard of about an acre, which is also similarly treated.

Seldom have we seen peach trees more promising than those in this establishment, in which there are some very old trees; one of these is planted near the middle of a division of one of the fruit houses, and its branches are trained in all directions along the roof, completely filling the house. The next compartment is occupied by three trees, one in the middle and two in the front of the house; these old trees are loaded with fruit, notwithstanding a heavy thinning to which they have been subjected. Pine-apples are grown here in frames, in which bottom heat is supplied by means of hot-water pipes. One set of frames is devoted to fruiting plants, another to



Somerleyton Gardens.—Corridor in Winter Garden.

succession plants, and a third to suckers; and seldom have we seen plants in finer condition, or producing better flavoured fruit. The furthest advanced of these are now approaching maturity. The kinds grown for winter use are the smooth-leaved Cayenne and Black Jamaica; those for summer consumption are confined to the Queen variety, off which Mr. Hopkirk obtains annually a heavy crop of large and fine fruit.

Through the liberality of the proprietor, these gardens are open to the public every Wednesday throughout the year.

THE SIX OF SPADES,

CHAPTER XI.

The President's Lecture—(continued).

AND now must I confess, with a blush upon my cheek as deeply crimson as Senateur Vaisse, well described in the Rose Catalogues as "intensely glowing scarlet," that for some fifteen years of my existence I walked "this goodly frame, the earth," with about as lively an appreciation of the beauties of a garden as may be supposed to be experienced by a collared eel. Abruptly and completely, like a coquette deserting a baronet for a peer, I transferred my affections from Flora to Pomona, and became miserably oblivious of all flowers pleasant to the eye, in my absorbing greediness of all fruits, which I erroneously supposed to be good for food.

I have not, my dear Brother Spades, I assure you, one unkindly thought against apples; I have not a detrimental remark to make against gooseberries, however green. Childhood, I know, will distend its little self, boyhood will fill its large pockets, and youth must have its fling (at the pear tree), whatever age may preach. For myself, so far from sermonizing, I thoroughly admire that magnificent digestion, which is no longer mine; I fondly desiderate that glorious palate, for which no *Magnum Bonum* was too unripe; and I mournfully envy those noble grinders, which were not afraid to grapple even with the peach's iron stone.

But while I speak approvingly of this early fondness for fruit, and say of it, as Sam Weller said of kissing the pretty housemaid, that "it's Natur, ain't it?" I see no reason why a fondness of flowers should not be developed contemporaneously, or why in childhood and boyhood, and in many cases throughout manhood too, the sense of sight and of smell should minister only, so far as gardening is concerned, to the gratification of our tongues and throats, and cease to co-operate with the heart and brain. Why should not that love of the beautiful, which is innate in every exile from Eden, be encouraged by our pastors and masters, with as much care and attention as the Greek grammar? Why should not our schools—and there are many, thank heaven, in which refinement of taste is no longer derided, and where it is no longer considered effeminate to avow an admiration of the works of God—why should not

these schools have their garden as well as their playground? and why should not those who will hereafter have gardens of their own be instructed in that happiest and most useful of all sciences, horticulture? What arts could be better worth learning than those of making our homes beautiful, of providing ourselves with a never-failing source of innocent gratification, and of supplying to those around us the continual refreshment of delicious fruits, with a healthful abundance of those vegetables, which are adjuncts, as excellent as they are economical, to every man's daily food.

From these complaints you will infer, my friends, that I had small encouragement in my earlier years to foster my first love of flowers, and that I received no instruction whatever in the gentle craft of the spade. Once or twice during my schoolhood the old light emitted a feeble ray, and I was so far illumined on a special occasion as to lay out ninepence on a Fuchsia. It

was received, I recollect, on its arrival from the nursery, with a great profession of regard and admiration from several of the bigger boys, and they proceeded at once to demonstrate their affection by administering a variety of liquid manures, such as blacking, sour beer, and mustard, which they assured me, on the authorities of gardeners at home, who had made the Fuchsia their special study, would cause an immediate and gigantic growth. But when they proceeded, "according" (so they said) "to the invariable practice at Kew Gardens, and to the principles laid down by Dr. Lindley," to distribute a fire shovel of hot cinders around my poor little plant, credulity gave place to bitter tears; and though I had the subsequent satisfaction of definitely discomfiting in five rounds a young gentleman, who thought to improve the occasion by addressing me as a "sniffling softy," I took heart no more during my scholastic term, to exhibit single specimens in pots.

In the groves of *Academy* (to use that beautiful diction, which is a trifle more appropriate to the groves of *Blarney*) there

prevailed, floriculturally speaking, as remarkable a dearth as dreariness. Beneath the trees of those renowned plantations, which dip their metaphorical branches in the limpid waters of Isis and of Cam, we grew nothing but *Scarlet Runners* (undergraduates in hunting costume, swiftly darting from quadrangle and cloister to avoid collegiate and proctorial authorities); a few *Stocks* (the freshmen wore them, when there was not the same connection as now between a *Buckle* and *Civilization*); and a large assortment of *Bachelors' Buttons* (straps being the fashion in those days, and wrist-studs unrevealed).

We attended, it is true, with a prompt punctuality the flower shows in "*Worcester*" Gardens, and no one could gaze more earnestly than we did upon those very delicate *Roses* and *Tulips*, which require the protection of a bonnet. We came away, moreover, with quite a longing for *Heartsease*, and were ourselves most perfect examples of *Sensitive Plants* and of



Somerleyton Gardens. Statue at end of Corridor in Winter Garden.

Love-lies-bleeding. But all this in figure, and that figure a cipher. We never looked at the flowers, nor thought of them; and when I was asked by a floral friend whether I had seen that lovely Polly-anthus, I urged him, to his grand amusement, to point out at once the beauteous Mary, and, if possible, to introduce me. I never met him afterwards, but he had something facetious, as he supposed, to say in reference to my mistake, "Should I like to know the fair Hannah-Gallis, the charming Carry-Opis, the celebrated Miss-Embryanthemum, the two great heiresses Miss Mary-Gold and Miss Annie-Money? Had I seen anything latterly of John-Quil, Bill-Bergia, or Stephen-Otis; of my Scotch friend, Mac-Ranthus, or my Irish friend, Phil-O'Dendron?"

And so, sans ears, sans eyes, sans nose, I wandered, flowerless, through a flowery world. Some, perhaps, may tell me that it was better so; that boyhood should find its recreations in active games, and youth in the sports of the field; and that floriculture is incompatible with that hardy physical training, which hereafter is to make the man. But I designate this doctrine humbug. Why should a boy be less brave or strong, if taught to appreciate the beautiful things about his daily path? or why should youth ride more timidly to hounds, because it had a flower in its coat? There is a time for all things. A time to tend some graceful plant, as well as to kick a foot-ball; a time to store the heart with gentle attachments and refined tastes, as well as to run and row; a time to develop the intellectual as well as the physical powers.

At length, to revert to my own history, a brighter morn dawned upon my darkness. A single star, twinkling in the firmament, first told the advent of a jocund day; and that star, my friends, was—A ROSE!

CHAPTER XII.

The President's Lecture— (continued).

As a look, a gesture, a picture, a song, a perfume, may suddenly transport the mind to things and thoughts, forgotten half a life, so did this rose, a Salvator Rosa to me, at once revive that early fondness for flowers, which had slept, as paralysed as Merlin in the oak, since my childhood laughed among the cowslips. The ice broke with an instantaneous crash, and set the river free; the fog disappeared before that single sunbeam as swiftly as the spectre army which beleaguered the walls of Prague; and it was summer-tide once more. Anatomists tell us of cases in which the brain, accidentally injured, or otherwise oppressed, has been relieved after long incapacity, and its powers restored; we have an account, for example, in the *Edinburgh Review*, and in an article upon "Brain Difficulties," of a young gentleman whose sagacity was considerably enhanced by a well-timed kick from a horse; and so was I on an analogous principle successfully trepanned by Dr. Rose, and my floral apprehension again put in working order. The clock struck only one, but, like the remorseful villain in the

tragedy, I "remember to have heard a clock strike in my infancy—I am overcome—I burst into tears—and become a virtuous and exemplary character for ever afterwards."

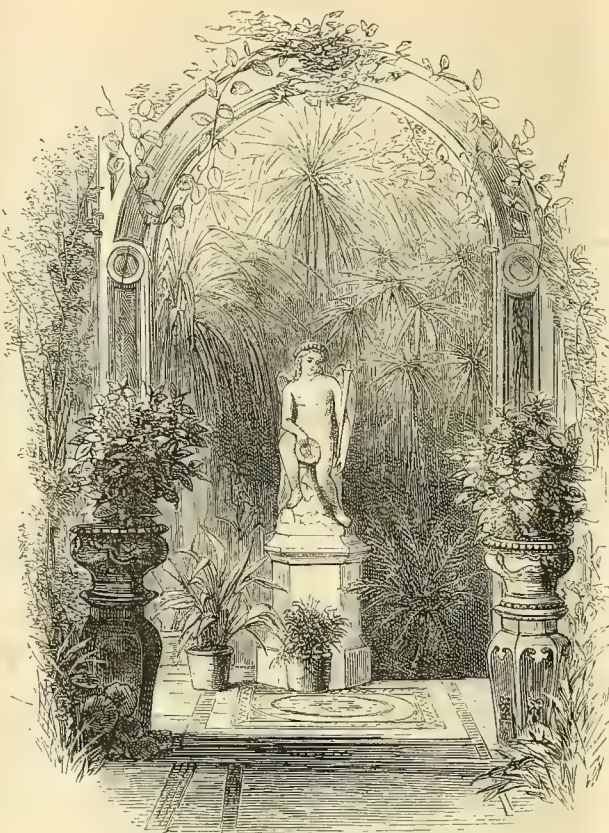
Sitting in the garden one summer's evening with cigar and book, and looking up from the latter, during one of those vacant moods in which the mind, like the Jolly Young Waterman, is absorbed in "thinking about nothing at all," my eyes rested on a rose. It glowed in the splendour of the setting sun with such an intense and burning crimson, the tints of vivid scarlet gleaming amid the purpler petals, as light in jewels or in dark red wine, that I shall never lose my first admiration for rose D'Aguesseau (Gallica), although, having accomplished the mission entrusted to her by Flora for my restoration, she has never since appeared in my rosarium in such resistless beauty. But I ever think fondly of my first fair love, remembering among a thousand charmers the darling of my

early youth, as the heart of man is prone. Blue-beard himself, I do not doubt, was wont sometimes to muse with special satisfaction upon the fascination of that young lady on whom he first lavished his affections and subsequently tried his carving-knife.

The next evening found me in my accustomed seat, but my cigar was exchanged for a pencil, with which I was making careful notes, and my book was "Rivers on the Rose." This dear little Red Book, *couleur de Rose*, so earnestly, so gracefully written in a language which, as Lord Macaulay says of Livy's, is "always fresh, always sweet, always pure" (he might have been describing a rose)—this guide to amateurs, which has brought so much happiness to the neophyte, so much instruction to the learner, so many glad memories and genial sympathies to all rose-growers, quite completed my conversion. In that pleasant manual there is a hearty, loyal fondness for the theme, a truthfulness of description, which cannot fail to charm. It seems to say, with the perfumed earth in the Persian fable, "I

am not the rose; but cherish me, for we have dwelt together;" and there is fragrance as of roses among its leaves. There can hardly be a treatise with less affectation and superfluity, so genuine, explicit, and natural, and so exact a transcript of the man from whom it comes, that when I made his acquaintance, some years after my transformation, he exactly verified my expectations, and it was like meeting with an old and valued friend.

And thus I discovered, if not "books in the running brooks," a most fascinating volume in the Rivers of Hertfordshire, and in I plunged, as keen as Cassius (to Cæsar's unspeakable disgust), and as eagerly as a hot schoolboy taking "a header" into his favourite pool, truant, it may be, and destined after his ablutions to the coarsest kind of towelling, but for the time as oblivious of all the ills which the fleshier part of youth is heir to, as though he bathed in Lethe. And just as this amphibious juvenile will emerge from time to time and diversify his



Somerleyton Gardens.—Entrance of Palm Stove.

sport by a periodical canter in the flowery mead, so I quitted my Rivers at intervals, and wandering among my roses (I had but a dozen then) tendered my tardy but devoted allegiance. Or as a pupil at Dotheboys Hall would be requested, after spelling the word "horse," to go and clean the quadruped in question, so I went from description to reality, first studying the portraits in my Book of Beauty, and then doing homage to those fair originals, born, or rather budded, so long to blush unseen, and waste their sweetness on my father's heir. How delighted I was, first to read, and then to have ocular proof, that Boula de Nanteuil was a "standard of excellence" (mine was only a half standard, but let that pass); that Kean was "always beautiful, in size first-rate, and in shape perfection" (Mrs. Kean herself could not wish for a more flattering portrait); that Coupe d'Hébé was "the gem of the family," and there, sure enough, I found her, a cup for the gods and jewelled with dewdrops; and how disappointed I felt as I read that Madame Laffay "ought to be in every garden," but could not find her in mine, soon consoling myself, however, in the presence of Baronne Prevost and Duchess of Sutherland, and, on the whole, as well pleased with my new friends as was the author of my book when, one morning in June, looking over the first bed of roses he had ever raised from seed, he saw growing with great vigour one of the very very few good roses then originated in England, and subsequently called, perhaps because robust in habit as poor Brummel's "fat friend," Rivers's George the Fourth.

If this account of my resuscitation—if the suddenness with which I cracked the cocoon of my grubship and came out a rose-loving butterfly, appear to any of my hearers to be too severe a test of their implicit confidence in the narrator (in coarser English, "a corker"), I have testimony at hand to confirm my statements, and Mr. Evans is here, like the statue of Horatius, "to witness if I lie." He will readily recall his great astonishment when I first began to speak to him of flowers; how he smiled encouragingly upon me as a mother upon the baby just "beginning to take notice" ("bless it!" exclaims mamma; "it's worth a million a minute!") and nurse immediately follows with, "Yes, mum, two!"); and how he would gaze upon me with an expression of kindly hope, as though he were some good physician, watching in his patient the first symptoms of recovery from delirious fever. He will recollect how rapidly our rosarium spread, since, as the Poet of the Seasons sings—

"By swift degrees the love of Nature works,
And warms the bosom, till at last sublimed
To rapture and enthusiastic heat,"

until it finally invaded the kitchen garden, and drove out the Asparagus at the point of the digging-fork; and he will rejoice with me in remembering the time when our hostilities terminated; when Mars was to influence us no more, although that deity, according to Hesiod, was the son of a flower, and not of a gun, as one would be more disposed to imagine; when we turned our bayonets into pruning-knives, our swords into scythes, our mortars into garden rollers, our helmets into flower-pots, our uniforms into shreds for the wall-trees, and our trumpet of war into a bird-tenter's horn. S. R. H.

(To be continued.)

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

PRIVATE GARDENS.

SPECIMEN plants of Hederae, Chorozemas, Azaleas, &c., are now being retarded or advanced, so as to suit the purposes for which they are intended. Pelargoniums for exhibition are being trained into proper form, and placed on inverted pots so as to be fully under the influence of light. As they are usually grown in small pots compared with the size of the plants, the pots are placed on a little damp moss, which serves to keep the roots in a moist condition; a little manure water is also given them occasionally. To Heaths abundance of air is given on all favourable opportunities. Erien Massoni, a fine Heath, is apt to produce a quantity of young shoots in the centre, which require thinning, for if too thick, mildew is likely to be generated; the thinnings make cuttings, which strike root more freely than the points of better placed shoots. Allamandas

are being trained round trellises or stakes. Stephanotis and Dipladenias are plunged in cocoa-nut fibre, and their young shoots are trained to thread fastened crossways to the roof of the stove; under this comparative freedom they grow better than when tied to trellises. When the shoots have attained sufficient length and set their flowers, the threads are cut, and they are then trained around the trellises, which are thus furnished at once with flowers and foliage. In retarding Phalenopsis it is customary to pinch out the first flower spikes, a mode of management which answers very well in the case of *P. amabilis*, but *P. Schilleriana* seldom pushes again after the first pinching, a point worth the attention of beginners in orchid culture.

Pits and Frames.—Dahlias separated from the parent tubers, and having good roots, are planted out in cold frames in good light rich soil, sashes or mats being placed over them; they are kept close for a time, and afterwards gradually exposed. Cannas started in heat are placed in frames, and kept rather close for a time. Young Chrysanthemum plants are shifted as they require it, kept near the glass in cold frames, well watered, and have the sashes drawn off altogether in fine weather. Balsams are never allowed to become pot bound; on the contrary, as they advance in growth, they are kept regularly shifted; the best place for them being pits or frames heated with dung and leaves; air is given on favourable occasions by tilting up the sashes at front and back, and even during mild nights they are left about half an inch open at the back. Half-hardy annuals sown in pots, pans, boxes, or broadcast in frames, are thinned, and the thinnings are used for transplanting; air is freely admitted, and water plentifully but carefully supplied, especially in the case of Stocks, which are liable to damp off. Cinerarias for late flowering are kept as cool as possible. Calceolarias are now throwing up flower spikes, and are neatly staked. Of Cinerarias some seeds are now sown, and from the earliest bloomed plants offsets are obtained, which are separated, preserving the small rootlets, and potted in sixty sized pots, kept in cold frames, rather closely shaded for a time, but after they have taken root fully exposed. Bedding plants in frames are being hardened as the weather permits, and where time and convenience can be spared, where three or four Geraniums were placed in a pot they are shaken out and potted singly. Verbenas, if not required for producing more cuttings, are also placed in cold frames. Boxes for window decoration are filled with various plants, and established in gentle heat.

Flower Garden and Shrubbery.—Evergreens newly planted are copiously watered and mulched. Hollies and Rhododendrons continue to be transplanted, lifting with them good balls of soil. Preparation is being made for the summer display of bedding plants by edging, manuring, and digging beds that have not been filled with spring plants. Much manure is not wanted, except the ground is very poor; but fresh maiden loam and leaf mould are sometimes beneficial. Succulents, such as Echeverias, Sedums, and Sempervivums are planted around small beds as edgings, &c. Plants of Saponaria calabrica sown and reared on wall borders are transplanted where they are to remain for blooming. Sweet Peas, Nasturtiums, and Tropæolum canariense raised in pots and boxes are also transplanted permanently. These are likewise raised on sheltered borders, as are also many kinds of Everlastings. Stocks and Asters are now sown on warm south borders for transplanting; should there be any danger of frost, branches of evergreen bushes, mats, &c., are placed over them.

Indoor Fruit Department.—Pines now receive plenty of water and heat; the fruit is tied neatly to stakes, and where size is looked for, all suckers as they appear are removed. Grapes colouring have the atmosphere kept rather drier than ordinary. Thinning, stopping, and tying of Vine shoots are attended to, and inside borders are particularly guarded against getting too dry. To Figs swelling, abundance of water is given. Peaches past the stoning period are thinned to the required distances apart. Strawberries ripening fruit are kept somewhat dry; to those swelling, a little manure water is given, and those in flower have the hand passed gently over the trusses occasionally to assist fertilization. As soon as the soil of Melon beds is filled with roots, they are topdressed, packing the soil firmly, and placing over it an inch of loose mould. Overcrowding of shoots or foliage is prevented by thinning, and single flowers are not allowed to set; on the contrary, all are removed until a fair crop can be set at once. Cucumbers are not permitted to bear too heavy a crop at one time; thinning and surfacing, as for Melons, are being carried into effect, except that the compost used is not so firmly packed, and is of a richer and more open character than that for Melons. Vegetable Marrows are sown, and some are ready for transplanting permanently. Tomatoes continue to be potted and hardened off.

Hardy Fruit and Kitchen Garden Department.—In some cases the disbudding of Peach, Nectarine, and Apricot trees

has commenced; protection from frosts cannot yet be dispensed with, and great care is exercised to guard against strong sunshine in the mornings after frost, as much damage is sometimes done by brisk sunshine at that time. As a protection against the attacks of green fly, the trees are now and then syringed with tobacco water. Double-bearing Raspberries are cut down to within a few inches of the ground, to encourage autumn fruitfulness. Asparagus beds for the present have all their produce cut, *i.e.*, none are allowed to run up, except perhaps here and there a stem or two for seed. Full sowings are now made of Salsafy, Scorzonera, and Skirret, in lines a foot apart. A few seeds of White Dutch, and of red and white stone Turnips are now sown. Round-leaved Spinach is sown between lines of Peas and in open spaces amongst other crops. A late crop of Carrots is now sown in deeply-worked sandy loam, not too rich. Celery plants are pricked out and freely exposed. Peas are sown for succession; those up, have a little earth drawn to them, and staked. To Beans a little earth is also drawn. Of Beet, a main sowing is also made, and French Beans are sown in warm situations. Cauliflower for late crops are pricked out, as are also Cabbages, of which another small sowing is made.

NURSERIES.

Indoor Department.—Stove plants in general, that were re-potted in March, are now making growth vigorously, and are copiously supplied with water at the root and overhead; a slight shade from strong sunshine is afforded them. Young Rhododendrons are being potted. Correas and other plants, the product of spring and winter grafting, are being re-potted. Azaleas done flowering are also being re-potted. These, Camellias, and Oranges, whilst young and making wood, are fully supplied with water both at root and overhead, as well as with heat and shade. Thus treated, they grow freely, and when growth is completed they are gradually hardened off. During active growth, Azaleas are generally cut in three times, which induces them to form fine stubby plants. Orange trees, which stand the pruning-knife better than most plants, are also cut into proper shape. Plants of *Solanum capsicastrum* are likewise pruned well in, and are kept in cold frames; plants struck from cuttings are re-potted, and kept for a time in an intermediate house. Statice are being propagated by means of single cuttings put in small pots under a hand-light in heat; those that are rooted are shifted into larger pots. As many cuttings as can be obtained from the variegated *Mesembryanthemum* and Thyme are being struck. Roses are also being struck from cuttings in heat. Crotons are being struck by taking off good-sized shoots and inserting them in small pots, in sifted peat and silver sand in about equal proportions, covering the pots over with a layer of silver sand. The pots are then plunged in cocoa-nut fibre under hand-lights in strong heat. Those rooted are shifted into larger pots, plunged, and subjected to a high moist temperature. Where it is desirable to increase the fine kinds of Pandanus, such as *P. Veitchii*, a few of the lower leaves are removed, so as to induce young shoots to push from about the base of the stem. When these have grown to a tolerable size, they are cut half-way through, and allowed to remain thus for a few days, when they are finally removed, inserted, and treated as Crotons. Should the old plant be leggy, it may be cut down, the stem cut up into pieces, and inserted in cocoa-nut fibre under hand-lights; these soon begin to push from all the eyes, and as they advance in growth they are taken off with a heel and treated as cuttings. Seedling Primulas are pricked out into boxes. Daturas from eyes and cuttings are being potted singly; as are also young Hydrangeas. The propagation of bedding plants is still vigorously followed up.

MARKET GARDENS.

CUCUMBERS planted out in frames are protected at night with litter, which is placed over the sashes, and removed in the morning; the points of the laterals are pinched out at the third or fourth joint, and the shoots are then pegged down with small wooden pegs. The hand-lights under which Vegetable Marrows are planted are, now that the weather is so cold, covered round with litter, which is also placed over the top during the night and removed to the sides throughout the day. Tomatoes established in pots, and those sown broadcast in frames, are fully exposed on all favourable occasions. Seedling Tomatoes are dibbled into six-inch pots filled with soil, and plunged up to the their rims in earth in frames, keeping them near the glass. After being thus pricked out they are shaded for a few days by means of some litter being shaken on the glass. Kidney Beans sown in frames are protected at night but exposed during the day; beds of these that were sown in lines under hoops covered with mats are now up, and throughout the day have the top mats removed.

Mushroom beds made in August last are still productive. A mulching of litter is still in some cases preserved about the crowns of Rhubarb, under which the leaf stalks come up tender and crisp. Asparagus is now plentifully obtained from the open ground. Fresh plantations of White Paris Cos Lettuce are being made; they are planted in sets of six lines at about eighteen inches apart, leaving a space of four feet between every six lines, which will shortly be filled with Vegetable Marrows. Lines of Lettuces are also being planted four feet apart, and between these two rows of winter greens are to be grown. The spaces between Vegetable Marrows are also sometimes sown with Spinach or Radishes. Leeks are raised in frames, and are now nearly as big as autumn-sown Onions; these are being planted out in lines in shallow drills drawn as for Peas, about eight or nine inches apart, and those still in frames are fully exposed. Onions sown broadcast over large spaces of ground are up and being cleaned. Marks or lines of four or five feet apart are made across the field; two men are then placed in every space between the lines, who with short hand hoes, about eighteen inches in length, and the blades an inch and a half or two inches in breadth, go through the crop loosening the soil and thinning the plants, which in so young a state are uninjured by trampling. Plantations of Thyme are being made under fruit trees, planting it with a dibber in lines eighteen inches apart. Young Celery planted in lines about three feet apart under fruit trees in December has now a little soil drawn to its base. Cos Lettuces and common Cabbages are tied round with pieces of matting to cause them to produce firm white hearts. Turnips of fair size are being obtained from the open ground; these are grown in six feet wide beds, and throughout the spring protected with litter like Radishes. Sowings of Turnips are also being made, as are likewise sowings of Sprouting Broccoli, Savoys, and Brussels Sprouts.

JAMAICA AS A TROPICAL GARDEN.

"THERE is nothing to prevent Jamaica becoming, for the quality, variety, and commercial value of its fruit, the most noted spot in the world, when gardening shall be understood and the value of the art shall be duly recognized here." These are the words of the Governor himself (Sir John Grant), says the *Times*, and they put the truth of the whole case before us. The island is one huge tropical garden, and the trade to be done in such products, not only with this country, but with the United States, is beyond all calculation. In the Northern States of the Union the market for tropical fruits is "unlimited;" what it might be here we need not say. Some progress has been already made in this direction. The real Bombay mango has been imported, and is flourishing; two true varieties of mangosteen have been introduced, and four new varieties of the orange. As to pine-apples, all other specimens, compared with the Jamaica fruit, are, according to the Governor, impostures and delusions; in fact, he does not believe it possible to grow a really "well-flavoured" pine in the latitudes from which we obtain our supplies. Yet—and this is the fact to which attention should be given—until the year 1870 fruit had no place among the exports of the colony. Pine-apples to the yearly value of at least £30,000 are shipped from a neighbouring island, which, as Sir John speaks of the "excessively bad fruit," we had better not name; while all this time Jamaica, which could produce the finest pines in the world—incomparable for quality and size, and of infinite value for the London market—never sent out a shilling's worth, except "now and then a barrel by the mail steamer to a friend." Exactly so; and the like conditions have ruled in a hundred other cases of precisely the same kind.

It would probably have been impossible to persuade a planter of the last generation that a fortune might be made by growing fruit for New York and London. Yet Sir John Grant, a man of extraordinary acuteness and experience, sees in a future fruit trade the unlimited enrichment of the colony. Its oranges, pine-apples, bananas, limes, lime-juice, cocoa nuts, and other such products could not be surpassed in quality, and might be cultivated to any imaginable extent. Besides all this, the soil and climate are eminently suitable to the growth of precious drugs and plants. Bark is raised easily, the cinchona plantation being in a most satisfactory state. Then there are hemp and China grass of excellent quality, nor would any arrowroot be superior to that of Jamaica if it were but more carefully prepared for market. Here, it will be said, is a noble prospect for the colony. True, but it is a prospect only. Not until the very last returns is there shown any "tendency to the development of new industries requiring little capital and no extraordinary skill." It is the old story, "minor articles" are neglected, though they are the very articles which we want, and which the colonists could send us. However, Jamaica is fortunate in having a Governor who can discern the true capabilities of the island, and the true place for its industry in the markets of the world.

ROYAL HORTICULTURAL SOCIETY'S BIRMINGHAM EXHIBITION.

THE complete schedule of prizes for plants, fruits, flowers, and vegetables, has been widely circulated; and we are glad to find that it appears to have given satisfaction. The exhibition, as our readers are aware, will take place in June next, and will continue for five days, viz., from Tuesday to Saturday, June 25th to 29th. It will be opened by his Royal Highness Prince Arthur.

The chief display of palms, tree ferns, and the more important stove and greenhouse plants, &c., will take place in a lofty tent three hundred feet by eighty feet wide, which will be erected over a beautiful garden, designed by Mr. Gibson. At one end will be a fountain and rockery, over which a cascade will fall. Picturesquely grouped beds, covered with turf, will be arranged over the entire length, and these will be divided by wide gravelled walks. The beds will vary in elevation, so as to prevent flatness, and to aid in giving the *ensemble* an air of naturalness.

As regards the prize list, we find that the sum of £1,659. 1s. is offered for competition, of which the Royal Horticultural Society provides £661. 18s., and the local committee £997. 3s. This amount is divided among 220 classes. For various kinds of plants £981. 11s. is offered; for cut flowers £263. 5s.; for fruit £155. 1s.; for vegetables £153. 19s.; for implements, and horticultural buildings, medals to the value of £105. 5s.

We are pleased to find that good prizes are offered for evergreen trees and hardy shrubs, as well as for alpine, succulents, and dinner-table decorations. The latter will be tested by artificial light. On the third day, the Queen of Flowers will hold a special levee; and as the prizes are large, we may expect a fine display.

We may mention that the implement committee have determined on substituting medals for money prizes. These medals will be of three kinds—gold, silver, and bronze; six—the total number of the kind first named—being offered in six divisions as follows:—1. For the best horticultural building. 2. For the best heating apparatus. 3. For the best collection of vases, or other garden decorations, suitable for outdoor purposes. 4. For the best collection of garden furniture. 5. For the best collection of garden machinery, tools, &c.; and, 6. For the best display of garden wirework; with liberty to add to their number.

The council of the Royal Horticultural Society have agreed upon the following scale of charges for admission:—Non-subscribers: Tuesday, June 25th, 10s. 6d. (or by tickets purchased not later than the previous Saturday, 7s. 6d.); Wednesday, June 26th, 2s. 6d.; Thursday and Friday, June 27th and 28th, 1s.; and the last day, Saturday, June 29th, 6d. Subscribers of 21s. will receive three admission tickets for the first day, and four for the second or either of the following days. Considering the liberality of this arrangement, it is not surprising that already more than £300 worth of these tickets have been taken, and we have no doubt, from the privileges they confer, the demand for them will be very great. A limited number of season tickets, available to the owners on all the days on which the show is open, will be issued at 10s. 6d. each, thus affording to all who may wish to make frequent visits the opportunity of doing so at a very moderate cost. The convenience and pockets of the masses have also been considered, for packets of the shilling tickets will be sold at the rate of fifteen tickets for 10s. 6d., and the employees in manufactories, &c., will thus be enabled to visit the show at a small cost. On the last day the charge will be reduced to sixpence, so that all classes of the community will be afforded an opportunity of seeing what we believe will prove to be the largest and best exhibition of plants, fruits, flowers, and vegetables, and certainly the most important and instructive collection of horticultural buildings, implements, and decorative appliances, ever brought together in this country.

THE BIRMINGHAM HORTICULTURAL EXHIBITION.

For so kindly inserting my last letter I beg to thank you. May I ask a second favour, in order that I may be enabled to lay before your readers one or two additional points which immediately affect the successful issue of the forthcoming horticultural exhibition.

I have now before me the code of regulations, and for all practical guidance to exhibitors they are about as open and undefined as it is well-nigh possible to frame them. Permit me to illustrate my meaning by supposing that eight horticultural builders compete, and that each one exhibits a distinct and separate class of building; builder number one exhibits, say, a conservatory; number two, a lean-to vinery; number three, a span-roof greenhouse; number four, a cucumber and melon house; number five, a length of peach walling; number six, a pine stove; number seven, an orchard house, and number eight, an improved form of strawberry house. Now, in the absence of any second or corresponding structure to any of these,

there can be no means of comparing; and I respectfully submit that no judge would be able to decide which constituted the "best horticultural building," or which would be entitled to an award. The fact is, each would be a "best" for the respective purpose intended, but for want of competition would be, so to speak, "disqualified."

Now in order to remedy this state of things, why not separate iron from wood houses, and place them under schedules A and B respectively, and then sub-divide each schedule into classes, enumerating what houses each class shall embrace? Every builder would be at liberty to elect into which class and schedule he would wish to compete. The date of entries should be limited to a given period prior to the show, and the applicant exhibitor could be made acquainted whether or not there were sufficient applications to constitute a competition in such particular class; if not, it would be futile for him to compete therein, and he would have an opportunity of selecting another class. Of course, if hereafterwards determined to become an exhibitor in that particular class with a view to obtain "honourable mention," or a "special award" for what he considered a novel and meritorious production, so far so good; but some such arrangement as the foregoing would put each competitor in possession of a knowledge of what he was undertaking; also it would tend to inspire confidence, whereas under the existing arrangements all is uncertainty.

Again, why should not specific and suitable awards be made for a display of plans, models, machinery for ventilating, detached ventilators, ingenious fastenings for doors, best mode of shading, and construction of stages? I think these and many other parts of a house are open to some improvement, and claim to be noticed.

Respecting the best hot-water apparatus, I shall, with your permission, be glad to offer a few suggestions next week. S.

SEFTON PARK EXHIBITION.

A GRAND fancy fair and flower show is to be held in aid of the New Southern Hospital, Liverpool, in Whitsun week. It will take place in Sefton Park, on May 21st, 22nd, and 23rd, and is to be opened by his Royal Highness Prince Arthur. The ground to be covered is in the form of a gigantic cross with a central plateau, from which a fine view will be obtained of the four wings, along which the plants are to be arranged on grassy banks. The prize list is on a scale sufficiently liberal, we should think, to induce a good exhibition, and as the proceeds are to be devoted to so charitable a purpose, we trust it may be well attended. We observe that special prizes are offered to ladies for a group of natural flowers in an *epergne* or centre-piece for table decoration; beauty of arrangement and effect to be the test of merit. First prize, *epergne*, value £15; second prize, *epergne*, value £10. The flowers used for these designs need not, it is said, be grown in the garden of the exhibitor.

L A W.

WILSON v. NEWBERRY.

THIS was the case of the horses poisoned by eating yew tree cuttings, reported in THE GARDEN for March 23rd. The parties to the action are near neighbours, residing at Lewisham. The plaintiff's paddock, in which his horses were, and the defendant's garden, both abut upon a lane, which separates them. The defendant had employed a nursery gardener, one of whose men, without any directions from the defendant, and indeed against his will and in his absence, cut a yew tree, and afterwards threw the yew cuttings into the lane, and two of the plaintiff's horses put their heads over the fence and ate the cuttings, and were both killed. The plaintiff sued the defendant for the value, and the case was tried before Lord Chief Justice Bovill at the last assizes at Maidstone, when the cause of action was put entirely upon negligence. The jury, however, found that the tree was cut without the defendant's authority, and that the cuttings were put into the lane without the authority of the defendant, and that he had no knowledge that they were poisonous, and so the verdict went for the defendant.

Mr. A. L. Smith now moved, on the part of the plaintiff, for a new trial, on the ground that putting the cuttings against the plaintiff's fence was a trespass, and a wrongful act independent of negligence, and that, therefore, the defendant was liable for the consequences. The court, after some discussion, granted a rule nisi for setting aside the verdict.

The Nightingale.—I see that one of your correspondents notices the arrival of this favourite songster. I heard its full song on the afternoon of the 11th inst., at Fairlight, near Hastings; and the cuckoo was heard in Beaufort Park on the Sunday previous; I myself heard it first on the 11th, near my house.—JOHN SKINNER, *Marchmont, Haddington, Hastings.*

CATALOGUES, &c., RECEIVED.

General Catalogue of the Hardy and Tender Plants Cultivated in the Botanic Gardens, Zurich; for sale or exchange.—*Flower Garden Annual Directory and Catalogue of Bedding Plants, &c.*, grown by John Scott, Crewkerne, Somerset.—*Descriptive Spring Catalogue of Choice Seeds for the Flower and Kitchen Garden*, by Barr & Sugden, King Street, Covent Garden.—*Hardy Trees, Shrubs, Conifers, and American Plants*, by Jas. Veitch & Sons, Chelsea.—*List of Select Flower, Vegetable, and other Seeds, and New Plants*, offered by Wm. Bull, Chelsea.—*General Catalogue of Plants*, by B. S. Williams, Upper Holloway.—*Flower, Sub-Tropical, and Vegetable Seeds*, by Wm. Rollisson & Sons, Tooting.—*New Roses, Pelargoniums, Camellias, Azaleas, &c.*, by Wm. Paul, Waltham Cross.—*Florists' Flowers*, by T. S. Ware, Tottenham.—*Florists' Flowers*, by Downie, Laird, & Laing, Forest Hill, London.—*Fruit Trees, Hardy Ornamental Trees, and Shrubs*, by Paul & Son, Cheshunt.—*Flower Seeds*, by Wm. Thompson, Ipswich.—*Flower and Kitchen Garden Seeds*, by Butler, McCulloch, & Co., Covent Garden.—*Flower and Kitchen Garden Seeds, Gardeners' Tools, Implements, &c.*, by James Dickson & Sons, Chester.—*Flower, Kitchen Garden, and Agricultural Seeds, Miscellaneous Plants, Fruit Trees, &c.*, by Robert Parker, Tooting.—*Vegetable and Flower Seeds, Garden Implements, &c.*, by Edmondson Brothers, Dublin.—*Vegetable and Flower Seeds, &c.*, by Drummond Brothers, Edinburgh.—*Cultural Guide, and Descriptive Flower and Vegetable Seed Catalogue*, by Smith & Simons, Glasgow.—*Select Flower and Vegetable Seed List*, by Wheeler & Sons, Gloucester.—*Garden Furniture*, by Frederick Reynolds, Birmingham.—*List of Subscribers to the Gardeners' Royal Benevolent Institution*.—*Second Annual Report of the Toxteth Park and Aigburth (Liverpool) Gardeners' Mutual Improvement Society*.

ANSWERS TO CORRESPONDENTS.*

H. V. (Mr. Hole will finish "The Six of Spades" in THE GARDEN).—A SUBSCRIBER (your description puzzles us; the plant was probably *Gentiana germanica*).—PYRUS (the Japan Quince thrives well as an isolated bush, and as such is very beautiful on a sunny slope).—RUS (one of the many richly coloured forms of the common *Polyanthus*).—HARRIET (a desirable fruit, but not one to be grown in quantity or for a supply).—J. BARRON (no; they are retail prices).—AN AMATEUR (we do not from your note glean what condition your vine is in, or what is the matter with it. We propose shortly to publish a series of articles that will probably furnish all the information you require).—R. MCC. (we will attend to your suggestion).—LORD E. (The Imperishable Hothouse Co., Beacon Hill, Newark, Notts).—T. C. T. (you probably mean *Acer rubrum*. Send us a leaf).—R. A. P. (your Lilies were probably dead when you bought them. Being a scaly bulb the Lily soon suffers from exposure to the air in shops, &c.).—N. H. P. and T. JONES (thanks).—SAXUM (next week. The Dartmoor subject is somewhat out of our way).—MRS. BURKE (next week).—MISS O. (we cannot say, as they are not manufactured in this country; but a good carpenter would be able to answer you. Your note next week).—J. GROOM (many thanks. Next week).—MISS K. (a very pretty plant. Next week).—W. W. H. (your pear tree leaves and blossom do not appear to be suffering from insects. We should refer their injury to the alternations of cold, wet, and heat. Negretti & Zambra, we believe, sell a cheap thermometer, examined and certificated by Mr. Glaisher.

EXHIBITION NEXT WEEK:—May 1st, Royal Horticultural Society, at South Kensington (Roses, cut and in pots, Auriculas, Azaleas, Orchids, Herbaceous Calceolarias, new plants, fruits, and vegetables).

THEY are growing their own poets out in Colorado, or seem at least to have entered upon this field of cultivation. As yet, the product seems imperfect imagination largely developed, with some deficiency in the sphere of accuracy, or perhaps we should say sobriety of statement. Here is a specimen from a local paper. The tendency to exaggerate the fertility of those great and often desert-like plains of the hotter parts of the West is well hit off here:—

"Is it where the cabbages grow so fast,
That they burst with a noise like the thunder's blast?
Is it where through the rich, deep, mellow soil
The beets grow down as if boring for oil?
Is it where the turnips are hard to beat,
And the cattle grow fat on nothing to eat?
Is it where each irrigating sluice,
Is fed by water-melon juice?
Is it where everything grows to such monstrous size,
That the biggest stories appear like lies?
Tell me, in short, I would like to know,
Is this wondrous land called Colorado?
You're right, old boy, it is?"

* All questions likely to interest our readers generally are answered in the various departments.

COVENT GARDEN MARKET.—April 26th.

Flowers.—These are now abundant; those in pots consist chiefly of Azaleas, Rhododendrons, Tea and other Roses, Hydrangeas with immense heads of flower, Deutzias, Cytisus, Spiræas, Gardenias, Amaryllis; zonal, sweet-scented, fancy, show, and other Pelargoniums in great profusion. Calceolarias, both bedding and hybrid kinds, Fuchsias, Mignonette, Heliotropes, small but well flowered plants of the Golden-rayed Lily, Saxifraga, Callas, still in good condition, Spring Heaths, Stocks, Lily of the Valley, &c. Amongst those not in flower are Musk, Dracænas, Cyperis, Myrtles, fine-leaved Begonias, Ficus elastica, Passifloras, and many others, besides a great variety of beautiful ferns. Cut flowers, in addition to those of the plants just enumerated, consist of White Bouvardias, Stephanotis, different kinds of Orchids, Pinks, Narcissi, Tulips, Tropæolums, &c., and summer bedding plants are also furnished in great variety.

PRICES OF FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples } sieve	3	0	to 6	0	
Chestnuts bushel	10	0	20	0	
Filberts lb.	0	6	1	0	
Cobs lb.	0	6	1	0	
Grapes, hothouse lb.	10	0	20	0	
Lemons 100	7	0	10	0	
Oranges 100	4	0	10	0	
Pears, kitchen doz.	4	0	to 6	0	
" dessert doz.	8	0	20	0	
Pine Apples lb.	6	0	10	0	
Strawberries oz.	0	9	1	6	
Walnuts bushel	10	0	25	0	
ditto per 100	1	0	2	0	
Cherries per box	6	0	10	0	

PRICES OF VEGETABLES.

Artichokes per doz.	4	0	to 6	0	Mushrooms pottle	1	0	to 2	0
Asparagus per 100	4	0	5	0	Mustard & Cress, punnet	0	2	0	0
Beans, Kidney per 100	1	6	2	6	Onions bushel	2	0	4	0
Beet, Red doz.	1	0	3	0	" pickling quart	0	6	0	0
Broccoli bundle	0	9	1	6	Parsley, doz. bunches	3	0	4	0
Cabbage doz.	1	0	1	6	Parsnips doz.	0	9	1	0
Carrots bunch	0	6	0	0	Peas, Continental, quart	3	0	5	0
Cauliflower doz.	2	0	5	0	Potatoes bushel	3	0	5	0
Celery bundle	1	6	2	0	" Kidney do.	3	0	5	0
Chilies per 100	1	6	2	0	Radishes doz. bunches	0	6	1	6
Coleworts doz. bunches	2	0	4	0	Rhubarb bundle	0	6	1	6
Cucumbers each	0	6	1	6	Salsafy do.	1	0	1	6
Endive doz.	2	0	0	0	Savoy doz.	0	9	1	0
Fennel bunch	0	3	0	0	Scorzenera bundle	0	9	1	3
French Beans per 100	1	0	3	0	Seakale basket	1	0	2	0
Garlic lb.	0	8	0	0	Shallots lb.	0	4	0	6
Herbs bunch	0	3	0	0	Spinach bushel	3	0	4	6
Horseradish bundle	3	0	4	0	Tomatoes small punet	3	0	0	0
Leeks bunch	0	2	0	0	Turnips bunch	0	3	0	9
Lettuce (Paris cos) each.	0	4	0	8	Vegetable Marrows, doz	0	0	0	0

Injury to Stone Fruits on Open Walls.—A most critical time has passed over for apricots, peaches, and nectarines on open walls. Notwithstanding the usual coverings of woollen and other netting, &c., as protectors of the blooms, and the anxiety evinced by every gardener at this season to do all in his power to secure for his employer a crop of these delicious fruits, it is sad to have to acknowledge our fear that the sudden transition of temperature, &c. has done its worse to the apricot crop at least for this year. The weakness of the apricot bud or blossom was very apparent at the outset of the spring, and after the continued cold, damp, hazy weather, with successive rain and snow storms, which we experienced at the end of March, it is to be feared, in the south at least, that the apricot crops have suffered greatly. We, therefore, hail with pleasure Mr. Ayres' fruit tree protectors, which appear to be steps in the right direction. But it is not fruit alone that has suffered; vegetables have also sustained injury. The early potato crop, which was looking prosperous and forward on the evening of the 19th instant, has been greatly hurt by the biting frost (five degrees) on the morning of the 20th—the haulm is blackened and destroyed to the ground. And what of the apple, pear, cherry, and plum blossoms, which were fully expanded on the morning of Sunday last? Nothing in the way of fruit-tree bloom could stand against such a surly bleak north-easter, with the glass at freezing and a drifting snowstorm for hours. I see that our gooseberry and currant crop is safe as yet, as are also cherries on walls, but peaches and nectarines are very scanty.—D. CUNNINGHAM, Moor Park Gardens, Herts.

The Name and Address of the writer are required with every communication, though not for publication, unless desired. Letters or inquiries from anonymous correspondents will not be inserted.

All questions on Horticultural matters sent to THE GARDEN will be answered by the best authorities in every department. Correspondents, in sending queries or communications of any kind, are requested to write on one side of the paper only.

All communications for the Editorial Department should be addressed to WILLIAM ROBINSON, "THE GARDEN" OFFICE, 37, Southampton Street, Covent Garden, London, W.C. All letters referring to Subscriptions, Advertisements, and other business matters, should be addressed to THE PUBLISHER, at the same Address.

Readers who may find it difficult to procure THE GARDEN regularly through the newsagents, may have the numbers sent direct from the office, at 19s. 6d. per annum 9s. 9d. for six months, or 5s. for a quarter, payable in advance. All the back numbers may be obtained through all newsagents, at the railway book-stalls, and from the office.



"This is an art
Which does mend nature: change it rather; but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE ROSE SECRET.

It may perhaps interest your readers to hear that from the different articles which have appeared in *THE GARDEN* in reference to what is called "The Rose Secret," I got "a notion;" and instead of throwing my prunings away this spring I used them as cuttings, putting a whole lot of them—about a dozen or more—in (I am almost afraid to mention it) a marmalade jar filled with coarse sand and water, with sufficient of the latter to be about a quarter of an inch or so above the sand. I then plunged the jars into a slight hotbed (covered by a Randle span-roof protector), and let the cuttings have all the light and sun possible—never shading once. This was about eight weeks ago. Last week I thought I would have a look how the cuttings were going on at the bottom, as they appeared very healthy at the top; fancy my delight to find that the new roots had covered the sides of the jar, and were matted together in such a way that I had to wash the sand away under a tap to be able to separate the cuttings without breaking the roots. I call this "striking like willows;" some bits with only one eye at the top struck almost better than any; others, where I put perhaps two eyes beneath the surface of the sand, have struck from every eye. I can assure you I never saw cuttings so well furnished with roots as these were.

Out of about 120 cuttings of some three dozen different kinds of Roses, I only missed striking fifteen, which I think is a very encouraging result; anyhow I shall consider it the road royal, and experiment again in a similar manner in summer, when I shall pay more attention to the preparing of the cuttings and the way they will strike the readiest. The beauty of my system is its extreme simplicity; the trouble or labour is *nil*; beyond the mere procuring of the cuttings, all one has to do is to leave the jars alone, only giving a little water from time to time to replace what has been lost by evaporation.

As to the size of cuttings, I have put in anything—thick or thin, pithy or woody, straight shoots or jointed ones, shoots with from one to six eyes—only taking care that the cut in every case was a clean one, such as a good sharp knife will make.

MAX KLOSÉ, *Rose Cottage, Chalford.*

SALAD CULTURE.

Most people like a good salad; but unfortunately, as a rule, when the days get warm the salads get poor, and consequently, just at the time when we should most enjoy them, it is almost impossible to procure them. This arises from defective cultivation. All our salad plants, to be tender and crisp, must be grown quickly; and to secure that important end, the weather must either be moist and growing, or the ground must be rich. A dry, hot spring generally results in poor salad plants. The exception to this rule is either in rich, naturally moist soils, such as may be found in the valley of the Thames, or in situations made artificially rich, and where in dry seasons an abundant supply of moisture can be ensured. Thus, for the growth of summer lettuce, I have a plot of ground heavily manured, deeply dug, and finely pulverised; and then I divide the ground into beds three or four feet wide, leaving a path between, and excavate the surface soil four inches, placing the soil in the paths. In the excavation I place well-rotted dung—cow manure, if the land is sand—tread firmly, and then return the excavated soil two inches thick, taking care to leave sufficient in the paths to raise them above the beds, so that they will re-

tain sufficient water to completely flood them at any time. Plant a plot thus prepared every three weeks or a month from the beginning of June to September, and a supply of crisp, succulent lettuce is certain up to near Christmas. Observe, however, that water must not be spared; and should the weather be hot and dry, sufficient to soak the beds a foot deep must be given every week or ten days at the furthest. When the young plants are thoroughly established, weak manure water prepared from guano or sheep's dung and soot may be given with advantage. The secret of growing fine summer lettuce is that the plants, from the seed state to final maturity, shall not receive any check. Place young plants upon poor dry soil, and they directly run to seed; plant the same upon the beds which we have described, and they directly assume that plethoric habit which is coveted by all salad eaters. A well-grown Cos lettuce should weigh, when fit for table, from two to four pounds; the Neapolitan little less; and Tom Thumb should present a compact heart as large, and nearly as firm, as a cricket-ball. That size it will readily attain if planted upon beds prepared as I have described, and not more than six or seven inches apart.

This course of treatment may be pursued up to the end of August; as winter approaches, however, more elevated ground must be selected, or the plants, from an undue accumulation of moisture, may damp off. Therefore, beds for winter lettuce should be in southern and sheltered (but not close) situations, should slope gently to the sun, and should be raised fairly above the surrounding ground, the paths being several inches below rather than above the level of the beds. Some of our market gardeners who grow lettuces so successfully, plant them upon a sloping bank, and place the plants under hand-lights or large bell glasses. The ground being prepared, the glasses are set down in line so as to nearly touch each other. Under each, according to its size, three, five, or more plants are placed at regular distances, and plants are also placed in the spaces between the glasses, and these form a successional crop. This is, however, found to be somewhat inconvenient, and hence small frames, which are readily ventilated, are preferred by some. Where space is limited, and it becomes necessary to utilise every yard, lettuce for the winter and spring crop may be successfully grown over asparagus beds. Thus in October, as soon as the asparagus has turned yellow, clear the tops away, and having removed the soil, fork the surface of the beds carefully over, and break the soil quite fine. Then lay on, two or three inches thick, a layer of rich compost, such as the dung and soil from a hotbed, and plant the lettuce out in the usual manner. For this purpose the plants should be strong, and they should be planted in rows six inches apart and four inches apart in the row, so that as soon as large enough each alternate plant may be taken out for use, and to make room for those remaining. These I cover with low light frames, which admit a gentle circulation of air, and protect the plants from cutting winds and rain. In this way I manage to get excellent lettuces in March and April—quite equal in fact to any to be found at that season in the London markets, to which they are so largely imported from the Channel Islands and from France.

As regards varieties the black-seeded brown Cos is perhaps the most hardy, and at the same time, when properly blanched, the most crisp and nutty in flavour. Then in the same section follow the Sugar-loaf Cos, which "turns in" without tying, and Perfection. These are the best of the brown Cos varieties, and to them may be added the green and white Paris Cos, or, as they are sometimes called, the London Market Cos.

Of cabbage lettuce the brown Dutch and hardy Hammer-smith are the hardiest; but Tom Thumb and All the Year Round are more delicate in quality. It is well for winter and spring supply to plant equal quantities of each of the preceding, though with the protection of glass there is not much danger of losing them, especially if the precaution is taken in severe weather to protect them thoroughly with mats and litter.

I sow every three weeks from the beginning of March to the middle of September, the first and last sowing being under glass. The autumn and winter supply I get from the plants raised in June and July; and those grown from the latter crop should either be so planted as to be readily covered with a frame or some other kind of protector, or they must be raised carefully, with good balls, before they are injured by frost in

October, and be planted in an orchard house or some other place secured from frost and damp. Of course at that season damp is the chief danger with full-grown lettuces; hence they must be carefully guarded from rain, and they will require to be examined frequently to remove decaying leaves. Properly protected from frost and damp, the July-sown seeds yield a supply through the winter months; and then for the early spring those sown in August will be ready for use. One advantage of planting over asparagus beds is that, if you protect the plants with glass, by the time the lettuce are fit for use the asparagus with the protection will be starting into growth, and thus it may be had some two or three weeks before the natural season, and when it is of much more value. Upon very heavy soils young lettuce plants are liable to damp off. In such cases it will be found wise to surface the ground at the autumn planting half an inch thick with burnt earth, or, if this cannot be obtained, fine cinder ashes. Either will remove moisture, promote the growth of the plants, and prevent the intrusion of snails.

G. S.

NOTES OF THE WEEK.

— A WOMAN born April 17, 1772, planted a tree the other day at Isleworth, in commemoration of her hundredth birthday.

— It is announced in the *Revue Horticole* that a nurseryman of Toulouse has obtained a really good double white Zonal Pelargonium. It is now in the hands of M. Bouchardat, of Lyons.

— THE translation of Le Maout and Decaisne's "*Traité Général de Botanique*," by Mrs. J. D. Hooker, is announced by Messrs. Longman as in the press. This is one of the noblest works on botany that has yet appeared.

— It is announced that the next exhibition of the Royal National Tulip Society will be held on May 25th, in the Botanic Gardens, Old Trafford, Manchester, when £60 will be given in prize money.

— THE Central Horticultural Society of France announces an exhibition of horticultural products, plants, implements, &c., in the Palais d'Industrie, Paris, in conjunction with the Fine Arts Exhibition from May 25th to 30th. All communications on the subject should be addressed to the secretary of the society, Rue de Grenelle, St. Germain, Paris.

— INDIVIDUALS who endeavour to perpetuate their names by inscribing them on seats in parks and gardens, &c., may be interested to learn, that recently a young gentleman of Bermondsey who cut his name on one of the new seats in Greenwich Park, has been offered by the magistrate the alternative of a fine of twenty shillings or fourteen days' imprisonment.

— DR. L. PFEIFFER, of Cassel, has published the two first parts of a work which will be useful to the systematic botanist, "*Nomenclator Botanicus*," being an alphabetical enumeration of the names of all classes, orders, tribes, families, divisions, genera, sub-genera, and sections of plants, published down to the end of the year 1858, with references to the authorities, systematic arrangement, synonymy, and first publication.

— At a recent meeting of the Court of Common Council, Mr. H. A. Isaacs moved a resolution to the effect that no steps be taken to reconstruct Farringdon Market until the court should have finally considered the modification in the plan and models. Mr. H. Harris seconded the resolution, which, after an animated debate, was carried by a majority of seven in a court of 103 members. For the present, therefore, the proposed reconstruction of the market remains in abeyance.

— THE employés of Mr. Cranston, of King's Acre Nurseries, near Hereford, having petitioned their employer to shorten the hours of labour on Saturdays from six to four o'clock, he readily conceded their application, for which the men seem universally grateful; and we have no doubt that it will prove the means of extending a kindly attachment between themselves and their employer. This is an exemplary act on the part of Mr. Cranston, and we should be pleased to hear of the same plan being adopted by others.—*Hereford Times*.

— THE cuttle-fish of the sea has a curious relative in the plant family. It grows in the southern parts of Africa, and is known by the name of Hook-Thorn or Grapple-Plant (*Uncaria procumbens*). The large flowers of this truly horrible plant are of a lovely purple hue. They spread themselves over the ground, or hang in masses from the trees and shrubs. The long branches have sharp, barbed thorns, set in pairs throughout their length. When the petals fall and the seed-vessels are developed and fully ripe, the two sides separate widely from each other, and form an array of sharp

horned hooks. Woe be to the traveller who ventures near at such time! The English soldiers in the last Kaffir wars suffered terribly from this plant. While the Kaffir, unclothed and oily, escaped harmless, the European was certain to be made and held prisoner. Imagine one hooked thorn catching in a coat-sleeve. The first movement at escape bends the long slender branches, and hook after hook fixes its point in the clothing. Struggling only trebles the number of thorned enemies, and there is no way of escape, except to stand still, cut off the clinging seed-vessels, and remove them one by one.

— THERE has lately been presented to the Academy of Sciences at Paris, a round cut from the trunk of an *Eucalyptus globulus* of six years of age, which is nearly twenty inches in diameter. This colossus of the vegetable kingdom grows and develops itself with astonishing rapidity. Seeds planted in 1865, are already, 1871, trees of fifteen metres high, and sixteen inches in diameter, at one metre distance from the ground. From the experimental garden at Algiers, where it has been much cultivated, plants are distributed gratuitously to such colonists as wish to have it. This *Eucalyptus* has succeeded exceedingly well in Algeria, and becomes in a very short time a tree of enormous size.

— IN the House of Lords this week, judgment was given in the appeal of the Duke of Buccleuch against the Metropolitan Board of Works. The original action out of which this appeal arose was commenced in 1867, and was brought to recover a sum of £8,325, which had been awarded to the appellant by an umpire appointed under the provisions of the Thames Embankment Act (1862), as compensation for taking away a jetty in which the appellant had an interest, and for the appellant's interest in certain lands adjacent, being injuriously affected by the execution of the respondents' works, together with interest on that amount and the costs. At the trial the jury found a verdict in the duke's favour, and this their lordships now upheld.—*Globe*.

— PARIS is just now subjected to a peculiarly unpleasant visitation. For eight or ten days past it has been deluged by swarms of large, black flies, common enough in gardens, but seldom seen in cities. They settle down in perfect shoals on people's clothes, on the tables at Boulevard *cafés*, on the *trottoirs*—everywhere in fact. These unpleasant invaders have made themselves so great a nuisance, that M. Blanchard, a member of the Academy of Sciences, read a communication to that learned body about them. He stated that the scientific name of the fly in question is *ibibio hortulanus*; that it is quite a mistake to suppose that it feeds on decaying animal matter; it has a *penchant* for *pruneaux*, fresh vegetables, and other good things in the leguminous world; and their great numbers are due to the fact that, the Commune last year having scared away the small birds that prey on their eggs, they have increased and multiplied to an extent unprecedented.

— A HANDSOME conservatory will form part of the attractions of the magnificent aquarium now being finished at Brighton. It will, for the most part, be in the natural style, and cannot fail to be a graceful adjunct to the many interesting features this structure may be expected soon to possess under the management of Mr. Lord. The rockwork portion of the aquarium, including the conservatory, is being executed by Mr. Pulham, a sufficient guarantee that it will be satisfactory. We regret to learn that the Town Council of Brighton have thrown all the obstacles in their power in the way of this fine aquarium, so likely to be of service to knowledge, not to speak of advantage to the town from a lower point of view. By preventing the necessary elevation, the Town Council has succeeded in completely ruining the external aspect of the building, which is buried almost out of sight. We regret this the more, as the establishment is likely to prove an admirable one. Internally the structure is all that could be desired.

— Too late in some countries, and just in time in others, people are learning what a folly it is to strip indiscriminately the face of the earth of its forest trees. Whole regions have been rendered arid and uninhabitable by the too free use of the axe. India has suffered much from this cause; Australia and America have cut down timber far too wildly; North Africa and Spain in ancient times lopped away forests which were the life of those regions; and we believe that the destruction of woods has been overdone in our own islands. A forest is a natural reservoir of water; it protects the rain which falls into it from solar evaporation, and thus feeds the underground springs. "Everyone should think twice before he lays axe to root;" and it is, indeed, almost a pity that the Greek idea is dead, which saw a Dryad in every graceful and picturesque tree. California has been wise in time. She has glorious forests, amid which tower giants of the vegetable world—those pines of the Yosemite Valley, for instance—beside which our grandest oaks would look like mere shrubs.—*Telegraph*.

THE FLOWER GARDEN.

THE WHITE LADY'S SLIPPER.

This is not so beautiful as the showy Lady's Slipper (*Cypripedium spectabile*), but it is withal a very beautiful plant, and quite distinct from any other kind known to us. The *American Agriculturist*, to which we are indebted for our pretty figure of the plant, describes it as of the natural size. We have seen it thrice this size in England, and from newly-imported specimens, too. There are six species of hardy Lady's Slippers in the Northern States of America, one of



Cypripedium candidum.

the rarest of which is the White Lady's Slipper. The lip, which is the conspicuous portion of the flower, is of a pure white, the rest of the flower being greenish. This rare little plant is found in bogs from Central New York westward. All the *Cypripediums* are worthy of cultivation, but they can only be grown successfully by imitating their natural conditions. They require a peaty, sandy, moist soil, and a shady situation, and under these circumstances their cultivation is not difficult.

NATURE'S FLOWER GARDEN.

A RAMBLE in spring through our woods and fields has a charm to my mind unequalled by few others of the pleasures of our existence. On every side we see plants in all stages of growth; some just bursting into life, and some already in flower, but all exemplifying the grand reproductive powers of nature. The bright sun overhead, lighting up, it may be, the drops fallen from a passing shower, the twitter and rapid flight of the swallow, the note of the cuckoo, seen and heard perhaps for the first time since their departure, all contribute to the buoyancy of spirits which a fine spring day brings

to those who are not too much borne down by this world's cares and sorrows. I am not much of a botanist—that is, I am not a scientific one—but I thoroughly enjoy such a walk through nature's "wild garden," and seeing and recognizing my old spring favourites on this their annual re-appearance. I have, too, my own special wild garden to replenish with any rarity with which I may happen to meet. To this end last week I made an expedition to a neighbouring wood, noted for containing an abundance of that rare native plant, the bulbiferous Bittercress (*Dentaria* or *Cardamine bulbifera*), and one which is well worthy of a place in a wild garden. This plant is, I fancy, not generally well known, as it grows in but few places in England. In flower it resembles the common Cuckoo-flower, or Meadow Bittercress, so abundant in our meadows; but the chief peculiarity about it consists in its white knotted rootstocks, like ivory, from whence it receives its name of Coral-root. The wood I refer to is charmingly situated in a hollow near a river, and was quite carpeted with plants of various descriptions. The dark green of the Dog's Mercury formed a pleasing contrast to the yellow flowering stems of the Wood Spurge; and almost every inch of ground was occupied by some more or less well-known plant. Here, later in the season, may be found, in great handsome clumps, the Willow Epilobium and the Nettle-leaved Campanula, with its elegant bell-like flowers; both of which plants might be introduced with advantage into our shrubberies, when they do not happen to grow in the immediate neighbourhood. After filling my bag with several roots of the *Dentaria* and other plants, I turned my steps towards the river. There also everything was beginning to wake up after its winter sleep, and in a few weeks the banks will be thick with vegetation—Epilobium, Comfrey, the yellow and purple Loose-strife, Hemp Agrimony, and many well known aquatic plants, too numerous to name, which add so much to the beauty of our native streams.

A visit to an old garden wall to ascertain the fact of the existence of *Asplenium Trichomanes*, and to a neighbouring churchyard to obtain a root of *Geranium pyrenaicum*, and my walk was ended. The expedition was not without its results, for I carried home a basket of plants to my wild garden, which will increase its beauty and interest in my eyes. A dried collection is doubtless a very useful and necessary thing, but, in my opinion, a small piece of ground set apart for the culture of our rarer native plants is a much pleasanter way of obtaining a smattering of botanical knowledge.

W. A. T.

FLOWER GARDEN FASHIONS FOR 1872.

MR. T. BAINES's last letter on the "bedding system," I am glad to say, makes it clear to my mind, that however his hands may have helped him, his head clearly has most to do with his deservedly high position. Of all the chinks in the gardener's armour, this one of the bedding system, which he exposes, is the weakest and the most glaring. There is really no such thing as gardening nowadays. Every establishment, big and little, has started a factory, in which every colour in the rainbow can be supplied at a month's notice, in any quantity, from six inches to six thousand yards. It is usual to laugh at the nobleman who ordered ten feet of theology, sixty yards of biography, and twenty of history, &c., to fill up his newly-erected library shelves; but his want of proper taste and appreciation is as nothing compared with that exhibited by those who plume themselves on their correct taste, and yet persist in sickening themselves and their neighbours with the namby-pamby and glaring mixture of vulgarity and formality which at present constitutes the bedding system. It was all very well for the first few years to astonish one's neighbours with; but the old conundrum gets dreary when you have heard it asked and answered thousands of times before; and it is no wonder that your visitor, when you show him your ribbon border, and ask his opinion of it, replies, that "he has, as nearly as he can measure, seen about sixty miles of exactly the same pattern," and asks you as a favour to be allowed "to cool his eyes on the parsley."

Just so; there's no individuality about gardens nowadays. When you have seen one, you have, to all intents and purposes, seen the whole of them. They are all miserable copies one of another. Gardening has drifted into horticultural tailordom, and it is even gravely proposed to publish a yearly plate of the "latest fashions." It appears to me that cultivators will shortly improve nature off the face of the earth. I will give them a wrinkle—it has been in my mind for years. Get five thousand yards of Dundee canvas in red, blue, yellow colours, to suit pattern; procure plate of fashions for 1872; call out the housemaid and stable-boy; don't dig your beds—it is expensive, and quite unnecessary; lay your red, blue, yellow, &c., strips to pattern, and I venture to say you will have one of the most finished spectacles it is possible for the mind of man to conceive. So overcome am I with the advantages which my plan of

gardening offers, that I only await the consent of an interested friend to patent it. Let me enumerate its advantages: For a place of even small pretensions it would take £1,000 to be sunk in houses to keep up the usual stock of bedding plants. It would take, say £200, for gardeners' wages, looking after, and planting them. If I wished to go in for spring gardening, and something late after the bedders, it would cost at least another £200. Then I have plants to pay for, coals to pay for, additional frame room, propagating space; additional men to propagate, keep the plants through the winter, harden them off in spring, plant out and carefully protect thereafter, and to take up when their four months are over. Now, mark the magnificent results of my invention. Every item of this account is entirely saved; for the £20 for the canvas and the £1 for the plate of fashions will have been made up by odds and ends not mentioned in the list, and the remainder is done by myself and my two humble help-mates in ten minutes. Can the objection to the bedding system be urged against mine, viz., that it is a blaze for two months, and blackness and darkness the remaining ten? Most certainly not. Talk about the seasons retarding vegetation and extending labour; I care not a fig for the seasons. Nothing can exceed the brilliancy of my red, yellow, and blue, &c., canvas, when well washed by the watery blast, which blew my neighbour's toil and expense to "smithereens" for a month, and when, after the storm, the sun shines through, my renovated beds present to the painter's eye and the poet's soul, a feast of the most ravishing effects and the most brilliant results. Am I twitted with providing this rich entertainment for the noble and the wealthy, I reply at once that, as in all strokes of true genius, every case is provided for. I vow, when I examine the increasing advantages of my astounding invention, I am lost in amazement at its magnificent advantages.

What, however, if my friend should object, as he has often done to former improvements confidentially mooted to him? He is a great Nature's advocate; and, to say the truth, my scheme is not very complimentary to her; in fact, she is, so to speak, entirely done without and ignored. But what of that? She is at all times capricious; and if I, by a stroke of unparalleled ingenuity, can remove her old, half-dead trunk, and substitute a sapling whose beauty and persistent loveliness is a delight from year's end to year's end, am I not entitled to the thanks of every discriminating individual? Clearly I am. Yet it is very likely my friend will disagree with me. If he does, he will, no doubt, treat me to the sixty-ninth repetition of his pocket-lecture about Nature. I know it well. This is how he commences: "Suppose a painter to be doing his best in his latest effort. A single tree is necessary for the foreground. Does he away and limn the scraggy thing at the corner of the street, or does he not rather try back in his memory, and in his portfolio, for the glorious sample of leaf and bough, and light and shade he came across in his woodland rambles? When he paints a fairy glen, does he go to the back-door to paint the gullet with the city's sewage pouring down? No; blindfolded he could lay his finger on the draught he made of the little northern ravine, with its trickling well and dewy ferns, that made heart and eye dance with delight at its marvellous beauty. He has travelled through the British Isles; he has been to Iceland, Norway, France, Spain, Italy, Egypt, even to Palestine, and everywhere his artist's eye and poetic soul have caught nature in a thousand of her loveliest and most enchanting forms. Here the quiet lake, there the majestic mountain piled in awful grandeur. In the morning a sunrise, in the evening a sunset; the "wimplin' burnie," the roaring cataract, the placid sea, the angry ocean, all furnish to his discerning eye and discriminating mind the pabulum that will one day place him among his country's greatest painters. He has painted scenes of lake views, but not one resembles another, although he might tell you that the sketch of each was nearly the same; that the little mountain lake he came upon in his Swiss tour had furnished him with rules for mountain, wood, and water effects ever since. But although he may vary these effects in numberless profusion, it never enters his head to portray a monstrosity in his "wild" scenery. You are surprised, perhaps, to see that his trees are all of the orthodox cast; in fact, so plain are they in leaf and habit that you can tell them at once, even from a distance. Suppose we get him by the button-hole, and say to him in a confidential way, "My dear fellow, you have really surpassed yourself in that woody scene. Couldn't you, just to light it up a little, have painted that front giant, say, with a white ground, yellow on the sunny side, as is natural, and blue will suit very well for the other and shaded side; the leaves of say a pretty pink; and have carried a broad band of golden gilt up the entire trunk to make it truly magnificent?"

"The oak tree with the white body, yellow and blue sides, and pink leaves, with gilt stripe in the middle, is, sir" (and here my friend looks wrathfully at me), "the present bedding system. Instead of the gardener of the present day being an artist, who studies

Nature, so that from every tree and flower, and hill and dale, he may cull ideas wherewith to "mend" his plan—to "change it rather," from a dreary wilderness to an ever-pleasing and fruitful landscape, he is a miserable paper-hanger, upholsterer, and plasterer, with his ribbons and lines, his cow-muck banks, with their paltry house-leeks stuck in; he is a cross between extravagance and vulgarity. Let him take a hint from Mr. S. R. Hole and his parsley bed. We are being done to death with vulgarity. The gardener breaks his own back, and shortens his days, with the eating anxiety and care caused by the millions under his charge. Day by day his, say twelve, men are driven like horses to propagate, pot off, harden off, arrange, plant out, carefully tend, and pick over; then propagate again, and take in and winter, the hideous stock necessary under this exterminating system (to all concerned), and not to speak of the heavy and never-ending expense to the employer. This is all trying. Having had a surfeit of expensive novelties, with the results above stated, let us revert to the old style, and see what can be made of it, helped with such modern ideas as we may have picked up. Let us have all trees of beautiful and distinct forms; all shrubs remarkable for fine flowers or graceful growth or foliage. Let us have perennials from the tiniest to the largest, and as many as possible sweet-scented. Let us have as many species as possible of the grand foliage plants to be found in the hardy section; and with such adjuncts as have just been named, surely any gardener might produce striking landscape effects, very different from those attained by means of ordinary bedding plants. However I may have spoken, I do not blame the gardener, employer, or nurseryman personally; least of all the first; but as a body they have been leading each other for many years into the deepest quagmire of expense and vulgarity." This is about the substance, although not the length, of my friends' production; and, notwithstanding the scheme I had propounded, I am afraid he has made me already a convert to his views.

W. W.

A GOOD STAKE FOR CARNATIONS, PICOTEES, &c.

NONE of the routine work of gardeners is of greater importance than staking, and the difficulty of getting it neatly and well done is often too evident in gardens. Even where there is time to rigorously attend to the staking, the beauty of the garden is often marred by the plants being tied into broom-like bundles.

The little invention here figured is intended to provide a stake which is at once cheap, unobtrusive, everlasting, and, if we may so speak, self-tying. The illustration shows it first by itself, as it is made for picotees, &c., by taking galvanised wire about one-twelfth of an inch thick (hard drawn), and twisting it in a long spiral way about



Fig. 1.

Fig. 2.

four times round a stiff straight piece of wire about a quarter of an inch thick (once round in about three inches), finishing with a sharper turn round the top about three-fourths of a revolution, and then cutting off, so as to leave half an inch of straight wire at the tip; the straight part at the bottom being about nine inches in length. Fig. 2 shows it applied to a picotee, and it is stuck in so deep that the top bud shall just rise above it. The plant is then wormed round so as to let it fall into a position in the middle of the spiral stick; and when the top is also slipped into its place it will be found as safe as if it were tied ever so well, being supported by the bit of straight wire left for the purpose. A few yards away this stake is scarcely observed, so neat is it compared with ordinary sticks. Another good point is the freedom which it allows to the foliage and long hanging flower-stalks to fall away

from it if they wish; and, in addition, if the stem grows after it is applied—as it nearly always does—it slides up without making any ugly hitch in an attempt to push up against ties, as in the old way. A man might make a hundred in a single evening out of half-a-crown's worth of wire, and apply them to plants next day in less than half an hour.—A. D.

A PLEA FOR OUR HEATHS.

WHY are our native Heaths not more frequently grown than they are in grounds kept and arranged for pleasure? Why not have a Heathery as well as a Rockery or Fernery? There are spots in every place of any dimensions where Heaths would be useful, growing as they do where many things will not succeed. How to cover that ugly "bank," is often a matter of concern to those who possess such places. Attempts are sometimes made to clothe such a place with ferns; but if the bank is elevated and open, Heaths would be the right plants in the right place. They glory in such a spot—plenty of air, plenty of sun. It is astonishing what they will encounter and conquer, even in dry seasons. They send their roots down after moisture to a considerable depth. Even in stony poor soil they somehow get through the severest drought when once established. A bank of Heath in flower, with rocks jutting out here and there, is a sight which invariably commands attention. In strolling through a wood some time ago, I came upon broad masses of *Erica ciliaris* full of flower, and again suddenly upon what must have been acres of *E. cinerea*, to which a few straggling Firs here and there served as supports, thus forming cones of flower. This, thought I, affords a pleasure which our dazzling terrace-gardens do not give, and furnishes a sight which ought to be more frequently seen. I have also found bushes of *E. vagans* six feet through every way, forming huge balls of flower. But this is describing some of Nature's flower shows. The question is, how shall we copy her example in having such spots of beauty in dressed ground? It is of no use to go and offer battle to Nature, and rob her of her big plants, bring them home, and think the thing is done. No; we must, like her, begin with little plants; although we have seen Heaths grow in almost any soil from which lime is absent, and sometimes where it may be said there was no soil at all, yet it is best to make a little preparation for them in the way of excavating little cavities and filling up with peat or very rotten leaf-mould, mixed with loam. This will save time in getting the plants to a good size, and save trouble and attention, which want of preparation would incur. If the distance is not great, and the soil in which these plants grow naturally can be got, that is best for them, taking the surface off three inches deep. Do not by any means allow any plants to be put in with hard balls of soil about them; loosen it as much as possible, without damaging the roots, before planting, otherwise no water will penetrate, and they will consequently die. Almost any nurseryman could supply our native Heaths and their varieties at a cheap rate; some catalogue as many as fifty hardy kinds, beside the Mediterranean varieties.

HENRY MILLS.

Engs, Cornwall.

THE LIBRARY.

DARWIN'S "ORIGIN OF SPECIES."*

WE have to record and to welcome the appearance of a new and cheap edition of this remarkable and most interesting book. It is needless to say anything in reference to its object now, as, since the appearance of the work originally, the chief ideas which it contains have been fully discussed. Few will deny (except perhaps those who discuss what they call "Darwinism," without having read the book, and such people are far from uncommon) that, even if they cannot go as far as the author and his more pronounced co-workers and disciples, the work has opened up a new and delightful field of thought and observation. On Mr. Darwin's labours we cannot do better than cite the opinion of Mr. I. Anderson-Henry, a well-known and very successful hybridizer of plants, who by no means adopts Mr. Darwin's views. It occurs in a paper read before the Botanical Society of Edinburgh:—

The various papers and publications given to science and the world in recent years by Darwin and others have directed the attention of all botanical observers of phenomena in that department to

* Darwin's "Origin of Species." Sixth and cheap edition. London: John Murray, Albemarle Street.

the changes which have been and may be effected on the existing species of plants; and those who reflect on the diversity of the vegetable kingdom as displayed in the grandeur of the various forms which compose the primeval forests of the torrid zone, or in the no less diversified but homelier forms of our temperate climes, must be attracted with the statement that, throughout all past time, change—slow but incessant—has passed on everything that now has life; insomuch, that we see no more the things which were in the things that do appear. So at least holds Darwin, whose observations for general accuracy, so far as they are open to scrutiny, stand well the test of investigation; though beyond that limit they diverge, as he himself admits, into speculations which, however logically deduced, all of us are free to adopt or reject, as we are or are not convinced by them. Much, I am free to acknowledge, I believe of the Darwinian theory—more now than I once did. Yet, as I have been asked by a high authority (in reference to a paper which I read in March last), whether I adopted the Lamarckian view, which forms the germ, if not the basis, of the Darwinian doctrines, I reply unhesitatingly, No—not in their beginning or their ending—though where the latter is, Mr. Darwin is perhaps as much at sea as any one of us. But lop off that beginning and ending—above all, lop it off as regards his views of the animal creation—and there remains in that great work, "The Origin of Species," a body of botanical philosophy, so well sustained by the author's own accurate observations and wonderful discoveries, that it constitutes, in my opinion, the most valuable contribution ever yet made to botanical science, and marks an epoch in its annals more brilliant than any yet attained. This is no inflated eulogy. For the last quarter of a century I have myself devoted every spare hour of my professional leisure, and for the last seven years (when free from professional yoke), my leisure almost entirely, to similar pursuits. And, as a humble labourer in the same field during all that time, I have some claim to be recognised as capable of forming an estimate of what has been discovered and achieved by Darwin, and given to the world in that great work, and in his scarcely less wonderful book "On the Fertilization of Orchids," and his papers read before the Linnean Society. He has not only accomplished great things by himself; but he has aroused attention, and stirred up other admirably qualified observers to extend his researches, and, it may be, has thus led the way to no less startling discoveries.

Nature has many mysteries to unfold. She has fixed rules, some so plain, that he who runs may read; and she has exceptions to these rules. Look at the wonderful provision she has made for the fertilization of orchids, and look at the no less marvellous modes she has adopted for the same end in the dimorphic forms of the genus *Primula*, and also in some forms of the genus *Linum*—of all which Darwin was the grand discoverer. I was myself almost a sceptic in the results obtained by him till I tested the statement he enunciated in the former genus by actual experiment, and found it true. Before he wrote, I had been myself at work among the species of the genus *Linum*, and while I found some of them tractable and open to self-fertilization, I found a disturbing element among others, for which I never could account, till I found it cleared up by Darwin in his dimorphic discovery. To a mind like his, ever alive to follow out by untiring research every perplexing cause which baffles the expected result, one discovery followed and perhaps suggested another, and it may be that the most brilliant of all yet awaits him. Let us follow in his wake; and though few are so constituted or so gifted as to attain to like successes, there is much for all to do. There is romance in the pursuit, and laurels to be gathered by every acute, industrious observer.

WAGES OF LABOURERS IN VARIOUS COUNTRIES.

THE Hon. Edward Stanhope sends the *Times* the following statement, showing the comparative earnings of agricultural labourers in the principal countries of Europe, with the purchase-power of money and the usual diet, where it has been possible to ascertain these particulars. The statement is founded mainly upon the reports of her Majesty's representatives abroad on the Tenure of Land, and on the condition of the Industrial Classes in Foreign Countries 1869-70-71. Reference is also made to the appendix to the lecture of Mr. James Howard, M.P., on Continental Farming and Peasantry. For comparison, the rates of wages and diet in Great Britain and Ireland are appended. The table deals only with hired labourers, and avoids all mention of the small proprietors at home or abroad. One disadvantage in the way of the foreign workman is the number of holidays or village fêtes, which number in Russia from 30 to 100 during the year, in Austria at least 76, in Turkey 48, and which are very numerous in Belgium, Spain, and Switzerland:—

"AUSTRIA.—Wages—Galicia, 9d. a day in summer and 6d. in

winter; at harvest, 1s. to 1s. 2d.; Silesia, men, £4 a year; women, £3, with board and lodging; Moravia, 8d. to 1s. 4d. in summer, and 6d. to 10d. in winter (Dr. Fuchs, 1869). In 1867 the average wages were from £3 to £4 for men, or £1 to £3 for women, with board and lodging. It has since risen (Lyttton). Purchase-power.—Same as in England at Trieste; twenty-five per cent. less at Ragusa. Diet.—As a general rule, well fed (Lyttton).

"BELGIUM.—Wages average 7d. to 1s. 1d. a day for men, and 4½d. to 8d. for women, with extra at harvest (official 1862). From 1s. 2d. to 1s. 8d. for men, and from 8d. to 10d. for women (Pakenham). Purchase-power.—Necessaries as dear, luxuries cheaper, clothes dearer, than in England (Consul Grattan). Diet.—Coffee adulterated with chicory, without milk or sugar, black or brown bread, butter, lard, vegetables, and fresh or salted pork. Very many have only potatoes with grease, bread, and chicory (Pakenham).

"DENMARK.—Wages, 1s. 3d. to 1s. 8d. a day, or 5d. to 10d. with food. Beer and brandy at harvest. Hours of work, twelve to thirteen in summer, and daylight in winter (Strachey). Purchase-power.—An unmarried operative can barely live on 10s. 6d. a week (Strachey).

"FRANCE.—Wages, 1s. 7d. a day in summer, or 1s. 3d. in winter; women, 10d. and 7d. (M. Leconteux). A farm labourer engaged by the year has £12 or £14 and his board, costing about as much (M. de Pimpin). Purchase-power.—No real difference, but on French mode of living twenty-five per cent. less (Verker), fifteen per cent. more than in England (Hamond). Diet.—Soup made of pigs' lard or beef suet, vegetables, and bread porridge (Hamond).

"GERMANY.—PRUSSIA PROPER.—Wages, 6d. to 1s. a day for men, and 5d. to 7d. for women, with house rent free, potato land, and medical attendance, or £3 to £4. 10s., and board, for men.

"POMERANIA.—5s. to 7s., or even 15s. a year, and board, with meat three or four times a week; food worth £10 a year.

"RHINELAND.—1s. in summer and 10d. in winter, with house rent free, or 1s. to 1s. 3d. without it. Hours of work twelve, or in harvest fourteen. Diet.—Porridge, milk, dried peas, potatoes, vegetables, and herrings. Meat on holidays. Such boarding valued at £9 to £13 (Harris-Gastrell).

"SAXONY.—Wages, 1s. to 1s. 3d. for twelve hours; women 6d. to 9d. Diet.—Bread, butter, cheese, soup, vegetables, coffee, and beer. Meat only on holidays (Burnley).

"BAVARIA.—Wages, 1s. 2½d. a day for men, and 11½d. for women on the average. Diet.—In south, meal with butter, fat, or milk, cabbages, and potatoes; in north, meat two or three times a week, instead of the meal and coffee (Fenton).

"WURTEMBERG.—Wages, 1s. 2d. to 1s. 8d. a day, with food, or £5 or £6 with board and lodging in a farmhouse. The necessities of life cheaper, and the standard of living much lower. Diet.—Potatoes, rye bread, and cider; very little meat (Gordon).

"ITALY.—Wages—Lombardy, 1s. to 1s. 7d. a day, without board; Bologna, 10d. to 1s. 5d.; Parma, 6d. to 10d.; Naples, 10d. to 1s. 3d. (Herries). This does not refer to the *métayers*. Purchase-power.—At Brindisi as fourteen to ten in England; at Naples as fourteen to eight. Diet.—Very little animal food, but principally macaroni, bread, fruit, vegetables, and wine.

"NETHERLANDS.—Wages in Gelderland, 8d. to 10d. a day for men, and 6d. to 8d. for women, or £5 to £10 a year, with board for farm servants. Purchase-power.—Necessaries about as dear, luxuries much dearer. Diet.—Tea and coffee, black and brown bread, butter, vegetables, and fat; fish in season (Locock).

"RUSSIA.—Wages, by the day 1s., by the month 7½d. a day, by the season 5½d. a day; at harvest 2s. a day; on well-managed estates they work from four a.m. to nine p.m., with three hours rest (Michell). Purchase-power.—One-half for natives, and for Englishmen one-third, cheaper than in England (Consul Stevens). Diet.—Cabbage, or mushroom soup, baked buckwheat eaten with milk, oil, or butter, and rye bread (Michell).

"SPAIN.—Wages—Galicia, men, 12d. to 14d.; women, 7d. to 10d., or £4 to £6 with board, washing, and a suit of clothes; Murcia, 1s. 4d. a day without, or 8d. with board; Guipuzcoa, 1s. 2½d., or 8d. and food; women, 8d. to 10d.; Biscay, 1s. 8d.; women, 10d. to 1s.; Valencia, 1s. to 1s. 6d. Purchase-power.—Food far cheaper, but meat a luxury. Diet.—Bread, vegetables, and 'gaspacho'—cold soup of slices of cucumber and bread steeped in vinegar and water (Ffrench).

"SWEDEN.—Wages, for men, 7d. to 2s. 2d. in summer, and 3d. to 1s. 8d. in winter; for women, 4d. to 1s. 10d., and 2½d. to 1s. respectively; farm servants, with board, £3 to £8 (Gosling). Purchase-power.—Wages bear a greater proportion to the expenditure than in England (Jocelyn). Diet.—Potatoes, rye, oats, and barley; milk abundant; salt herrings, but no meat; beer (Gosling).

"SWITZERLAND.—Wages, 10d. to 1s. 8d. in winter, and 1s. 8d. to 2d. 6d. in summer. In remote districts still less (M. Bovet). Working day generally reckoned at thirteen hours. Purchase-power:

Board for a man averages from 5s. 6d. to 7s. 3d. a week. Diet: Milk, coffee, cheese, potatoes, vegetables, and soup; meat rarely; wine and beer.

"TURKEY.—Wages, 1s. 6d. a day, or £7 to £14 a year, with board and lodging (Consul Moore). Diet.—Brown bread of mixed grain, staved beans, leeks, and a little mutton.

"ENGLAND.—Wages, for men, from 1s. 6d. to 2s. 9d. a day, averaging over 2s., with extra money for harvest and piecework. Diet.—White bread, bacon, potatoes and vegetables, cheese, tea, coffee, and beer or cider. Milk and butter scarce. In the North a good deal more meat, especially for farm servants.

"SCOTLAND.—Wages, 12s. to 15s. a week, being partly paid in kind, or £18 to £24 a year with food. Diet.—Oatmeal porridge, bread, potatoes, milk and butter, tea and coffee, a little bacon, but other meat rarely.

"IRELAND.—Wages, 1s. to 1s. 8d. a day, or 6d. to 1s. with food. Diet.—Bread, potatoes, oatmeal, milk, whisky, and a little bacon."

THE INDOOR GARDEN.

CLIMBING FILMY FERNS.

THERE is no more beautiful or interesting example of cultivation than that of the climbing filmy ferns so successfully grown by Mr. James Backhouse at York. When at York in 1870 we had one of the beautiful specimens there photographed, and from this our illustration is engraved. It is impossible in an engraving to render full justice to the finely-divided texture and exquisite grace of these plants, which, when they become popular, will add quite a new charm to our hothouses and warm ferneries. The creeping species at York climb up



Trichomanes Luschianthium.

imitation stems made in common porous flower-pot ware. On this, which in a moist atmosphere gets quickly covered with moss, they thrive apace. We are indebted for the following remarks on the essentials of the culture of filmy ferns to Mr. James Backhouse:—

The cultivation of the filmy ferns depends for success upon one or two very simple things, viz., perpetual humidity in the atmosphere, and a steady "medium" temperature—40° to 45° for the cool ones in winter (*i.e.*, for British, Chilian, and New Zealand species), and 55° to 65° in summer, and for the tropical species, 55° in winter to 70° in summer. As will be seen by these figures, extremes of heat and cold are always wrong, as the total annual variation should never exceed 20°, or at most 25° with the cool species, and 15° or 20° in the case of the warmer ones. Shade, which absolutely keeps off the sun's rays, and yet allows as much light as would exist in the open air when a cloud covers the sky, is requisite. These points "carried" and "kept," success may be considered certain. Sudden increase or decrease of either temperature or moisture is dangerous. Half-an-hour's sunshine in early spring may ruin "a year's work." Light vegetable soil, more or less mixed with white sand, is "the correct thing" for nearly all. The rhizomes should creep upon, or be above, the surface, the rootlets only penetrating the soil.

THE BETEL-NUT PALM.

(ARECA CATECHU.)

THIS Palm is grown in the Indian Archipelago for its seeds, which are chewed by the natives with lime and a leaf of Piper Betel, which is said to be intoxicating. In this country it is a beautiful palm, with spreading dark-green fronds resembling feathers. It has a clear, erect, and graceful stem, which in its native country rises to a height of upwards of



Pinang, or Betel-Nut Palm.

forty feet. It likes a moist climate, and does not grow freely in pots, except it has a great deal of heat and water. We are indebted to Mr. Bickmore's interesting work, "Travels in the Eastern Archipelago," published by Mr. Murray, of Albemarle Street, for our excellent illustration of this fine palm.

J. CROUCHER.

MARÉCHAL NIEL ROSE CULTURE.

I have just seen a remarkably fine example of the culture of this noble rose with Mr. Merryweather in his nursery at Southwell, Notts. It was as simple as successful. Imagine the roof of a span-roofed house, originally prepared for a viney I believe, lightly shaded, not with vine leaves, but with the no less beautiful foliage of this lovely rose; and picture also a whole galaxy of golden buds and blooms, like those we have

all so much admired at our flower shows, drooping gracefully from all parts of the roof. Three plants cover the roof of the house in all its parts, and from it Mr. Merryweather cuts every day from seventeen to twenty-four dozen of fine blooms; and yet the house was so full of its beautiful golden treasures that it looked as if no one had ever ventured to cut a bloom therein. This case is very suggestive of the grand qualities of Maréchal Niel as a roof plant. Trained over the roof, as at Mr. Merryweather's, there is nothing to prevent one using the house just as if it did not contain this precious gold-bearer. The shade given by the foliage is so light that the cultivation of most kinds of plants is quite practicable beneath. I was reminded of Mr. George Paul's good suggestion of using the Maréchal for training over the roof of the camellia house, than which plan nothing could be more desirable. W. R.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

A Sweet-Scented Palm.—A whole acre of mignonette would not emit more perfume than a single plant of the Fan Palm of the Rio Negro (Mauritia carana). In approaching one of these plants through the thick forest, the sense of hearing would, perhaps, give the first notice of its proximity, from the merry hum of winged insects, which its scented flowers had drawn together to feast on the honey, and to transport the pollen of the male to the female plants; for it is chiefly diocious species of palms that have such sweet flowers.—R. SPRUCE.

A Simple Mode of Growing the Huntsman's Cup (Saracenia purpurea).—Get healthy, fresh young plants, and pot them in peat now with a few lumps of crocks or a few lumps of peat at bottom, the last the best. Use thirty-two or forty-eight sized pots, according to the size of the plants, and then place them on a light shelf in a greenhouse or pit, near the glass with full light in either case. Put a saucer under each, filling it with water, and keeping it so, not otherwise attending to the plants, except perhaps to syringe them when the other inmates of the house or pit receive that attention. In that way you will have dwarf, healthy, and stubby specimens of this most interesting plant, that will, after a year or two's growth, bear comparison with any in existence.—H. V.

Half-Hardy Palms.—It will be found that the dwarfier and hardier palms of comparatively cool regions will prove capital ornaments for our houses at all times. Their leathery texture enables them to stand a dry atmosphere that would kill ordinary thin-leaved plants in no time, while their exquisite grace and beauty of form place them above all other vegetable ornaments for house decoration. We strongly advise any readers who have an opportunity of securing some of them in a young state to do so, as nothing can be more useful either in house, open garden in summer, or conservatory in winter. Among the best obtainable kinds are Chamerops humilis, the dwarf fan palm of the south of Europe; C. excelsa, of America; Corypha australis, one of the best, very hardy; Cocos coronata and flexuosa; Latania borbonica, Thrinax elegans, and a good many other kinds, are available.—H. V.

THE PROPAGATOR.

ON PURE HYBRIDIZATION, OR CROSSING DISTINCT SPECIES OF PLANTS.

BY ISAAC ANDERSON-HENRY, ESQ., F.L.S.

(Continued from page 507.)

FROM my readers I respectfully claim the same kind indulgence which Darwin has shown to the testimony he has had to deal with, in judging of the views I have offered, and am now to offer, on the experiments which I mean to lay before you. But ere I enter upon them, it is necessary to premise, especially as regards that form of dimorphism which occurs among many plants in the Linnean classes from Pentandria up to Decandria—in having very generally one if not two pairs of stamens shorter than the other stamens in the same flower. And the same dimorphic form often occurs in even a more marked degree in many plants of the class Tetrandria. It is also the distinctive character of the two orders of Didynamia to have two long and two short stamens.

As observed in my former paper, it is now seventeen years since my attention was drawn to the *long* and *short* stamens, but to the latter more particularly in some muling operations there alluded to, where, by using them, I crossed that large species of rhododendron, R. cinnamomeum, on the pigmy Rhododamnus chamaecistus. I refer to these short stamens again, as the means by which I succeeded in effecting some extraordinary crosses which, I confidently believe, but for their use and my improving a propitious time, would have been utterly impracticable. As I have said, I at first worked only with short stamens. These I use in all cases where I wish to cross a large on a small species. I have now found that the converse also holds, and use the long stamens where I wish to cross a small on a

large species. In all extremes I use the longest or shortest pair of stamens as the case demands. The short pair is generally well distanced by the others—the longest pair is often not just so much in advance. There is often an intermediate pair of short stamens, which in cases less extreme are exceedingly serviceable, but there are seldom such intermediates among the long ones. My reason for the use of these short, intermediate, and long stamens is intelligible enough. If I wish to cross a large on a small species, the smallest-grained pollen being in the short stamens, I take the pollen of these stamens of the large plant as best fitted to pass down the tubes through the stigma to fertilize the ovules of the smaller species, and so effect the cross on it; and so, *cæteris paribus*, with respect to the other forms.

I shall restrict the instances I am now to cite to the last few years, noticing first,—

CASES OF CROSSING WITH SHORT STAMENS.

The first cross I shall notice is one already alluded to, viz., *Rhododendron virgatum* with my own hybrid *rhododendron* B (*R. ciliatum* crossed on *R. Edgeworthii*); and as this cross is memorable and instructive in several points of view, it is proper to give you its history. On April 20, 1864, I find from my note-book that "I took off all expanded blooms of *R. virgatum* and removed the stamens from all unopened ones on the plant, there being none left for self-fertilization; done in fine sunshine—west wind—with three short anthers of B"—i.e., the hybrid male, being the identical cross which produced Veitch's *rhododendron*, Princess Alice. Of this cross I ripened four capsules of seed, which I sowed on January 28, 1865, and, with some failures, got up by December that year seven nice healthy plants, all of which, however, save one, I lost by an accident. That one plant is now setting for bloom—not at the axils, as the female parent (*R. virgatum*) generally shows, but at the extremities of the shoots, as in the male (*R. ciliatum* crossed by *R. Edgeworthii*). But, as I have had occasion to observe already, the type in all else is more that of the female than of the male parent. By the mother's side this plant is a hybrid, by the father's it is a mongrel, and yet it has a fair share of vigour in it. As in its sexual aspect, so in its height, it is that of the mother. A few cilia are noticeable on its leaves, but it has none of the tomentose or dense hairiness of the male parent; and so in this also it partakes most of the glabrous foliage of the mother. Again, this doubly-crossed plant, and the crosses which produced it—all extreme—show how such crossing may hasten on the reproductive or flowering state. Never in all my experience have I seen or heard of *rhododendrons* offering bloom at two years of age. I have *rhododendrons* now fifteen years from seed which have never shown the slightest tendency that way, though ten and twelve years I would consider about the mean at which they attain their flowering condition. If by such crosses the like precocity can be generally secured, practical florists may turn them to some account in their profession. You will please observe that I am now dealing with hard-wooded shrubs, where there is in general more fixedness of structure and habit, than in those on which the physiologists I have cited have chiefly experimented, and which are less liable to be modified by the manifold influences which affect the more pliant and shorter lived herbaceous genera.

2nd. The next cross in the *rhododendron* tribe effected by the short stamens to which I would direct attention is very recent, and one with which I took the utmost pains to prevent miscarriage. The beautiful *R. jasminiflorum* of Java, with its delicious perfume and its long tubular five-lobed flowers, of snowy whiteness, so like *Erica Aitonii*, so like, too, in form and fragrance, the sweet-scented *jasmine*, and so unlike all its own congeners, is the subject of it; and as I regard this cross of some scientific as well as of some practical value, I shall offer no apology for giving you particulars. I made it the subject of many attempted crosses by many of its own tribe—all of which failed except two, which, by the way, afford a good illustration of what I alluded to in my former paper of the sympathies of plants, and perhaps, too, of natural selection, though whether it be in the mode which Darwin regards as leading to diversity of species I cannot positively assert, yet I think it is worthy of his consideration. While it rejected so many of its legitimate brethren of the *rhododendron* tribe pure and simple, I was somewhat surprised that it took kindly with my hybrid B already noticed—i.e., *R. ciliatum* crossed by *R. Edgeworthii*—a hybrid of the first degree, having large flowers of three inches diameter, perfumed, and also of snowy whiteness. After the bloom had been long emasculated, on April 17, 1867, I effected the cross with the short anthers of the hybrid B. The cross took admirably—the seed-pod swelled, and was pulled fully ripe about 12th July last. On the 15th of that month I sowed the seeds. For the purpose of comparison, I sowed a pod of its own plain native seeds which I had gathered previously, and had, in fact, sown it some ten or twelve days before I sowed the cross. These are both now up. While the native seeds have produced a fair show of feeble plants,

the crossed seeds have come up in more than double the number of plants, doubly vigorous in growth and habit, and with leaves so much larger than those of the normal form as to remove all doubt about the verity of the cross.

3rd. The next illustration I have to give you is of a small-foliaged Indian *azalea*, eighteen inches high, which I crossed with the tall and robust shaggy-foliaged *Rhododendron Edgeworthii*. Two things more unlike in every feature from which to effect a union can hardly be imagined. Yet, with the short anthers—and it was with the very shortest I could find on *R. Edgeworthii* that I effected it—the cross, after careful emasculation, was done on 6th May last. The seed-pod swelled to its due dimensions, and, appearing to be ripe, I cut a slice off it, and sowed the seeds so early as the 13th, and the residue on 28th, September last, and I have now got up one or two plants. If I shall be so lucky as to bring it to maturity, the progeny of this cross (one never before accomplished perhaps) should be a sweet-scented *azalea*, having a rose variegation like the female parent, a novelty in its tribe; for though the *Azalea sinensis* has been crossed by *rhododendrons*, I am not aware of any authentic cross, or cross of any kind, between the *rhododendrons* and this proper Indian *azalea*.

4th. I have still further a cross of the same nature, between another Indian *azalea* and *Rhododendron jasminiflorum*, the latter being again the seed-bearer; and I here refer to it mainly as showing another tendency of this *rhododendron* towards natural selection, or rather perhaps of sympathy between it and remote species, if not genera, for the *azaleas* have till lately been regarded as a separate tribe from the *rhododendrons*. The cross was effected in August last, when it again rejected its more natural allies, and formed a union with the Indian *azalea*, a late rose-coloured spotted variety, a seedling of my own raising. The seed-pod of this cross is now at maturity.

5th. But I have now to call your attention to a cross in this same family bearing on Darwin's doctrine of natural selection, or of sympathy, in a still more remarkable manner, which I effected last summer between that most gorgeous of all the *rhododendron* tribe—namely, the lovely white, large-flowering, sweet-scented *R. Aucklandi* of Dr. Hooker otherwise, *R. Griffithii*—and an Indian *azalea*, the latter being the seed-bearer. I made the cross on two separate days on two separate blooms, carefully emasculated some time before; and on the same *azalea* I tried other crosses with several of the *rhododendron* tribe, viz., with a fine form of *R. arboreum*, *R. Edgeworthii* pure, and the above hybrid seedling B (*R. ciliatum* × *R. Edgeworthii*). But while every one of these failed, the crosses by *R. Aucklandi*, which were effected respectively on the 30th April and 1st May, took most kindly. Both pods swelled; and the seed-pods, though green, appeared to be sufficiently ripe when I pulled them. I counted the seeds in one of these pods, and found them to be about 324, all finely formed, but, I fear, too green to vegetate freely, though some which I sowed appear to be coming up. I cannot vouch for this cross being effected with the shortest stamens, for the stamens with which I effected it were kindly sent to me from another source, as I did not myself possess the male plant; but as I invariably select the shortest for such crosses, my firm belief is that I had so selected these in this instance, and I had a plentiful supply of all lengths to choose from. In the above cases of crossing a small with a large species, I hold firmly by the opinion that but for the use of the short stamens I could not have succeeded. I have few recorded instances of having extended my experiments with them far into other families. I certainly tried the *pelargonium* in a plant I had of the beautiful white-flowered *Madame Vaucher*. I fertilized a bloom with its two shortest stamens, which, however, were very little shorter than the remaining ones; and, from the three seeds which came of it I raised two fine plants, far more compact and somewhat dwarfer in habit than the parent, having the flowers equally fine, and elegantly throwt up above the plant. But the short stamens of this section of the *Geraniaceæ* are very little shorter than the others, and I therefore cannot rely much on the results as establishing the hypothesis I contended for in my former paper—namely, that where all other things are equal, a cross or simple fertilization with the short stamens tends to dwarf the progeny—to my belief in which, however, I still adhere. The instances I have given support this other hypothesis, that by their use you may cross a large on a small kindred species, a result which, without them, you might not effect.

(To be continued.)

Kew Gardens and the Proposed Military Station at Richmond.—We learn from the *Surrey Comet* that a house-to-house canvass of the tradesmen of Richmond has resulted in establishing the fact that a very large majority of them are in favour of Mr. Cardwell's proposal to make the town a military station. It may be so; we do not care to dispute it; but what we would submit is that Mr. Cardwell and the shopkeepers of Richmond are not the only

parties to be consulted. It seems to us that if the matter is to go by popular vote, London has a right to be asked its opinion. We have been legislating for the last two or three years for the preservation of the few pleasant spots accessible to us after our day's work or on occasional half-holidays, and we have done so in the interest of the metropolis as a whole. Hampstead Heath and Wimbledon Common have been saved, not for the benefit of the few hundreds or thousands of persons who live in their immediate neighbourhood, but for the sake of the three millions who crowd the metropolitan area. The question for Mr. Cardwell to consider is not whether the Richmond publicans and tobacconists may profit by having soldiers quartered in their vicinity, as it is more than likely they would, but whether Londoners ought to be deprived (as they will be virtually deprived) of one of their most agreeable places of resort, when, as he himself has stated, no necessity for the deprivation exists. Richmond Park and Kew Gardens are national property, and the ratepayers of Richmond, even if they be as unanimous as the local paper represents them to be, have no pretence of right to determine whether they shall retain their present quietude and propriety or be overrun by half-trained recruits. Whatever may be said about the aristocratic associations of the Star and Garter and the Park, the gardens at Kew belong to the people, in the most popular sense of the word, and nobody who has seen the hundreds of working-men's families who visit them alike for pleasure and instruction every fine Sunday afternoon, and marked the propriety with which they conduct themselves, would wish to see their recreation interfered with.

THE GARDEN IN THE HOUSE.

A MOST CHARMING WINDOW PLANT.

WHAT can it be? A Fuchsia? Well that is charming; but it is not about the Fuchsia I would now write. The Geranium, a rare window plant that has been, from first to last, from the oldest Cape species down to the newer plain or variegated striped zonal—all have found their way to the window. And they have done good service in sweetening and adorning our homes. But it is not the Geranium. Well, I have seen windows made glorious with Cacti, especially *C. speciosus* and *speciosissimus*; and as succulents are once more the rage, perhaps it may be one of these. No; it is a simple hardy plant, so beautiful that it deserves a place in every boudoir, and so cheap and easily grown that it might lighten up with a gleam of beauty even a garret window. Everybody admires, loves it; and what is more, everyone might grow it. It is the lovely Forget-me-Not—*Myosotis dissitiflora*, the earliest and the most beautiful of all the Forget-me-Nots. For some years I have found that no hardy plant is more grateful for the shelter of glass during the winter and early spring than the Forget-me-Not. By potting up a few tufts of it in November, and placing them in a sunny frame or window, they will be in full flower in January or February. In passing through Bury St. Edmund's the other day I was much pleased to see it in full beauty in two windows in the street. If in two, why not in a thousand? The plant can be increased by means of division, cuttings, or seeds to any extent. By giving it a little morsel of ground, any number of tufts, say six inches across, fully charged with flower-buds, may be had ready in November. Pot a few in any soil in four-inch pots, and place them in the window. Those not potted will come in for succession in March, and will continue the blooming season till the end of May. And if a few plants are divided late, and the first flowering ones in pots are planted out as soon as they have done blooming, a succession of Forget-me-Nots in windows or gardens may be enjoyed all the year round. But the greatest merit belonging to the Forget-me-Not is its early flowering. Long before Fuchsias, Geraniums, or almost any other plants are half awake from the semi-torpor of the winter's cold, the Forget-me-Not is already in sky-blue robes. Are any in doubt, let them try; and if it does not answer all I have said and more, they have either got the wrong variety or do not know how to grow it.

D.

ON CHOOSING FLOWERS FOR DECORATING VASES.

I HOPE that "W." will kindly supplement his remarks on this subject by giving a few instances of good and bad selections, with the flowers best suited for variously formed vases. The latter is a point very much overlooked in floral arrangements. The self-same things are often used for all sorts of vases, large and small, short or tall, narrow or wide, cornucopias or glass baskets. This is a great mistake. There ought to be a certain fitness between the form and size of the casket and jewel—the flower-holder and the flowers. One

great difficulty is to obtain flowers of different colours to harmonise in form. Take, for instance, such a charmingly sweet flower as *Mandevilla suaveolens*. How difficult to find a match for its waxy blossoms in red, unless the *Lapageria rosea* or *Tacsonia von Volxemii* happen to be in flower at the same time. When *Pelargoniums* or other flowers are used instead of these, the incongruity of shape mars the effect; and so with very many others. What flowers, for instance, unless it be some of the *Hoyas*, will match the bunches of *Stephanotis floribunda*? We want red, pink, or blue bunches of similar make to bring out the colour without marring the symmetry of form, if I may so express it. Perhaps *Ixoras* fit in with the *Stephanotis* better than most flowers. This difficulty of harmonising form, and the tendency of mixtures to run into sameness, has made me a convert to the utmost simplicity, inasmuch as I believe that, as far as possible, every vase should be furnished with but one flower, and fringed with its own leaves. The Maiden-hair monotony of finishing has become as intolerable as the universal flower mixture so often served up in dining and drawing rooms with little judgment and less taste. But enough, and more than enough, for the present. I began by asking for examples of what to choose and avoid, and then with rare inconsistency—I was almost tempted to write a harder word—have gone on to give some and censure others. Still, I am sure we shall be grateful to "W." for filling a few vases for us as they ought to be filled.

D. T. F.

CULTURE OF PLANTS IN ROOMS.

(Continued from p. 446.)

DRAINAGE.

WITH regard to drainage: the hole or holes in the pot should be in the bottom at the lowest part, and no water should sink to any part where it cannot run off; therefore the sides of the pot should have an equable inclination towards the bottom, which should be concave, to facilitate the egress of the water. Care should also be taken that the potter, in making the holes, leaves nothing inside to form a rim round them. The next condition is that the ball may easily and without injury be removed from the pot as soon as it has become so filled with roots as to form a solid mass. To secure this desideratum, the sides of the pot inside should slope evenly from the upper edge to the bottom. In the ordinary kind of flower-pot the sides do not slope evenly, but at the bottom there is a slight incline towards the drainage-hole in the middle. Underneath is a rim to enable the pot to stand on a hollow bottom. Where several holes are made in the sides at the bottom, the bottom may be somewhat arched in shape. When there is no rim at the bottom, the pot should be placed on pieces of sherd or wood, so as to prevent it from standing flat on the ground. In the case of a vase which I employ, the foot serves for a saucer, and the upper part is made to lift on and off, in order to empty the foot of water when necessary. The sides of the vase may be curved at pleasure, but on the inside they must diminish gradually in width, in order to allow of the ball being taken out uninjured.

FLOWER-POTS AND VASES.

All other flower-pots or vases should be made on these principles: The material should be a porous, well-baked clay, or may even be of wood. Glazing, or painting the pots with oil-paint, is not to be recommended; yet of the two, the paint is not so injurious, as the glazing completely hinders the percolation of water and air. For the same reason pots of earthenware, porcelain, iron, zinc, &c., are not proper. Wherever, as in plant-cases, flower-stands, &c., zinc trays are used for holding plants, the bottom should be concave, and pierced with numerous holes. Freshly-burnt, unglazed, new clay flower-pots when first used absorb a considerable quantity of moisture, so that the plants must be watered more frequently until the sides of the pot are completely saturated, or, better still, leave the pots immersed in water for an hour before they are used. Old pots, which have been long in use, are sometimes covered with mould or moss, which hinders the percolation of the air. It will be very beneficial to the health of the plants, if the outside of the pots is frequently cleaned; and in no case should an old flower-pot be used for a fresh plant without being thoroughly cleansed. Lastly, the size of the pot is a matter of importance. It should of course be always adapted to that of the plant. To sum up the preceding observations—a plant may receive more water, in proportion as the

drainage of the pot is free and its sides porous, as it is new and clean, as the size of the ball is small, when compared with the plant, and as it is filled with roots.

REPORTING.

In transplanting, a part or the whole of the roots in the ball are usually removed, the outer layer of soil being seldom penetrated by the roots. It is now planted in a new, porous pot, in which the outer layer of soil speedily comes under the influence of the dry air; but so long as no young roots are protruded from the old ball, the outer layer will remain tolerably moist. Attention must therefore at first be given to the ball, and not to the surrounding layer of soil. Accordingly the soil should be raised around the edge of the pot, so that the flow of water may be directed to the ball. But as soon as young roots are sent into the surrounding soil, it should receive most attention, and should not be watered before it has arrived at a proper degree of dryness. This period of root-forming after transplanting is a time when no water should be given, unless it is absolutely necessary and signs of dryness make themselves manifest, otherwise the newly-formed roots soon perish and the plant becomes sickly. This has been long known to the practical gardener; and certain plants, such as Camellias, which at other seasons must be watered plentifully, must be kept dry after being transplanted. The explanation of this we believe to be, first, so long as no young roots are sent out of the old ball into the new soil, the moisture of the latter is only given off as the old ball requires it, and so no harm is done. Secondly, a very concentrated and rich food is suddenly applied to the young roots when they penetrate the surrounding soil, and this of course will be all the richer for being watered. Thirdly, it is a fact that the formation of roots goes on all the more rapidly the more they are brought into contact with the percolating air, as, for instance, in loose sandy soil; while in heavy stiff soil the process is much slower. Now the drier the soil is allowed to remain, the more easily will the air percolate through it, and the stronger and more abundant will be the formation of the roots in consequence.

DEFICIENT NOURISHMENT.

The writer has observed that want of nourishment induces plants to send out more roots in loose soil, so that by the increased number they may obtain more food, but that in loose but well manured soils, and in heavy, stiff, unmanured ones, root-formation was very feeble, so that he has arrived at the conclusion that the production of roots in loose soils is due to the action of the atmosphere. The position and the season of the year exercise a very great influence on the necessity for frequent or unfrequent watering. Plants will require more water in proportion as the air is dry and warm, the position exposed, and the weather clear and bright. A plant standing in an exposed pot will require more water than if the pot were plunged in sand, earth, or moss. Where the evaporation from the pot is increased by the action of dry air, or of the sun, the pot may be shaded with a board, or the pots in a window may be placed up to the rim in boxes of sand, earth, or moss, which in bright, warm weather should be kept well moistened. Plants grown in rooms will require less water in autumn, when the temperature of the room ranges from 60° to 66°, than at other periods of the year, when the dryness of the outer air, at a lower temperature, produces a corresponding dryness in the room. At those seasons of the year when the rooms are not heated and are well ventilated, the watering of the plants must be regulated by the temperature of the outer air. In bright, hot weather, when the air is dry, plants in rooms require most water; but the lower the outside temperature, and the moister the air in consequence of frequent rains, or the short days of autumn, the less water will be required. In winter, the supply of water should be diminished according to the coldness of the weather. The necessity for watering must also be regulated by the health and state of vegetation of the plants. All diseases of plants, which declare themselves by the partial drying up of the shoots, a feeble growth, the yellow tinge of the leaves, or their falling off while still green, are intimately connected with injury to the roots, which absorb water, and with it nutriment. As a man when ill requires less food, and must be restored by proper dieting, so it is with plants. The more serious the disease the less nutriment is required to be conveyed to them by means of watering, and in this case the ball should be carefully

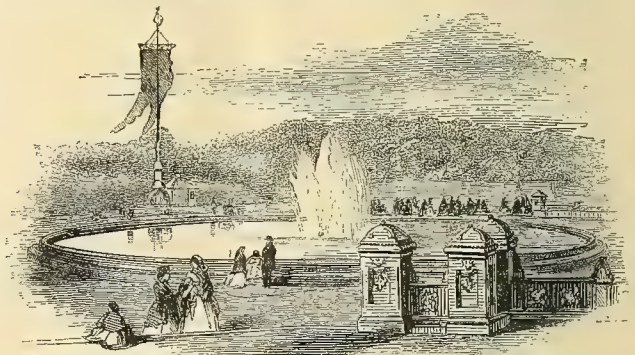
examined as to its state of dryness before any water is given. On the other hand, the more healthy a plant is, and the more richly covered with leaves, the greater is its need of water, as every leaf is employed in elaborating the food derived from the water, and in transpiration. A plant in full vegetation not only requires a rich supply of food, but transpires from its tender young leaves much more water than from the firm old ones. Therefore the more luxuriant the growth of the plant, the greater will be its need of water; but when plants are in a state of rest, and no new growth is being made, the less will be their need of water, and the more cautiously must it be given. Deciduous plants in a state of rest require least.—*From the German of Dr. Regel.*

(To be continued.)

PUBLIC GARDENS.

THE CENTRAL PARK AT NEW YORK.

No public park yet made has cost so much money as this, and we are bound to say that the result is not unworthy of the vast expenditure. In point of design, extent, planting, &c., it is equal, and in many respects superior, to anything of the kind in existence. It is not a park in which gaudy temporary colour effects are produced at great expense to last for a few months and then perish, but in which all the really important and permanent features of a public garden have been developed with rare taste and ability. Large lawns of green, extensive plantations, a splendid series of roads, beautiful naturally disposed lakes, and immense reservoirs of pure



Portion of Lower Terrace, with Fountain, in Central Park, New York.

water for the supply of the city, occupy the greater part of its surface; but there are so many minor details of interest that it is only by the aid of detailed description, and a good many illustrations, that we can hope to give any just idea of this highly creditable national work. We are the more desirous to do this, as much of the work done in the Central Park seems well worthy of imitation wherever public gardens are created.

To us the park seemed, however, to show certain highly objectionable faults, which we will proceed at once to describe. The history of gardening is to a great extent the history of its sufferings at the hands of architects, and, to a smaller extent, from sculptors. These have invariably used it to display their own work, not nature's. Hence Versailles, with its miles of crumbling balustrade, and many other hideous scenes which we have been accustomed to call gardens. If architects had not our habitations, public buildings, and cities on which, and in which, to display their skill, one would not mind allowing them free scope in a national park. But few will dispute that it is nature, and not useless, objectless, second-rate, and costly architecture, we want in our public gardens. In the Central Park as much money has been spent on useless work of this kind as would have created another noble park without such needless embellishments.

In this country elaborate terraced-gardens are justified by the often far-fetched and groundless reason that the proximity of their sites to the house made this treatment necessary. Here a costly terraced-garden has been made in the middle of the park, away from any building; an example which we trust

may not be imitated. It is very well done, but quite out of place.

Of the costly terrace the following explains the most favourable American view, and hints clearly enough at the result of allowing architects to work their own way in a public garden, with which they really should have no connection:—

"The terrace is at present incomplete, and indeed it must be many years before the design, as it exists on paper, can be fully carried



Drinking Fountain in Central Park, New York.

out, because it includes full length statues, as well as busts, of distinguished Americans, which it is intended to place upon the large pedestals that are now covered with temporary ornamental caps. The commissioners have done wisely in making no attempt whatever as yet to procure statues for these places, and it ought not to be done until there is ample means to secure the best work possible in America. First-rate statues are as yet hardly to be got for money here, though we believe that they will be produced in good time; but until they can be had it is best to wait; for a second-rate



Bridge over Arm of Lake in Central Park, New York.

statue is not to be endured. If one statue is found fit to be placed upon the terrace in a generation, we shall think we are getting on very well indeed. But so long as the pedestals want their heroes, so long the terrace will be incomplete, and people will be half justified in saying that it "looks squat." This, however, is a difficulty which it was not possible for the architects to avoid. They

probably never expected nor intended that the park would be completed in a single decade, nor in two. Indeed, until every tree upon it is fully grown, the effect they had in view at the beginning cannot be realized. We must consider the terrace, then, as an incomplete architectural composition."

In connection with this may be named the useless bridges which span the roads of the park in numerous places. There was, of course, occasion for bridges in various places; and very tastefully designed and gracefully clothed ones span parts of the ornamental water, of one of which we give an illustration. But the bridges we object to are those, the building of which arose from a desire to construct separate routes for pedestrians and equestrians, instead of allowing the roads to cross each other where necessary, as in the far more crowded parks of London and Paris. Hence different levels, and many well-built and costly bridges, such as that shown herewith, have been con-



Bridge in Central Park, New York.

structed. All these bridges, too, are constructed in the best manner, and are well designed, but they are nevertheless utterly needless.

(To be continued.)

THE ROYAL GARDENS, KEW.

THE PALMS.

THESE "princes of the vegetable kingdom," as they are justly called, are well represented at Kew, though unfortunately the great Palm House there is too large for the maintenance of the proper degree of heat and moisture that is required for their successful cultivation. They are therefore distributed in different houses. In the Palm House properly so called are fine examples of the Fan Palm (*Sabal umbraculifera*), Sugar Palm (*Arenga saccharifera*), *Areca alba*, *sapida*, and *Bauerii*; the Wine Palm (*Caryota urens*), *C. Cumminghii*, *Seaforthia elegans*, *Phoenix reclinata* and *sylvestris*, *Livistona humilis*, *inermis*, and *chinensis*; *Cocos flexuosa* and *Trithrinax aculeata*. These are planted out, and so noble an appearance do they present that, were it not for the paved walks that traverse the house, one might fancy oneself in a tropical forest. Most of these Palms rise to a height of from forty to sixty feet; and such kinds as *Sabal umbraculifera*, *Areca Bauerii* and *sapida*, and *Caryota Cumminghii* produce seeds freely. At the south end of the house is a mass of *Rhapis flabelliformis*, and a very elegant species of *Areca* from Lord Howe's Island.

In tubs or in pots in this house are large plants of *Martinezia caryotæfolia*, *Attaleas*, *Phoenix*, *Caryotas*, *Diplazium*, *Astrocaryum*, *Hyophorbe*, *Calamus*, *Chamerops*, *Ceroxylon*, *Thrinax*, *Euterpe*, and *Elæis*, varying from twelve to twenty feet in height; also many smaller plants belonging to various genera. When it is seen how much better those planted out thrive compared with those in pots, it seems a pity that more planting space is not afforded.

The best view of the Palms in this house is obtained from the gallery, from which each can be seen separately, and an idea obtained of what the whole would be if room were allowed them for free development. Thus looked down upon, their dignity of port becomes apparent. Judging from the

excellent condition of those planted out, it is evident that a regular state of the medium in which the roots run has much to do with success, and it also indicates that a Palm enjoys more rather than less heat than that which it gets in its native country. Were this not the case, we should not have *Sabal umbraculifera* (from the West Indies), *Livistona chinensis*, *Cocos flexuosa* (from Brazil), and *Areca Bauerii* (from Norfolk Island), all in the same bed, and each equally healthy. The beautiful coral-like inflorescence of *Areca Bauerii*, which is produced just below the lowest frond, annually attests the fact that it is quite at home. The *Sabal umbraculifera*, furnished with gigantic fronds, and producing abundance of seeds (annually nearly one thousand), confirms the same fact. Its associate, the Wine Palm, too, is in every way excellent. *Phoenix reclinata* resembles more than anything else with which I can compare it a gigantic fountain.

The collection of *Chamædoreas* is accommodated in a house near the principal entrance, where this genus is well represented. Its specialities are *C. Sartorii*, *Ernesti-Augusti*, *crucifolia*, *Martiana elegans*, and *Arenbergiana*. These, though growing as they do here, under the dense shade of tree ferns and other fine-foliaged plants, luxuriate, and produce flowers regularly; but they seldom produce seeds, unless artificially fertilized. In the centre of the newly-erected range of glass, as well as in the Victoria House, are some of the tenderer species of Palms, such as *Geonomas*; among which, the best are *G. Martiana*, *Ghiesbreghtiana*, and *Schottiana*. There may also be found *Stevensonia grandiflora*, *Verschaffeltia splendida*, and *Pritchardia pacifica*, three of the noblest-foliaged Palms with which we are acquainted.

The Cocoa-Nut Palm is likewise in this house. It is fond of heat and moisture, and has succeeded but indifferently at Kew, where large plants have often died on account of the want of proper means of securing those conditions so essential to success. The Cocoa-Nut Palm is, without doubt, a very elegant plant for the centre of a large stove, rising up as it does with such dignity and grace. A plant of it at Sion has perfected fruit twice, and from what I saw of it the other day, under the skilful management of Mr. Woodbridge, it may be expected to bring forth many more. It is interesting to notice the way in which the nuts germinate, which is as follows:—Simultaneously with the advance of the germ outwards, inside is formed a sponge-like mass, which is at first much crumpled up, but by a gradual unfolding it softens the hard albumen by a process similar to that of the action of the gastric juice in animals, and gradually takes the whole up until the shell is cleared as clean as though scraped with a knife. By the time the albumen is exhausted, the sponge is fully developed, after which it gradually decays. The plant having now done what may be termed sucking, has to exist by means of its roots. A similar process goes on in all Palms, though in a less degree.

There also will be found representatives of the African *Raphias* and the Doum Palm of Egypt, lately described in your pages by Professor Owen, as well as many young plants of *Calamus*, and other introductions of recent date. We frequently read of Calami climbing to enormous heights, and we have often thought that if one or two were planted in a water-tank, they might be induced to show the public some of their natural modes of growth.

Specimen plants of *Chamærops Fortunei* and *humilis*, and *Jubæa spectabilis*, must be looked for in the new temperate house, in which an attempt was made to grow the lovely *Seaforthia elegans*, *Livistona australis*, and *Phoenix dactylifera*; but the winters in this house were too cold for them. Altogether, the collection of Palms at Kew consists of some 260 species.

Some have wondered why Palms have not been placed out of doors during summer. I, for one, should be sorry to see them spoiled by such treatment. A Palm out of doors in this climate looks, as a rule, a picture of misery, except, perhaps, on the very quietest and warmest of days. J. CROUCHER.

[As in an early number we shall publish a view and sections of the great Palm House and great Temperate House at Kew, drawn and engraved expressly for THE GARDEN, we this week devote a page to sections, showing the comparative sizes of these two remarkable structures.]

GARDEN DESTROYERS.

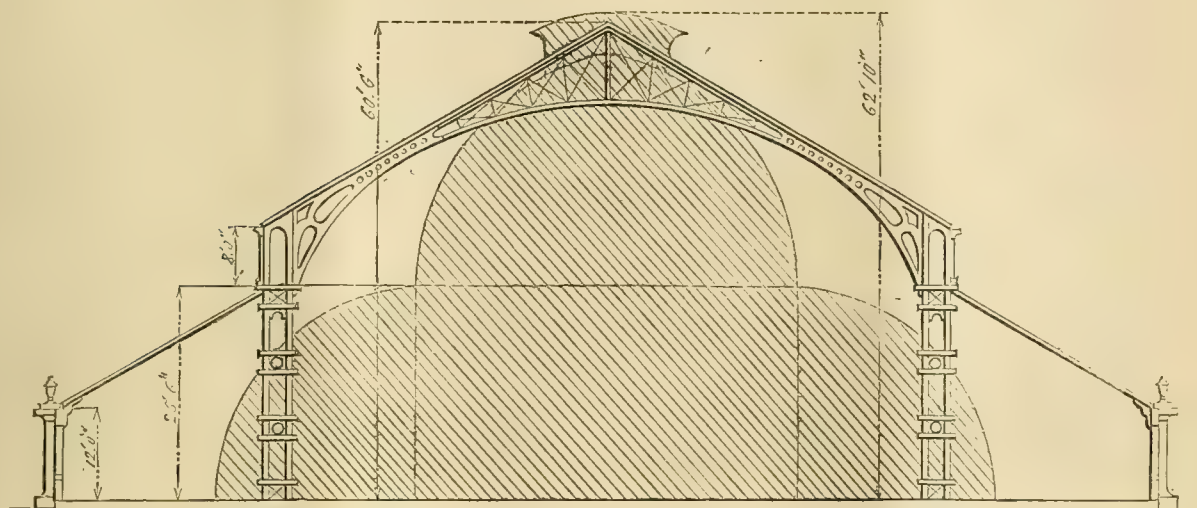
"WORMS."

[THE following, by Mr. G. A. Sala, refers to the caterpillars which have been so successfully fought by the English sparrows introduced to New York some years ago.]

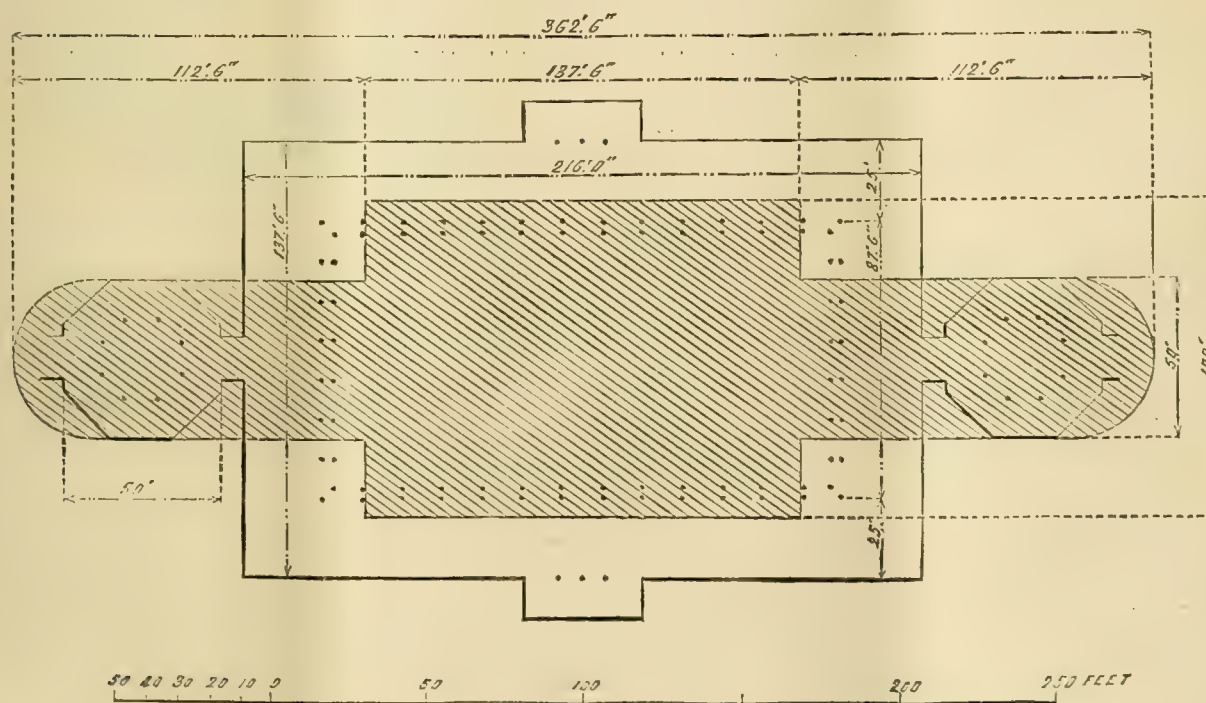
I was taking my walks abroad in Fifth Avenue, one summer's morn, meaning harm to no man, and with my heart full of sweet and placid feelings towards the United States. Suddenly I saw, advancing towards me, with fierce and rapid strides, an old lady. Now I am not afraid of ladies. This was, nevertheless, a very fearsome old lady to look upon. She was tall and wore no crinoline, and was crowned with a coal-scuttle bonnet. She had spectacles, also, and a very hard hickory-looking face beneath them. "This is an old lady from New England," I mused. "I see it all. She is from the State of Massachusetts. Residence East Buffum, profession widow, sectarian proclivities Heterodox Congregational." . . . I drew aside to allow this respectable but formidable female to pass; but to pass me was apparently not her aim. She meant mischief. Her eyes were inflamed with ire. Her lips moved at though in wrath. She held in one woollen-gloved hand a monstrous gingham umbrella; and with it she made as though to strike me down. She brandished this weapon of offence, this gingham Excalibur, above her head. She swung it to the right and the left. . . .

She delivered the carte and the tierce and the reason demonstrative. She was clearly cunning of fence; and I thought I would see her blessed ere I fought with her. Her umbrella, was, at last, within an inch of my nose. The hair of my flesh stood up. This old lady had evidently sworn to have my blood. Conscience makes cowards of all. But who was she? A Woman's Rights Convention delegate? A Black Republican? A manufacturer of chewing tobacco? A spiritualist medium? or an abolitionist lecturer? I had made up my mind for the worst, and was preparing either to fly or to cast myself at the feet of the vengeful old lady, and sue for mercy. "Transatlantic female," I was on the point of saying, "spare me!" . . . when the old lady rushed by me, still wildly waving her umbrella, but, with singular clemency, forbearing to knock my head off. And, looking back, I beheld her still urging on her wild career down Fifth Avenue, towards Tenth Street, brandishing her gingham all the way. Was she mad? Was she in a spiritual ecstasy, and speeding from a Revival? No, a hasty remark she made as she passed me at once explained the mystery of her proceedings. In a tone of dolorous agony she cried, "Oh, them Worms!"

Yes, those worms. They are the bane, the scourge, the nuisance, which, in the merry month of June, make a man's life a torment to him. The side walks of the streets of New York, faithful to their Dutch origin, are bordered with trees, principally limes and elms. In joyous June, when they are in full leaf, and their verdure has not been burnt up by the white heat of the summer sun, they are refreshingly unbrageous and look very pretty. But these trees are, one and all, infested by a horrible little reptile, known commonly as the "measuring worm," the "canker worm," or the "pace-maggot," but which, according to scientific authorities, has quite as much right to be called the "geometer," the "arpenteur," or the "hindrometer." It is of a dusky olive in hue, with a tawny head and a pea-green tail. It is about as long as a bit of string, and as big as a piece of chalk—stay, the length of the middle joint of your little finger affords an apter standard of measurement. I don't know whether it has any eyes; but, when touched, a hideous green matter exudes from it. This worm swings by an almost imperceptible cord or filament from the branches of the highest trees, as of the lowliest shrubs. As you walk along the street, myriads of these worms are hanging motionless in the air. Suddenly they bob against your nose, they slide down your shirt collar, they enter your eye and sit on your lid. Open your mouth, and a worm slides down your throat. They light on your hands and your feet. A lady comes home from walking with her parasol tasseled, and the hem of her dress fringed, by these beastly worms. When they have munched their fill of the young leaves of the trees, they spin out of their own depraved bodies a slack rope of gluten; and down this aerial bridge they slide till they are within a distance of five feet from the earth. There they ruminate, till, gorged with vegetable dirt, these green leeches tumble down on the pavement, where they wriggle and wallow, and, after a time, I trust, die. The flagstones are so speckled with surfeited worms, that, on the finest and most cloudless afternoon, you may fancy it is just beginning to rain. As I have said, they specially affect to perform their Blondin and Leotard performances on a level with the faces of human beings walking erect, and the only way to



Sections of Palm House and Temperate House at Kew; the shaded portion shows the Palm House.



Ground Plans of the Palm House and Temperate House at Kew; the shaded portion showing the Palm House.

prevent their choking or blinding you is to arm yourself with a stick or an umbrella, and slash them away as you travel. The old lady I had met was evidently, and of old, aware of the worms, and of the means to combat them. Hence her violent and apparently hostile demonstrations with the umbrella.

These detestable creatures are no mere petty nuisance. They are destroying the finest trees in the streets of New York. You might take them to be pipe-layers, or log-rollers, or lobbyists, or members of a municipal "ring," so speedily and so completely do they devour every green thing. Like every other social nuisance, the worms have their friends, and one enthusiastic student of natural history writes to the papers to claim for them "a certain amount of brains, or at least of instinct." He watched, it seems, a flock of birds light upon a tree full of worms. The reptiles, knowing full well what the intent of these early birds must be, hastily "skedaddled" down their air-ladders, whence, like the showman's kangaroo who took refuge down his own throat, they doubtless (if worms can cachinate) derisively guffawed at their baffled pursuers. The birds flew away, and then the worms went back to gobble up more leaves. The strangest circumstance about these diminutive "cusses" is that their appearance in New York is a comparative novelty. Ten years ago they were unknown, and they are rarely seen in the streets of the New England towns, which are bordered by the most beautiful trees. Are they emigrants, I wonder? Did they land at Castle Garden? And, again it has been remarked that by a grotesque coincidence, the worms and the barrel-organs come out together. You seldom see these "Alfred le Measurers" before the end of May, you rarely hear an organ before the beginning of June. By this time the first are squirming, and the last are grinding all day long. . . . In a month or so they will cast their slough of dusky olive, and blunder about the world and the gas-burners as the large uncouth moths which, from the loose white, flowery pollen with which their wings are covered, are known as "millers."

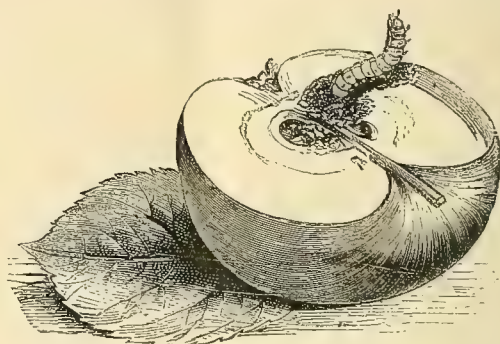
THE APPLE MAGGOT.

It is difficult to exaggerate the amount of injury caused by the apple grub on the continent of Europe, in England, and in the United States of North America. With a sagacious eye to self-interest, the apple-growers of Normandy actually, however, make a profit of its doings; they dry the grubby windfalls, and sell them to us under the name of Normandy pippins—and really very good they are when properly soaked and stewed with sugar and lemon peel. The moth itself is a beautiful little creature—it is, indeed, the most beautiful of the beautiful tribe to which it belongs; yet, from its habits not being known, it is seldom seen in the moth state, and the apple-grower knows no more than the man in the moon to what cause he is indebted for his basketfuls of worm-eaten windfalls in the stillest weather. To find the moth in the daytime, the trunks of the apple trees should be carefully looked over; or, if your orchard be surrounded with a wooden fence, the moth may often be found sitting against it, with its pretty wings neatly folded round its body, which is three-eighths of an inch in length, and the wings are three-quarters of an inch in their expansion; the head and thorax are brown; the body, where covered by the hind wings, is paler brown, with a silky gloss; the fore wings are of that colour which the Germans well express by the compound word grey-brown; they are delicately barred with dark purple transverse lines, and have on the hind margin a large dark blotch, and within this another blotch almost circular, and bordered with scales of a glittering fiery copper-colour. Towards evening—in fact, at sunset—the moth begins to move, and may then be seen hovering about the little apples, which by the time it leaves the chrysalis (the middle of June) are well knit, and consequently fit for the reception of the eggs, which it generally lays in the eye of the apple, one only in each. This is effected by introducing its ovipositor between the leaves of the calyx, which, closing over the eye, forms a tent that effectually shields the egg from the inclemency of the weather or any other casualty. The act of oviposition is not, however, always confined to the eye. When the apple stands with the eye uppermost, I believe this is invariably the case; but when it hangs eye downwards, as though regarding the earth, the other end of the apple is used as a receptacle for the egg, which is then dropped into the cavity surrounding the foot-stalk. Neither is this the only alternative the moth possesses, for its egg may sometimes be found glued to the rosy cheek of the Quarenden—an apple which seems to be a favourite with our *Carpocampa*. I have not, however, found a single worm-eaten apple in which the grub had entered from the cheek—a fact that leads me to suppose that eggs so deposited must miserably perish.

As soon as the egg hatches, the little grub gnaws a hole in the rind of the apple, and buries itself in the substance; and it is

worthy of remark that the rind, as if to afford every facility to the destroyer, is thinner in the eye than in any other part, and consequently more easily pierced. The apple most commonly attacked is the Codling, a large early sort, which ripens in July and August. The grub, controlled by an unvarying instinct, eats into the apple obliquely towards the centre, thus avoiding the core and pips so essential to the apple's growth; at first it makes but slow progress, being little bigger than a thread, but after a fortnight its size and operations have much increased. Up to this period the grub has availed itself of the very restricted gallery it has made in its devouring career, as a channel through which to force its excrement; and this may always be observed in a little brown heap or mass, either concealed by the leaves of the calyx or around the base of the foot-stalk, according as the egg has been laid at the eye-end or stalk-end of the apple.

But when it has eaten half-way down the apple, and the position of the hole at the top, if the apple continues upright or nearly so, is inconvenient for this purpose, another communication with the outer air becomes requisite; and it must be constructed so as to allow the power of gravity to assist in keeping it clear. It is accordingly made directly downwards towards the part of the apple which is lowest, and thus the trouble of thrusting the pellets upwards through the eye of the apple is avoided, and a constant admission given to a supply of air without any labour. The hole now made is not, however, sufficiently open for an observer to gain by its means any knowledge of what is going on within; this is only to be obtained by cutting open a number of apples as they gradually advance towards ripeness. The hole is, however, very easily seen, from its always having adhering to it on the outside an accumulation of little masses of excrement which have been thrust through. Having completed this work, and having reached the core, the grub turns



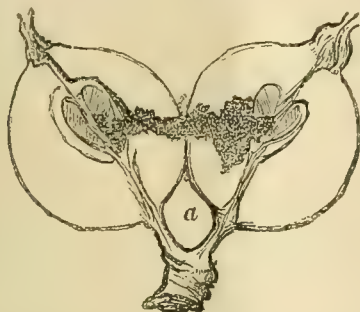
The Apple Maggot.—Section of Apple, showing Grub at work.

towards the cheek of the apple, and makes a third gallery, through which he eventually makes his exit, but not at present; for as soon as he has thus made sure of a means of escape he returns towards the centre of the apple, where he feeds at his leisure. When within a few days of being full-fed, he for the first time enters the core through a round hole gnawed in the hard, horny substance which always separates the pips from the pulp of the fruit, and the destroyer now finds himself in that spacious chamber which apples generally, and codlings in particular, always possess in their centre. From this time he eats only the pips, never again tasting the more common pulp which hitherto had satisfied his unsophisticated palate; now nothing less than the highly flavoured aromatic kernels will suit his tooth, and on these for a few days he feasts in luxury. Somehow or other, the pips of an apple are connected with its growth, as the heart of an animal with its life; injure the heart, an animal dies; injure the pips, an apple falls. Whether the fall of his house gives the tenant warning to quit I cannot say, but quit he does, and that almost immediately; he leaves the core, crawls along his lateral gallery, the mouth of which, before nearly closed, he now gnaws into a smooth round hole, which will permit him free passage without hurting his fat, soft, round body; then out he comes, and for the first time in his life finds himself in the open air. He now wanders about on the ground till he finds the stem of an apple tree; up this he climbs, and hides himself in some nice little crack in the bark.

Such is the usual mode of proceeding; but I must notice a deviation from this mode. I have said that the moth, in the selection of a nidus for its egg, exhibits a preference for the early varieties of apples; but when these are not at hand it by no means denies itself the agreeable duty of billeting its destructive progeny on others. Still in the later kinds it very often meets with this difficulty: the apples

at this early period are much smaller, and a single apple is insufficient for the requirements of a single grub; so the moth, before laying its egg, judiciously selects a cluster of two, three, or four apples which are touching one another, so that, having worked its will on one of these, it can pass into the next through a hole in the cheek which it has made for this especial purpose; and, curiously enough, the extruded excrement serves as glue or cement to fasten two apples together like Siamese twins. In nine cases out of ten the grub contents himself with a single apple, never leaving it until he is full-fed.

Having now followed the grub until he is full-fed, it seems desirable to describe him entomologically; it has taken him three or four weeks to eat up to his full stature. The body consists of twelve

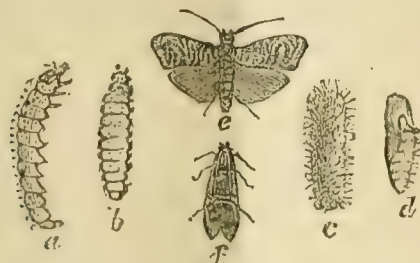


The App'e Maggot: *a*. Section of two apples joined together by the passing of the grub from one to the other.

segments besides the head, which is obtusely triangular, shining, and nearly black; the body is dingy white, with the slightest possible tinge of pink, except on the second and thirteenth segments, the backs of both of which are nearly black. It should here be observed that entomologists now properly consider the head as the first segment—hence the first segment of the body is the second segment of the insect; it is needful to bear this in mind, or some numerical confusion may occur in counting. Every segment of the body after the second has eight very small black warts, and these are arranged somewhat in pairs, and each wart emits a slender hair or bristle, which are too small and fine to be represented in a woodcut; the very pale colour of the body, and likewise the black warts, are more observable before the grub has quite attained its full size, after which period the colour of the body is slightly darker, and the warts are less distinct.

I ought here to remark, that the fall of the apple, the exit of the grub, and his wandering to a place of security, usually take place in the night-time.

When safely ensconced in the "nice little crack in the bark" I have already described, he remains without stirring for a day or two,



The Apple Grub viewed sideways, and distended by being killed in spirits, *a*; back view, *b*; the cocoon, *c*; the chrysalis, *d*; the moth with wings expanded, *e*; the same with wings folded, *f*.

as if to rest himself after the uncommon fatigue of a two yards' march; then gnaws away the bark a little, in order to get further in out of the way of observation; and having made a smooth chamber big enough for his wants, he spins a beautiful little cocoon or case, and within this changes to a chrysalis, which may be described as of a mahogany-brown colour, and as having on each segment of the body a transverse double series of minute warts; these, although so small, are rough to the touch, and may be distinctly felt by passing the finger along the back of the chrysalis. The length of time that elapses between the spinning of the cocoon and the transformation

from a grub to a chrysalis does not seem to be very constant, for I have found the grubs unchanged even as late as March. Be this as it may, it is quite certain that the creature, whether changed or unchanged, remains in the cocoon eight or nine months of the year and always during the winter months.

It is difficult, perhaps unwise, to express an opinion as to the particular design in the economy of nature which decrees that one animal shall either prey on or be preyed on by another. But two conclusions are inevitable; first, that the tomtits, now so abundant in our cider counties, must inevitably perish were it not for the oak galls, and the hosts of apple grubs which have sprung up in the crevices of the bark, and which these active birds are hunting for during every moment of our short winter days; and, secondly, that without the assistance of the tomtits the apple crop would be entirely destroyed by this irrepressible insect. Many a proprietor of garden or orchard in Herefordshire, Worcestershire, or Devonshire will contend that the tomtits must be killed because they peck holes in the apples and pears just above the insertion of the stalk—a fact that cannot be denied, an act which cannot be defended; the blue-headed tomtit in particular, if he have any conscience at all, must plead guilty to its commission; but gentlemen will find that in exactly in the same ratio as they diminish the number of their tomtits so do they increase that of their worm-eaten windfalls.

To myself there is no sight more pleasing than a little bluecap searching every crack and cranny in the trunk of an apple tree for the cocoons of the apple grub; his excessive, his indomitable industry, the sharpness of his sight, the knowing manner in which he turns his head on one side the better to peer into the crevices, the drollery of his attitudes, infinitely surpassing those of gymnast or acrobat, and his merry although perhaps unmusical note—all commend him to my affection, and indeed to my protection where I can possibly extend it; but almost every apple-grower of my acquaintance prefers worm-eaten apples to blue-headed tomtits, and I find it impossible to overcome this preference.

Supposing, however, that our little chrysalis escapes the prying eyes of the bluecap; supposing no such ill fortune betide him as to be transferred from his carefully-selected retreat to the crop of the little bird—then by the middle of June the chrysalis has become a moth, and is again on the wing and hovering round the young apples on a midsummer evening as before.

"Is there no remedy but the tomtits?" asks some devoted enemy of the titmouse race. Yes, a partial one. By burning weeds in your gardens at this time of year you may drive away this little moth. If you have trees the crops of which you value, make a smoking (mind, not a blazing) fire under each. It will put you to some inconvenience if your garden be near your house, but the apples thus saved will repay you for that. Then again you may do as some recommend—pick every apple that the grub has attacked. This is indeed a radical cure, but who can accomplish it? After all, Nature's remedy is by far the best; for the tomtits will serve you without giving you any trouble, and simply for their own gratification. And then again, supposing you are possessed of an orchard (mind, this remedy will not do for a garden), turn in your pigs; nothing is more agreeable to the porcine community than crunching a windfall. It is proverbial that a pig always delights in going the wrong way; and I verily believe they like these windfalls all the better from a conviction that they are taking what they ought not—their sly little eyes twinkle with delight as they utter their com-plaisant grunt over each crisp mouthful. Thus the pigs are fed, and the grubs are destroyed before they have left the stall where they were fattened.

E. Newman, in "Field."

BIRDS IN GARDENS.

THIS is, as one of your correspondents truly observes, a sore point in many establishments. Farmers have of late cried out loudly against the over-preservation of game, and undoubtedly much good has resulted to them from a free and temperate discussion of that subject; why, therefore, should not gardeners ventilate their grievances respecting the over-preservation of such birds as are destructive to seeds, buds, fruit, &c.? In places where there is a standing order that not a bird must be killed nor an egg destroyed the gardener is often placed in a difficult position; for, no matter however careful and vigilant he may be, if birds are present in undue numbers, they will mar his hopes and destroy the fruits of his labours in spite of all he can do to prevent them. I have several times tried to not up large standard cherry trees so as to preserve the fruit until ripe, but have never succeeded, for the simple reason, that if no way was left for the birds to get inside, they very soon made one, and after that a good many more, by breaking the meshes of the net, be it new or old.

As a garden destroyer, the blackbird may be placed in the front

rank, for he is not only a great thief but a great glutton, and very daring; he has also a well deserved reputation for wariness and cunning, for he will run on the ground under cover of anything that may be on it, until out of gunshot, and then he skims quickly over the wall and into the bushes, chattering defiance as he goes. In dietary matters his taste seems to be pretty correct, but his habits are profligate; although he invariably attacks the best first, he does not trouble himself to make a clean job of one fruit before he begins on another, but gouges away right and left till he has spoiled the lot and filled himself until he can hardly rise from the spot. If he cannot get soft fruit, hard will do; no matter how hard it is, his bill is strong and his digestion good, and when the supply of fruit fails, he will take to worms and such things; but then he is hard up—these are his last resource.

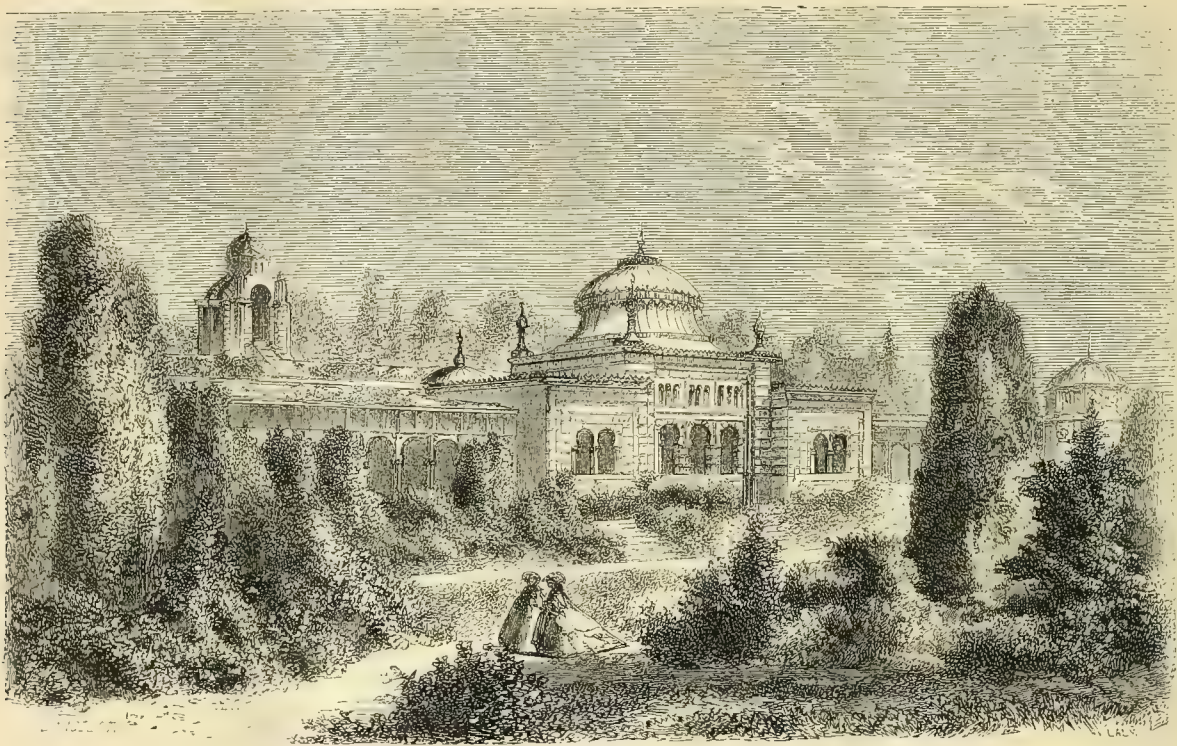
F. H.

ARCHITECTURE AND FOLIAGE AT WILHELMA, WURTEMBERG.

STUTTGART some few years ago was one of the most picturesque of small German capitals. Its Alten Schloss Platz, a spacious area, was enclosed by buildings whose quaint

liens of the vicinity. The gardens are laid out upon a partially geometrical plan, in more or less accordance with the form and character of the building. But the unpleasant formal result which might have been expected from this system of planting has been relieved from its most objectionable characteristics by allowing the growth of the trees and shrubs to assume their natural forms and dimensions; so that, while the arrangement is based upon a well-defined and even "formal" plan, which, near a large building, has many advantages over unmeaning tortuosities, the objectionable element of mere formality is overcome by the graceful irregularity and varying forms of the luxuriant foliage. The end attainable by this means is well worthy of careful consideration, for it is of great value in garden æsthetics.

Mere uniformity is of high value as a foundation, but requires to be elevated into symmetry, which is a thing of far higher character and importance than the bare duplicate repetition of any given set of absolute forms. For instance, in a group of buildings one wing may be made to harmonise perfectly with another, not by mere repetition, but by the introduction of objects



The Chateau and Grounds of Wilhelma, Wurtemberg.

architecture formed the delight of travelling artists in search of subjects for pallet and pencil. The ancient Schloss of the Electors occupied one entire side of the Platz, and from it diverged the principal streets, almost as rich as the Platz in interesting specimens of mediæval architecture; but modern improvements, all in the direction of convenience, cleanliness, and improved ventilation, have played sad havoc with many of the most picturesque features of the place. Each of the main streets of Stuttgart leads to one or other of the gates of the little Wurtemberg capital, and through the opening of nearly every one of them a view is obtained of vine-planted hills, which form a delightful termination to the vista. Many of those rocky vineyards yield wines of various qualities and considerable excellence, which, at no distant period, are destined to be better known in England than they are at present. Not more than a mile or two from the city is the domain of Wilhelma, the fine modern chateau of which, with its pretty conservatories and outbuildings, is one of the

and forms of corresponding values. Say, on one side a low massive tower is the main feature, while on the other a slender and lofty turret is made to balance that effect harmoniously, without the necessity of resorting to the unimaginative and poverty-stricken resource of repeating the low tower; and thus symmetry, instead of mere uniformity, is attained. In the same way, by judicious planting, the effect of masses of trees and shrubs, which, in the ground plan, are geometric reflexes of each other, may be made to produce similar varieties of effect without destroying their harmony. A towering and slender Deodar, for instance, being made to balance the effect of a dark mass of evergreen oak, in a manner precisely analogous to that of the low square tower and the acuminating minaret above alluded to.

These principles are well shown in the engraving of the Wilhelma structures and gardens, which serves to illustrate these remarks. The buildings, though pleasing, have, unfortunately, somewhat of that fantastic cast which distinguishes modern

German architecture, which is in a state of active, but exceedingly indecisive, transition. Whether it shall become Gothic, or Spanish-Saracenic, or Italian *resorgimento*, or whether some national style shall evolve itself from the chaos of decomposed architectural atoms which are at present being jumbled together in the struggle after progress, it is difficult to say. German critics dream very fondly of a "Gothic of the future," as in the art of music the adherents of Richard Wagner boldly assert the coming advent of a "*Music of the future.*" But just at present a little fog of confusion, both in idea and performance, somewhat obscures the distant prospect.

H. N. H.

THE ARBORETUM.

FINE TREES OUT OF PLACE.

BY JAMES BARNES.

How often in our rambles do we observe trees planted in situations in nearly every garden and pleasure-ground that would almost cause one to imagine that little thought or consideration had been previously given as to the amount of space they would require for extending their growth, or the size to which they would ultimately attain. Everywhere do we find fine old Cedars, Larches, Cypressess, evergreen Oaks, and even Poplars, Yews, Horse Chestnuts, Elms, and other large and ornamental trees, planted closely to old castles, mansions, halls, &c.; and still such misplacement is continued. Neither is this always the gardener's fault, for a lady or gentleman may purchase in a pot a plant of some newly-introduced tree, and, without consulting anybody, choose some conspicuous spot for the reception and future development of their little favourite. The gardener is then informed of their decision, and although he may remonstrate, his endeavours to frustrate their purpose often fail. This, therefore, is frequently the reason why we find stately and handsome trees planted so near mansion houses. During their infancy, all goes on well; but as they grow older, they increase in stature, as a matter of course; and, if not removed, they ultimately attain dimensions which quite unsuit them for the situations they occupy, sometimes darkening the house, and at others obstructing a free view of the distant landscape.

Where it is desired to have choice trees grown to advantage, a piece of deep, well-prepared ground should be selected purposely for them, in what may be termed an arboretum, where, when once planted, they should be allowed to remain uninterfered with.

When the Sequoia (*Wellingtonia*) gigantea was first introduced into this country, a number of them was placed under my charge, and, with careful treatment and regular and large shifts, to my great satisfaction, they soon made fine luxuriant plants. Proud of my success, I wished to provide them with a permanent situation where they would be well sheltered, have plenty of room, and enjoy a considerable depth of good soil; and with that object in view I consulted my employer about them, when I learned with astonishment that the place fixed upon for their future development was where they now stand, viz., in a situation exposed to the sea, on the poorest ground on the estate—a solid bed of gravel! I determined, however, to make the best of such adverse circumstances; I gave each tree a space of sixty feet, trenched the station on which it was to stand forty feet in diameter, and enriched it with surface soil and whatever other suitable material I could obtain, thoroughly incorporating the whole and fashioning it into a gradually sloping mound five feet high in the middle. At the time of planting, a railway was to have been made through an adjoining field, the turf surface of which I intended to secure, for the purpose of filling up the hollows between the trees to a height of six or eight feet, thus converting their present mounds into little valleys; but in this I was afterwards disappointed. In planting, the centre of each mound was cast out, and a load of good open healthy soil was introduced, in which the plants were inserted. They were then mulched, and the operation was finished by placing a rustic cage six feet in diameter around each young tree. Thus treated, and kept free from weeds, they grew most luxuriantly, and safely weathered the cutting north and north-east winds of the severe winter of 1860-61, and also those of the winter of 1864-65, with the exception of a slight searing on the windward side, from which they completely recovered the following summer.

In the arboretum one tree was planted and did remarkably well, when, owing to an addition of seven or eight acres of new ground being made, it, together with others, had to be removed. I then planted it on a spot filled up with many hundreds of cartloads of healthy old bank soil mixed with turf, thus forming a depth of eight feet of excellent soil, in which it will find room to grow and luxuriate

for the next five hundred years at least; there it remains still, a noble example of what may be expected of this tree when planted under favourable circumstances.

These Sequoias (*Wellingtonias*) have for several years produced cones, both male and female, and from their seeds have been obtained young plants. Immediately I discovered the male catkins, and found them in a fit state, I had a few of the female cones fertilized; these quickly swelled, and from their enlarged form could easily be distinguished from others even from a distance. When full grown the seed cones are about the size of a walnut, and in shape something between that of the cones of *Capressus macrocarpa* and of *Cedrus Deodara*.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Preserving Stakes.—Some few years ago, I had some stakes for the nursery made of pine inch-boards, three inches wide, sharpened to a point, and then boiled for a short time in a solution of blue vitriol, and they are lying around in the field now as sound as the day they were made; while other stakes, coal tarred, do not last much longer than when left without it.—*A. Starr, in "Cultivator and Country Gentleman."*

Golden Yews.—Persons interested in these effective shrubs, or those who are yet unacquainted with the splendid effects well-developed specimens produce, would do well to see the fine old examples in Mr. Anthony Waterer's nursery at Woking. In summer they assume their richest tints. A good specimen, seen amidst the ordinary verdure of our evergreens, is something not to be forgotten.

The Tulip Tree.—A few days ago we saw a tulip tree about eighty feet high, in Surrey, and one which was much crowded up by other trees. This reminds us of what few seem to be aware, that this tree, which endures the hardest frosts of the American winter, is considered the largest tree of the Eastern or older States of America, often reaching a hundred feet high and six feet in diameter. Specimens in North Carolina have been measured thirty feet, and even more, in circumference.

Movement of the Sap.—The following example destroys the generally admitted rule, "that the sap rises by the albumen and descends between that and the bark to form the cambium." Our illustration is an elm of about nineteen inches in diameter, near the base of which four inches in width of bark have been stripped all round. Notwithstanding that, and also that the operation took place towards the end of December 1870, the tree does not seem to have suffered in the least, and has shot forth very well. It is therefore certain that the movement of the sap, both up and down, must have been by the centre of the tree.

Mistletoe-Bearing Oak.—There is a fine old oak with mistletoe growing on it in Lord Sondes' Park at Lees Court, Kent. I saw it for the first time in 1867. I do not know if it was known before that time that the parasite was growing upon it in five different places. I have been to look at it to-day (April 2nd), and I see that some ruthless hands have cut away the two largest pieces since I last saw it, so that there are now only three pieces left. There are hundreds of oaks of all sizes growing around it, from saplings to hoary-headed fellows that have stood the tear and wear of time for centuries, but on none can I find the parasite growing, except on the solitary one just named.—*J. PINK, The Gardens, Lees Court.*

GARDENING FOR MAY.

THE INDOOR GARDEN.

BY T. BAINES, SOUTHGATE.

Conservatory.—In order to prolong the flowering season of such plants as are in bloom here, it will now be necessary to attend carefully to shading during the middle of the day in sunny weather. Serim, a fabric made of flax, is much the best and cheapest shading material in the end. It outlasts considerably any other material I have ever tried. The finest quality of it will break the sun's rays without excluding too much light. Roof climbers will now require regular attention to keep them from becoming an entangled mass. The system of allowing the whole roof to become covered, as is frequently done, is objectionable. It excludes too much light from the plants underneath, especially in dull weather; it also spoils the general effect, which is much enhanced by confining climbers to something like one-fourth of the roof space, and leaving them to hang down gracefully at intervals; yet in this too much uniformity should be avoided, by allowing some to hang lower than others. Let every means be employed to keep them free from insects, more especially scale. Azaleas that are brought into bloom in other structures for removal to the conservatory, will be benefited by sprinklings overhead with the syringe every afternoon until their flowers are fully expanded; they should also be shaded, especially the high-coloured varieties. They must likewise be well attended to with water, as during the development of their flowers there is a much greater drain upon the roots than at any other time, and if allowed to become dry the flowers suffer as well as the growth for

the ensuing year. Geraniums and Calceolarias that are throwing up flower trusses should be encouraged by means of liquid manure, not too strong, especially in the case of Geraniums, or it causes them to run too much to leaf. Fumigate regularly, and not too severely. Fuchsias stake, stop, and tie. Closely examine them to see that they do not suffer from aphides or red spider, as either quickly spoils them. Cockscombs, Balsams, Achimenes, and Hydrangeas should be well attended to, as these, with the plants previously mentioned, will be the principal things to be depended on during the following two months, when there is a much greater scarcity of flowering plants than during early spring. Chrysanthemums that have filled the small pots they at present occupy, should be at once potted into their flowering pots; from eight to twelve inch pots, according to the sizes the plants are required, will be found large enough for general use. If fine flowers are wanted, stop the shoots during this month, but not later. A dozen really good blooms on a plant of the large-flowered varieties are preferable to three times the number of starvelings often met with. Plunge them at once in their summer quarters in ashes, which will prevent worms from getting into the pots, and will keep their roots at a much more equable temperature than when not plunged. The effect of rapid change in the temperature of the soil in an ordinary plant pot when not plunged is not sufficiently considered; during bright weather the effect of the sun's rays acting upon the pot raises the earth heat in an unnatural degree, and therefore the cold chill of even our summer nights causes a corresponding reaction. The first batch of Primulas and Cinerarias will now require potting into thumb pots, using good loam, well enriched with rotten dung and leaf mould for the purpose, mixed with a little clean sand; place the plants in a somewhat close pit or frame; shade them from bright sun, and attend to them well with water. Pot off all cuttings struck of Euphorbias, Hydrangeas, and Poinsettias, placing them in a growing temperature near the glass, so as to insure short, stout growth. *Rhynchospermum jasminoides* is a useful conservatory plant, its fragrant white flowers rendering it a general favourite. It is a plant of easy management, requiring the temperature of a vinery or intermediate house during its growing season. The different varieties of *Kalosanthes* will now be fast showing flower, and will be benefited by weak manure water. Get them properly tied before the shoots get too heavy. They are useful decorative plants for summer. Now is a good time to propagate them; they strike freely in loam or peat, with an admixture of a little sand, giving very little water until they are rooted. Tie out Achimenes as they advance in growth, giving them all the light possible, so as to induce a stout, blooming habit. A good number of the oldest plants of scarlet and pink Geraniums should be selected for keeping up the conservatory display during the summer and autumn; and a batch of the scarlet *Pelargonium Vesuvius* should be potted into six-inch pots and turned out of doors, where they will be fully exposed during the summer to the full sun. With these it is not size that is required, but a thoroughly matured growth that will ensure their flowering freely when subjected to heat for winter decoration.

Stove.—Allamandas in pots that have not made a sufficient number of shoots should have their branches wound round the trellis on which they are trained, bringing the points of the shoots down towards the top of the pot; this will have the effect of causing them to break freely, which growth will show bloom before it has advanced far. All stove plants that flower from the current season's wood will be benefited by liquid manure as their pots get filled with roots; but in all cases let it not be given too strong, and always in a transparent condition; if applied thick and muddy it closes up the surface of the soil, doing more harm than good. Even in May we frequently get cold cutting winds; therefore, when such is the case, never give air at both top and bottom of stoves, as it causes a through current of cold air, which is equally as injurious to vegetable as it is to animal life. We are frequently told that if the openings where the air is admitted are opposite the hot pipes, the air is warmed in its ingress by passing over the heated surface. To some extent it is, but not sufficiently; neither is it sufficiently charged with moisture to be allowed to rush onward on a windy day amongst young tender foliage at this season of the year; towards the autumn, when the object is to ripen up late growth, the case is different. Place Gloxinias, Tydæas, and all soft quick-growing plants near the glass, so as to get all the light possible; otherwise, when they have to be removed for decoration elsewhere, or their flowers are required for cutting, they are so soft and flimsy as to be useless.

Fern House.—Plants that have not been repotted for some time, and where it is not deemed advisable to give them more root room, may be assisted by the application of manure water; but in all cases see that the drainage is effective, otherwise its application will only aggravate the evil. If any plants are out-growing their bounds,

either in pots or planted out, it is an easy matter to reduce this over-luxuriance by cutting away, more or less, according to circumstances, their oldest fronds whilst in a green living state; this will be found to reduce the size of the young fronds made afterwards, in proportion to the extent it has been carried out. The different kinds of *Dicksonia*, *Lomaria*, *Cyathea*, &c., that throw up their young fronds in a batch may have, when these are fully developed, the oldest fronds, if unsightly, cut away.

Orchids.—This and the ensuing month is generally the gayest period of the year as far as these plants are concerned. The great drawback to the enjoyment of Orchids during this their flowering season, is that many of the plants occupying the different structures devoted to their culture are now in active growth, necessitating a high temperature and humid atmosphere. Where numbers of plants are grown therefore, a small house should be devoted to such as are in flower; this can be kept drier, so as to prolong their flowers, and also cooler, than is required for such as are in active growth, at the same time affording facilities for inspection without the infliction of a vapour bath. See that *Dendrobiums*, especially such as are found in the almost saturated atmosphere of the hill regions of India, receive an abundance of water, both at their roots, and in the atmosphere during their season of growth. Keep them also in a lower temperature than is required for the well-being of such plants as inhabit the low hotter regions. The greater number of *Cattleyas*, including *Mossiae*, *labiata*, *Skinneri*, and *intermedia*; *Lælia purpurata* and *crispa*, &c., are also very impatient of too much water at the roots, even during their season of growth, unless where the temperature in which they are grown is higher than either is necessary or desirable.

Hard-wooded Plants.—Azaleas will now be coming into flower without the assistance of fire heat, and although with the increased temperature of the season they will not last in bloom so long as those that have been forced, yet the much brighter colours which they acquire under more natural conditions will compensate for their shorter duration. The house they occupy whilst in bloom should be well shaded, in order to prolong their flowering as long as possible. Remove all seed pods from such as have done flowering; after which, allow them a fortnight or three weeks to recruit their energies previous to repotting. Use in the operation good fibrous peat broken into pieces proportionate to the size of the plants; add nothing except as much silver sand as will not only insure porosity, but also maintain a sweet healthy condition of the soil for years; for Azaleas with anything like fair treatment are not short lived. After potting keep them in a closer atmosphere than they have been in for a few weeks, and shade during bright sunny weather. Admit no side air during such time, but give sufficient at top to keep the temperature from getting too high; 80° or 85° with air, shade, and moisture will do no harm; on the contrary Azaleas enjoy it. Plants that are vigorous and that push some of their shoots very strong will be benefited by having the points of such shoots nipped out, as soon as they show a disposition to outgrow their neighbours; if done whilst the growth is soft the plants will push several shoots, which will set blooms with the rest of the plant. Attend as heretofore to the general stock of hard-wooded plants, and by close attention encourage early and vigorous growth.

THE FLOWER GARDEN.

BY GEORGE WESTLAND, WITLEY COURT.

ALTHOUGH our springs of late years have cautioned gardeners as to the propriety of early "bedding out"—many preferring to wait until the first week in June before they commit tender plants to the open ground—it is not too early to decide how the garden shall be planted, and to make arrangements accordingly. What may be termed the massing system has had its day, and it is evident that something fresh must soon be introduced. Gardeners, it is to be regretted, have in too many instances prided themselves more upon the tens of thousands of plants bedded out, than upon the good taste which should have characterised their distribution. Striking masses of primary colours are all very well when viewed from a distance and when well balanced by an ample background of green; but close under the windows of the mansion, associated with light-coloured walks and bright statuary, they not only become offensive to the eye, but in sunny weather positively intolerable. Loudon describes a beautiful scene "as one which an artist would like to paint," but we wonder where the artist could be found who would like to paint even the best of our modern flower gardens. As examples of broad masses of mere colour, and of the ability to crowd the greatest quantity of plants into the smallest space, they are well enough; but refined taste repudiates such ostentatious colouring. Nevertheless, bold masses of brilliant colours are not always out of place. Who at the present time, whether travelling by rail or road, can abstain from

admiring the soft, bright tint of the Larch? Some of the Acers, too, are scarcely less beautiful; while the grey of the Poplar and the brown of the Elm contrast admirably with the sombre green of some of the Pinus tribe; and the snowy blossoms of the Bird-cherry are everywhere enchanting; but, on the other hand, go again later in the season to our heath-empurpled mountains and moorlands, and though the expanse may be lovely, who is not delighted when a break of Fern, a group of Foxgloves, or even a few scrubby bushes of Birch, Thorn, or the golden Furze step in to break the monotony? This is what we want in our gardens. The flavour of the Quince in the Apple-tart is good, but an Apple-tart nearly all Quinces would not be eatable; just the same is it with our modern flower gardens; where we have striven for effect we must henceforth be satisfied with quiet repose. Towards this point are we drifting when we introduce foliage and sub-tropical plants into our flower gardens; and it is to the artistic disposition of these—the judicious blending, as it were, of colour with form—we must look for a satisfactory solution of our present flower-garden difficulty. We would have masses of colour in suitable situations, but we would have them subdued and tastefully toned down by means of foliage, so as to form a rich, quiet, and harmonious whole. Even ribbons, if a mere repetition of the same plants *ad infinitum*, cease to charm; and the same holds good in the case of paneling and carpet-bedding, where gaudy colours are employed.

We would, therefore, as the planting season is at hand, counsel our readers to put in practice the subdued system of decoration; and, where it may be necessary to introduce colour boldly, so to tone it down by foliage and contrast as to produce a harmonious and pleasing picture. The secret of garden decoration does not consist in crowding hundreds or thousands of plants, however scarce or valuable, into a given space. No; it lies more in the judicious use of appropriate plants, and in so lighting them up by means of colour that each shall enhance the beauty of the other. For this purpose expensive materials are unnecessary; it is the arrangement rather than the plants individually which charms. One man, with a handful of flowers from the hedgerow will often produce an exquisite bouquet; while another, with flowers however choice, might fail. Tasteful application of the material which may be at command is what is wanted.

Spring-flowering plants, although now doing good service, will soon require to be removed to the reserve garden, the ground in which should be put in order to receive them; add to it a little thoroughly decomposed manure, leaf soil, or peat as the case may be. Before re-planting, divide into small portions such plants as Aubrietias, Arabis, and Daisies, &c., allowing sufficient space between the plants for proper development, without crowding. Bulbs must be removed in as perfect a manner as possible, being careful not to bruise the leaves in the operation, and on no account remove the flower stems, as they greatly assist the maturation of the roots. Water freely, and protect from sunshine for a few days with evergreen branches. Plant out spring-struck Hollyhocks, and divide and re-plant Neapolitan and late-flowering Violets. Centaureas should be plunged in the beds in pots, as they grow more compactly, colour better, and are more manageable in winter. Clip box edgings, and everywhere maintain perfect neatness and order.

Pits and Frames.—The majority of bedding plants now occupying these may be placed under temporary protection, preparatory to being planted out. Attend to the pricking off of tender annuals, and push forward what potting off may yet remain to be done. Abundance of space and air should be afforded to the more tender bedding plants, so as to insure sturdy, well-matured growth. Continue to make sowings of tender annuals.

THE ROSE GARDEN.

BY GEORGE PAUL.

In the case of Roses on the briar, suckers seem peculiarly troublesome this year, and their removal demands immediate and continued attention. Look for them carefully in the head of the trees, and check any incipient shoots that appear on the stem. On the budded briars of last year they will be found in abundance, and entirely overpowering the variety budded; in this case all should be removed at once, except one just above the breaking bud. This may be left for a day or two in full vigour, then shortened, and finally, in about a week altogether, be cut off. Experience shows that too sudden a check, before the bud has time to carry off all the sap, kills the now abundantly-forming white rootlets.

In early districts and on hill-tops, where frost threatens not, a dressing of guano or dried blood (ammonia with carbon) will be beneficial to the growth. In the valleys we are afraid to encourage a vigorous sappy growth, too often finding ourselves overtaken by May frosts, and prefer awaiting the benefits arising from a mulching of

droppings, to be prepared for application just as the buds are swelling and the hot season is setting in. Take advantage of the softer condition of the ground after showers to break up any clods still left after digging; hoe deeply and frequently.

Careful and almost daily search should be made for maggots; they lie often close to the flower bud, gnawing through the stalk just below it; when not looked after, the foliage, eaten and ragged, is a disfigurement for the whole season.

Towards the end of the month, plant out dwarf Teas, and more especially Roses on their own roots in pots; the latter get so much better established than if left until autumn, or when put out in winter.

Last week and the present first week in May is emphatically the season for pot roses; they are never so fine as when in flower now, and with the not too hot weather which we are now experiencing, they last long in bloom. They open, with the cool treatment now possible, large in size and fine in colour. The house in which the plants are opening their blooms should be kept shaded from all mid-day sun; a temperature of 55°, the happy medium, is not always possible at mid-day, but by plenty of water on the floor and amongst the pots a comparatively cool and moist atmosphere may be produced. If wanted for a particular date, hastening on the bloom may be done by a warmer and closer night temperature; but if they may be allowed to come in regardless of shows or garden parties, air may be left on and a cool night temperature may be maintained with obvious advantage to the size of the blooms. Pot roses for June cannot have too much air or be grown too slowly. In tying, plants should be gone through a second and last time when the growth is fully made and the operator can see how far out his flowers will be.

THE FRUIT GARDEN.

BY WILLIAM TILLERY, WELBECK.

Outdoor Fruits.—Our fickle climate has never been better represented than it has been lately, for on April 21st it snowed here nearly all day, with a frosty north-east gale prevailing all the time. The latest flowering portion of standard Pears, Plums, and Cherries, being then in full bloom, the prospects of a good crop of these fruits are again somewhat blighted. Last year the rainy, cold weather which we had in April and May prevented some kinds of outdoor fruits from setting well, especially Apples, and very thin crops were the result in nearly every locality. Where Apricots, Peaches, and Nectarines have been protected, the coverings will want gradually taking off, so that the trees may not suffer from too sudden exposure. Disbudding the shoots, by only taking off a few at a time, till all danger from the influence of cold weather is over, must now be proceeded with; and where this is properly done it adds to the beauty and health of the trees. Where the fruit has set thickly, timely attention to thinning must be observed; but I am afraid this operation will be a sinecure this year on many kinds of fruit trees. Apricot trees are often much infested with the grub, that curls their leaves up and eats the young fruit. As this pest is safe from syringings or dressings of any kind, it must be searched for and crushed with the finger and thumb; and the more effectually this is done, the fewer grubs will appear next year. Peach and Nectarine trees on the walls, if infested with green fly, must be syringed with tobacco water; and this, if done in time, will prevent them from injuring the foliage. Attend to the stopping of all fore-right shoots on Pears, Plums, and Cherries on the walls. Towards the end of the month, Strawberries will be beginning to swell their fruit; and for all the large, valuable dessert kinds, forked sticks should be placed in the rows to support the trusses. This I find is far better than laying straw, short grass, or hay down to keep the fruit clean, as these materials harbour snails and other vermin.

Orchard House Fruit Trees.—In true orchard houses, that is, where no artificial heat is employed, the temperature must be ruled by the weather. It is advisable, therefore, on bright sunny days to close the lights early in the afternoon, to secure a higher temperature for the night. Disbudding and pinching all strong shoots, and thinning the fruit where set too thickly, will be the routine for this month. Green fly and red spider must be eradicated by fumigation or syringing with tobacco water.

Vineries.—The Vines in the early houses will now be ripening, and some air left on at night will assist the colouring process. In the succession houses, when the Vines are in flower, good fires must be kept up, and plenty of air given when the weather permits. Thinning the berries as soon as they are fit, stopping the laterals at a leaf or two above the bunches, and removing all superfluous shoots will be the main points now to attend to in the latest vineries. The coverings may now be removed from all the outside

borders, and some liquid manure applied to them when watering is necessary.

Peach Houses.—The fruit in the earliest peach house will now be at its second swelling, and the border must be examined to see that the moisture is sufficient, especially where the roots are all inside the house. Abundance of air must be given when the fruit is colouring, and the watering at the roots gradually discontinued. The trees in the late succession houses must be syringed every afternoon, and a moist atmosphere kept to prevent red spider from injuring the foliage. Soft water, at a temperature as high as that of the house, should be used for this purpose, for hard water stains the foliage and fruit with carbonate of lime, and spoils the bloom on the fruit when ripe. The thinning of the fruit must be attended to, and the quantity left on be regulated by the health of the trees. I find the best soil for Peach and Nectarine borders, where such can be procured, is the turfy loam from old pastures or the sides of roads, and no manure or compost of any kind added to it. Peach trees grown in such soils never make too gross or unhealthy wood, and they can always be kept up to the desired vigour by an addition of fresh soil to the roots and liquid manure during the time the fruit is swelling. All leaf mould, old tan, or any compost or soil that is likely to bring funguses into Peach-tree borders, should be strictly avoided when making them, for when fungus fastens on the roots of Peach trees it soon renders them unhealthy and unproductive.

Figs.—As the first crop of fruit will be about ripening, the supply of water to the roots must be diminished, and only sufficient given to prevent the second crop from dropping off. The trees grown on walls after the winter coverings are removed will want their wood thinned, and all the shoots left nailed or tied in.

Cherry House.—As soon as the fruit is all gathered, the trees must get all the air possible by taking the lights off or opening them to their fullest extent. When grown in tubs or pots, the trees can be placed in the open air in some sheltered situation, and not neglected for water in dry weather. Syringe with tobacco water, or fumigate, should the black aphid make its appearance on the trees.

Cucumbers and Melons.—A steady bottom heat will still want keeping up, and by attention to syringing and a moist atmosphere the foliage will appear clean and healthy. The fruits on both Melon and Cucumber plants often set too many at a time, and require thinning, so as not to weaken the plants too much. Put pieces of slate or glass under Melons grown in frames, to prevent the damp soil from rotting the young fruit. When Melons are grown in pits and the plants trained on wires or trellises the fruit when getting heavy must be supported on a square piece of wood with a piece of string fastened to each corner tied to the wires, leaving plenty of room for the fruit to swell to their full size. Plants in frames will still want covering up with mats at night, and continued till all danger from cold weather is over. The ridge Cucumbers sown in May will want planting out by the end of the month, and a suitable ridge or bed made with hot dung will want preparing for their reception. Vegetable Marrows will likewise want planting out at the same time, and in the same way.

Strawberries.—When the fruit is all gathered from forced Strawberries the plants are often huddled together in some exposed corner and neglected; but such plants, if taken care of and planted out, will furnish fine fruiting plants next year in the open air. Some varieties likewise when planted out early produce a good crop in the autumn, and notably Sir Charles Napier for one, as I had this variety very fine last year in September, and quite fit for dessert. If the ground cannot be got ready for planting them out till other crops come off, and the pots are wanted, the plants may be shaken out and packed closely together with a little mould sprinkled amongst them, when they will be safe till planting-time, if supplied with water in dry weather. Take advantage of favourable weather to clean between the plants, and to mulch them properly in good time. Where the soil is light and open, tread it firmly previous to mulching.

THE PINERY.

BY JAMES BARNES.

To make fruit swell off freely, now that the days are long and light, ought to be no difficulty. All that is required is method in the way of applying necessities, such as tepid manure water, charging the atmosphere with ammonia and humidity, kindly airings occasionally, and never shading if well swelled, finely-coloured fruit is aimed at. Talk of shading, indeed, in our cloudy, dark, humid climate, where the general complaint always is what little sun we get! Oh, no; to deprive our fruits of that little is against all natural reason and law. Succession plants in every stage of growth

should now get their full share of heat, humidity, and air, with a warm humid atmosphere. Air freely night and day, in order to get strong robust plants.

THE KITCHEN GARDEN.

BY JAMES BARNES.

IN order that vegetation may make proper progress, stir the surface of the soil frequently and well amongst growing crops, by means of the hand scarifier, Dutch and draw hoes. Unctuous, stiff, wet soils must be methodically trenched, exposing as much of them as possible to the influence of sun and air, in a rough, ridged state. Forking, scarifying, hoeing, &c., at all seasons amongst crops is the masterpiece of good cultivation, giving neither vermin nor weeds a chance of existence. Make up vacancies by transplanting, or you tolerate a loss; everything can be transplanted by means of a trowel in each hand, one to open the hole and the other to take up the plant with a ball of earth attached to it. After-thinnings, when the plants are established, are made with crane-necked hoes, one in each hand, sharply looked after. Broccoli, make the last sowing of some late kind for the season; prick off all previously sown plants as soon as they can be handled; also those of Savoys, Brussels Sprouts, Borecole, and other Kales. Cauliflowers, plant these out in succession now, on the coldest, dampest situations you can select, and make small sowings for succession. Carrots, thin early sorts, and sow other early kinds in small quantities, in order to have always a succession of young roots. Beans, plant garden Beans on stiff, cold ground, and pinch the tops out of such as are coming into bloom. French Beans, transplanted or up and growing, dredge with dry dust, to prevent shanking or canker; shelter, where not under hand-glasses, with boards or boughs. Of Scarlet Runners, and other runner Beans, plant a full crop, sheltering and dredging them as just recommended for French Beans.

Celery.—To early plants in frames give air freely, and water abundantly; earth carefully, remove the lights entirely now, and make use of them for sheltering and assisting the second crop for a short time, or for French Beans, Capsicums, Chilies, Sweet Basil, &c. Young Celery for succession, continue to prick out; never allow the plants to get large or drawn previously with large tap roots, if fine, crisp, well-finished Celery is aimed at. The best situation for Celery at this season is in partial shade, that is, where tall late peas have been sown in rows, twelve or fourteen feet apart, as they always should be, in order to obtain a heavy, perfect crop, and where early crops of Spinach, Turnips, Cauliflowers, &c., have first been taken; between the Peas cast out a shallow trench, six feet wide, fork into it a good portion of good rotten manure, and plant seven or eight plants cross-ways in the trench, eighteen inches apart. Thus treated, the result cannot fail to be a heavy crop of fine Celery, and that with less trouble, labour, and expense, than by any other method, and in this way all the winter crops can be conveniently sheltered and protected from severe frost.

Lettuces.—Sow these once a fortnight in drills, on well-prepared ground, to be thinned by hand or hoe; they will grow away much freer without "bolting" from seed, than when transplanted in hot, dry weather.

Peas.—Of these continue to sow late varieties at good distances apart, in order to obtain good and perfect crops, and partial shade for intermediate cropping. Draw a ridge of earth up to within nine or ten inches of each side of all Peas up and ready for sticks, and place mulchings of decayed manure of some kind between the Peas, and the ridge on each side. It is astonishing how this benefits them by preventing evaporation, and it affords convenience for applications of water. Stop or pinch out the tops of all early blooming Peas; and all late kinds and strong growers should be first stopped when two feet in height, and three or four times afterwards, in order to get heavy crops.

Seakale.—Manure and fork the ground between crops of this that have been cut; thin the crowns early to two or three shoots, according to strength, and apply dredgings of soot pretty freely in rainy, dark, cloudy weather. Seakale grows naturally in great abundance, as do also Cabbages and Asparagus, round this coast close to the sea.

Tomatoes.—These should now be planted out against walls, close fences, under hand-glasses at the bottom of steep sloping banks, or in warm valleys against stakes, &c.; they may be trained and led with one shoot up to any bare spots on walls between fruit trees, then stopped to fill up. The Tomato is a wholesome fruit not grown or made use of in this country to the extent it should be.

Radishes, Mustard and Cress, Chervil, and other saladings, sow little and often; and make a small sowing of Endive.

Turnips, sow these in small portions, in drills on the coldest and dampest land that can be found.

THE HOUSEHOLD.

GREEN PEA SOUP IN WINTER AND SPRING.

Sow Peas thickly in pots and boxes, say six weeks before the soup is wanted. Place them in a temperature of 60° or so, close to the glass in a house or pit. Cut the plants as soon as they attain a height of from three to six inches, and rub them through a sieve. The shoots alone will make a fair soup. Mixed with dry peas, also passed through a sieve, no one could scarcely distinguish colour or flavour from that of real green pea soup. There is, however, considerable difference in the flavour of pea leaves, as well as of the peas themselves. The best marrows, such as *Ne Plus Ultra* and *Veitch's Perfection*, yield the most piquant cuttings. Also the more light the plants receive the higher the flavour, plants drawn up, or at all blanched, being by no means comparable with those well and strongly grown.

In the spring, a few patches or rows may be sown in open quarters expressly for green cuttings. These are most perfect and full flavoured when four inches high. When too long, the flavour seems to have run to wood, and the peculiar aroma of green peas is weaker.

There is yet another mode of making green pea soup at any season at very short notice. Chip the peas by steeping them in water and leaving them in a warm place for a few days. Then slightly boil or stew, chips and all, and pass them through a sieve. The flavour is full and good, though such pea soup lacks colour. It is astonishing how much the mere vegetation of seeds develops their more active and predominant flavour or qualities; a fact that might often be turned to useful account in the kitchen in the flavouring of soups or dishes, with turnips, celery, parsley, &c.

D. T. FISH.

FLAVOURING WITH LEAVES.

LEAVES are more or less popular for garnishing, but it has often surprised me that they are so little used for flavouring. With the exception of sweet and bitter herbs grown chiefly for the purpose and parsley, which is neither bitter nor sweet, but the most popular of all flavouring plants, comparatively few other leaves are used. Perhaps I ought also to except the sweet bay, which is popular in rice and other puddings, and certainly imparts one of the most pleasant and exquisite flavours. But, on the other hand, what a waste there is of the flavouring properties of peach, almond, and laurel leaves, so richly charged with the essence of bitter almonds, so much used in most kitchens! Of course, such leaves must be used with caution, but so must the spirit as well. An infusion of these could readily be made, either green or dry, and a tea or table spoonful of the flavouring liquor used to taste.

One of the most useful and harmless of all leaves for flavouring is that of the common syringa. When cucumbers are scarce, these are a perfect substitute in salads or anything in which that flavour is desired. The taste is not only like that of cucumbers, but identical—a curious instance of the correlation of flavours in widely different families.

Again, the young leaves of cucumbers have a striking likeness in the way of flavour to that of the fruit. The same may be affirmed of carrot tops, which are as like carrots in taste as may be. In most gardens there is a prodigious waste of celery flavour in the sacrifice of the external leaves and their partially blanched footstalks. Scores of sticks of celery are cut up into soup, when the outsides would flavour it equally well or better.

The young leaves of gooseberries added to bottled fruit give a fresher flavour and a greener colour to pies and tarts. The leaves of the flowering currant give a sort of intermediate flavour between that of black currants and red. Orange, citron, and lemon leaves impart a flavouring equal to that of the fruit and rind combined, and somewhat different from both. A few leaves added to pies or boiled in the milk used to bake with rice, or formed into crusts or paste, impart an admirable and almost inimitable bouquet. In short, leaves are not half so much used for seasoning purposes as they might be.

D. BURY.

Flavouring with Seeds.—For the dead season, when greens are scarce, or frost has made a full and final meal of them, it may be of service to bear in mind that we can turn to seeds, dry or chipped, for various flavours. I have already adverted to such as celery, turnips, and parsley, among vegetables. The seeds of most herbs possess similar characteristics; such seeds as those of thyme, marjoram, or savory, taste very like the plants. But most herbs may be dried and bottled, and it is comparatively easy to have such, either green or dry, in sufficient quantity; it is, however, often otherwise with parsley. Its seed is of fair size and substance, and the flavour much concentrated, so that a little goes a

long way. For soups, &c., the seed boiled is a capital substitute for the leaves. For melted butter the great drawback is colour. But even this may be overcome by the employment of a neutral green to mix with strong parsley seed water. Perhaps this neutral tint is given by mild Scotch kale, grated as parsley is for melted butter. The colour is almost identical, and the flavour can be parsleyed over so completely as to defy distinction.

—D. T. FISH.

THE FRUIT GARDEN.

PEARS IN THE CHANNEL ISLANDS.

IN reply to Mr. Baines (p. 415), as to why I named only two sorts of Pears in my former paper, I beg to say that I did so because the two kinds mentioned are well-known to most persons. I am glad to see Mr. Baines's acknowledgment that the Chaumontel and Duchesse d'Angoulême are of better quality grown in the Channel Islands than those of English growth; and I can safely affirm that the same is the case with all other first-class Pears with which I am acquainted, or have ever seen grown. The Channel Islands are the land of Pears, all of which can be grown to first-rate perfection, both as to quality and size. And why should it not be so? England, as a whole, is not the best of Pear-growing countries. Apples do better in it than Pears. I am aware that many good Pears are grown in England, but the sorts must be selected with care for the different localities; and even then, often after much trouble and expense, they do not equal those grown either here or in France. In most parts of England many sorts have to be given up in despair; and, as Mr. Baines says, the further north the worse they are. He might also have added too far south is just the same. There, also, Pears will be found "no better than turnips." Mr. Baines appears to have overlooked the fact that there is a happy medium in most things, and in nothing is it more conspicuous than in growing first-class Pears. All good cultivators of the Pear are agreed that too great heat, too great an amount of cold, or a very changeable temperature, is fatal to those who aim at growing first-class quality fruit, either for size or flavour. Such being the case, I affirm that few, if any, places will beat the Channel Islands for the flavour of their fruit. Never mind what sorts are cultivated, they will all be first-class in that respect. First: We have an excellent soil, in which the Pear delights to grow. Second: Our temperature neither rises too high nor falls too low in summer, which is frequently the reverse in England, our insular position obviating extremes. Third: We have longer summers, which commence earlier in spring and last longer in autumn; a point of primary importance to late-keeping and long-hanging fruit. Thus it is evident that we have great advantages on our side as regards growing first-class Pears, either for size or quality. I myself cultivate upwards of two hundred varieties of Pears, some of which are the most delicate and tender in cultivation. My trees are wholly grown as pyramids or as ground cordons, and they receive no protection of any kind. They invariably produce good crops, and ripen fruit to the highest perfection. Among them are to be found sorts that I feel confident Mr. Baines would not equal even with the aid of walls; and I am led to this conclusion from observing that Mr. Baines calls the Chaumontel a coarse fruit. I have an idea that Mr. Baines is too far north, or he could never call the Chaumontel a coarse Pear, for few if any Pears can beat it for flavour; and if all its good qualities are taken into consideration, it cannot be surpassed by any Pear in cultivation—of course, I mean when grown in a favourable climate, such as we have here. Those Pears named by Mr. Baines are good sorts, and will bear good fruit in most parts of England where Pears do anything at all, excepting Marie Louise, which is rather tender in some places; and this Pear, also, is better flavoured here than even in Devonshire, where I have seen it in beautiful condition against a south wall. I believe I may repeat with certainty that no better Pears can be grown in Europe for size or flavour than are grown in the Channel Islands and France, say as far as the river Loire. South of this the flavour decreases, and far south Pears get worse and worse, until they become little "better than turnips;" and then we enter the land of grapes, figs, olives, melons, &c.

JOHN RICHARD WILLIS, *Rohais Nursery, Gournay.*

ORCHARD HOUSES.

WE have here a very good span-roofed orchard house, measuring seventy-five feet long, twenty-two feet wide, and fifteen feet high. From the time we gather from this house our first dish of currants, raspberries, and gooseberries, for tarts, up to the month of October, when we gather the last dish of Easter Burrell pears, the house is full of interest. It will be seen that we do not gather superior fruits at the beginning of the season, but we gather peaches and apricots, nectarines, plums, and cherries by the hundred afterwards,

and apples and pears by the dozen. The greatest drawback is not having plenty of fruit trees to go on with when the house is built. On the trees in pots first bought, I have no doubt there will be a good crop the first season, if the selection has been rightly made; but next year, putting all together, a good crop will seldom be obtained. What, therefore, is to be done? Instead of buying only one set of trees at first, buy two; one set to be in pots to begin with, the second unpotted and from two to four feet high, which should be planted rather closely in a sheltered but sunny situation, and if practicable in a stiff, yellow loam, in which they should be planted pretty firmly and allowed to remain undisturbed till the following season. The following February examine your trees in the orchard house, and those that bore a heavy crop the previous season, if not likely to be very productive this year, as they will not probably be, remove them to the outside; and in their place take in those planted out. Lift these with good balls, and pot them firmly in good, stiff loam, mixed with a little bone dust. By yearly pursuing this practice, no lack of fruit need be experienced. In this house last year we had a small plant of Williams's Bon Chrétien pear, that produced six fine fruits, averaging in weight sixteen ounces each, and of superior flavour. I quite agree with your correspondent "W." in saying that those who have never tasted a well-ripened pear, produced under glass, have something in store. So fine is the flavour of these pears that they are always eaten even in preference to peaches or grapes. The currants, gooseberries, and raspberries which we bring forward under glass for tarts, are all removed before they in any way prove injurious to the regular inmates of the house. T. SOUTHWORTH.

Castle Head, Morecambe Bay.

Fruit Improvement in Canada.—As evidence of this it is only necessary to call to mind the magnificent displays of fruit that have now for several years formed so conspicuous and attractive a feature in our provincial exhibitions, and which have elicited the admiration of all beholders. The change is also shown by the fact, that whereas we used to be dependent upon our neighbours across the lines for our supply of nearly all kinds of fruit, we now not only raise sufficient of the hardier sorts to meet the demands of home consumption, but we annually ship large quantities of apples for the English market. The culture of the grape has also been prosecuted with most encouraging success, and is spreading rapidly. Still further proof of our progress in the same direction is furnished by the growth of the nursery business in this country. There is not a nurseryman in the Dominion, though their number and the extent of their transactions have greatly increased, who is not taxed to the very utmost to supply the demand for ornamental, shade, and fruit trees; and the results are visible in the neat aspect of city garden plots, the charming grounds of suburban residences, and the improved appearance of farm homesteads.—*Canada Farmer.*

SOCIETIES, EXHIBITIONS, &c.

ROYAL HORTICULTURAL SOCIETY.

(MAY 1ST.)

Not a large meeting, but one worthy of the brilliant May-day on which it was held, in the variety and beauty of the subjects shown.

Roses were abundant and remarkably fine, especially three boxes of cut blooms of Marechal Niel, which were excellent. The bright golden flowers of this Rose, its free-blooming qualities, and its suitability for greenhouse decoration as a climber, deservedly render it a universal favourite. Amongst other plants the most remarkable were two superb examples of *Sarracenia* from Mr. Baines, of Southgate, surpassing in size and in perfectness of development even the noble specimens of these plants so often shown by Mr. Baines, both in London and Manchester. To these a silver floral medal was awarded. We noticed some improvement in the mode of showing herbaceous and alpine plants, Mr. Ware sending flat baskets crammed with the alpine *Phloxes* of America. Thus shown, the beauty of alpine flowers is well brought out, and the fact plainly showing that they surpass all other plants in profuseness of blossom. *Eucharis amazonica* was shown by Mr. Standish, a fine specimen with nineteen flower spikes on it, each spike bearing some six flowers; the plant itself, which was growing in a small tub, measured five feet in diameter. Of bedding *Pelargoniums* some were shown in fine condition; tricolors we noticed with finely marked foliage; also white variegated-leaved kinds bearing pure white flowers, and judging from their compact habit, and apparent free-flowering qualities, we have in them obtained something good for summer outdoor work. Orchids were exhibited in great variety and beauty; conspicuous amongst them was *Mesospinidium sanguineum*, with three gracefully drooping spikes of charming bright rosy flowers. Cut flowers of *Ranunculus* from Mr. Hooper, of Bath, were contributed in excellent condition; as were likewise cut blooms of *Pansies* in great variety, fine in form, and distinct in colour.

Amongst new plants, a first-class certificate was awarded to *Echinocactus Mirbelii*, a curious and deeply-furrowed species, with clusters of large spines, from Mr. Peacock's admirable collection at Sudbury House, Hammersmith. Few private collections of these curious plants are so rich in interest as this; their requirements are well understood by Mr. Croucher, who grows them in perfection, and many species nowhere else

to be met with in Britain may be seen here. First-class certificates were also awarded to *Encephalartos cycadefolia*, from Mr. B. S. Williams, Upper Holloway; to a dark copper-coloured long-leaved *Dracena*, much after the form of *D. indivisa*, from Messrs. Rollisson & Son, Tooting; to *Odontoglossum brevifolium*, a distinct kind, with dark flowers and thick leathery leaves, but of a very unruly habit, from Mr. J. Linden, Belgium; to *Bouvardia longiflora flammula*, a promising rose-coloured kind, from Messrs. E. G. Henderson & Son, St. John's Wood; to *Pansies*, Mrs. Eyles, Prince of Wales, and *Crimson Beauty*, from Mr. Hooper; to *Auriculas* Mercury and Colonel Scott, two good new kinds, and to *Azalea Fanny Ivery*, a brilliant red kind, from Messrs. J. Ivery & Sons, Dorking; and to an alpine *Pentstemon*, from Messrs. Veitch, Chelsea. This, a very distinct and pretty little magenta-coloured *Pentstemon*, found by Mr. W. Robinson on the summit of the Rocky Mountains, was one of the most admired. It was not shown in its best state, as naturally it is a tiny, neat-habited shrub, two to three and a half inches high, forming round tufts associated with the alpine *Phloxes*.

Mr. Francis Dancer sent from his excellently-managed market garden at Chiswick, a noble dish of *Asparagus*. His system is the opposite of that of those who crowd thickly a number of plants into a bed. He leaves three feet or so between each plant. Mr. Dancer, good judge as he is, and ought from his practice to be, does not agree with those who wildly write in the papers, showing how very foolish people are who eat blanched *Asparagus*. These, for the most part, found their opinion of the blanched *Asparagus* on imported specimens, that have been perhaps lying in Covent Garden for a week. Mr. Dancer's *Asparagus* was blanched to within two or two and a half inches of the top; properly done *Asparagus* is most delicious treated thus, at least so it seems to those who have given both ways a fair trial.

A fine example of Blue Gown Cucumber, about two feet in length, was exhibited by Mr. J. Reven, gardener to E. Forrest, Esq., Orpington, Kent; this arrived too late to come under the notice of the judges. A Melon, called Little Heath, weighing four pounds ten ounces, was shown by Mr. J. Munro, Potter's Bar, Barnet.

Fruit, although not shown in quantity, was, as far as it went, excellent. New Grapes in good condition consisted of Black Hamburg and Buckland Sweetwater. A dish of Grosse Mignonne Peaches, and one of Violette and Brown Turkey Figs were also contributed in good condition, as were likewise dishes of Dr. Hogg and Marguerite Strawberries, both fine-looking fruit.

EXHIBITION OF USEFUL AND HURTFUL INSECTS.

In order to diffuse a knowledge of the natural history of insects affecting field and garden crops, and to enable agriculturists, gardeners, fruit-growers, and others interested in the matter, not only to familiarise themselves with the appearance and transformations of their insect friends and foes, but also to become acquainted with the most effective means of encouraging the former and checking the ravages of the latter, the Central Agricultural Society of France is making arrangements for an entomological exhibition, to be held in the Luxembourg Garden, in Paris, between the 18th August and 3rd September next.

The exhibition will be divided into four sections, the first of which is to contain all the useful insects, ranged under six classes, and represented in their different stages of development, from the egg to the perfect being. Each class must be accompanied by a specimen of the food on which the insect lives, as well as by a short account of the usual method of rearing it, of its natural history, economy, products, average market value, &c.

The second section will consist of noxious insects, and as basis of classification the authorities have taken the plants which they consider it most important to protect, placing together in groups all those insects which attack the same crop or produce. This classification is perhaps not scientific, but it possesses at all events the advantage—so it is hoped—of being easily comprehended, and of facilitating study. All the chief crops and objects of culture to be met with in France, including fruit and forest trees, will be represented in this section, together with the minute population to which they afford nourishment. Thus, for instance, class seven will contain insects living upon timber; class eight those infesting truffles and mushrooms; class nine such as destroy dry organic substances (woollen goods, feathers, horsehair, &c.); and class ten, parasites of the domestic animals and man.

On the one hand, place will be found for carnivorous insects, down to the parasites of the plant-louse and of different moths and butterflies; on the other, the claims to representation of insectivorous mammalia, such as the mole, hedgehog, &c., as also of insectivorous birds, will not be forgotten.

The exhibition is also to embrace two entirely non-entomological sections, one of them devoted to river fish culture, the other illustrative of the rearing of edible snails, and of the damage done by snails and slugs. An enumeration of the simplest and most efficacious means of destroying these pests will be added, for the benefit of horticulturists and vine-growers—the greatest sufferers by their depredations.

Although the different collections will be so systematically arranged and catalogued as to tell their own tale, it is thought the instructive lessons they convey will be more deeply impressed on the minds of visitors if "conferences" be held in connection with the exhibition, the subjects of discussion at the same to be decided upon beforehand. This plan was followed with the best results at the last entomological exhibition in the Palais de l'Industrie (Champs Elysees), the conferences being well attended and exciting much interest. Communications relative to the exhibition should be addressed before the 1st of August to the secretary of the society, 59, Rue Monge, Paris.—*Field.*

ONE of our enthusiastic correspondents, prompted, no doubt, by the genial warmth of the season, has broken into flower with the following:—

SWEET MAY.

SWEET greeting to thee, May!—may we,
Sweet child of Sun,—run
To thy daisied lap,—and lap
From dew-sprent lids “day’s eye!”
And if not, why not?—knot thee
In our heart of hearts—for art
Thou not, with all thy love and light—light—
Hearted May! our May? and may we
For ever call thee ours—and hours—
Sweet hours of young life’s prime—chime
Sweetly in our hearts—where rime don’t fall,
Nor frost at all—only light, flowers, and sun—won,—
By thy smile, may come—tripping as thou dear daisied May;
And oft, in joyance, may we greet this day—
Mayn’t we? SWEET MAY!

May Day, 1872.

COVENT GARDEN MARKET.—May 3rd.

Flowers.—Those in pots consist chiefly of Pelargoniums of all classes, well flowered and abundant; herbaceous Calceolarias, charmingly marked and well-grown; Gardenias, indispensable on account of their sweetness; Golden-rayed Lilies, graceful little Fuchsias; spring flowering Heaths in great variety; Roses of most kinds, more especially the pretty dwarf Chinese sorts; and many other plants of interest. To these may be added fine-leaved plants such as Dracenas, Ferns (principally Adiantums), graceful kinds of Pteris and Polypodium, Palms, Cyperuses, and Club Mosses. Bouquet flowers mostly consist of light-coloured Tea Roses, Stephanotis, White Azaleas, Blue Cinerarias, Double-flowering Stock, sprays of various Orchids, Gardenias, Lily of the Valley, Ferns, &c. Button-holes include a Gardenia flower with a few leaves; light Rose with leaf; red Pink; spray of Lily of the Valley and Fern; Stephanotis and Fern; Hoya, cluster of flowers, and Fern; Nemophila, and a few other flowers were also worked into them. Hardy plants are now furnished in great plenty; amongst them are Pansies, Sweet Williams, Stocks, Alyssum, blue Gentians, double-flowering Ranunculuses, Mimuluses, Carnations, &c.; also Nasturtiums and Sweet Peas, and other plants of similar kinds.

PRICES OF FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples .....½ sieve	5	0 to 10	Pears, kitchen .....doz.	4	0 to 6
Chestnuts .....bushel	8	0 15	Pine Apples .....lb.	6	0 10
Pilberts .....lb.	0	6 1 0	Strawberries.....oz.	0	9 1 3
Cobs .....lb.	0	6 1 0	Walnuts .....bushel	10	0 25
Grapes, hothouse .....lb.	8	0 15	ditto .....per 100	1	0 2
Lemons .....100	7	0 10	Cherries .....per box	6	0 10
Oranges .....100	4	0 10			

PRICES OF VEGETABLES.

	s. d.	s. d.		s. d.	s. d.
Artichokes .....per doz.	4	0 to 6	Mushrooms .....pottle	1	0 to 2
Asparagus .....per 100	4	0 8	Mustard & Cress, punnet	0	2 0
Beans, Kidney .....per 100	1	6 2 6	Onions .....bushel	2	0 4
Beet, Red .....doz.	1	0 3	pickling .....quart	0	6 0
Broccoli .....bundle	0	9 1 6	Parsley, doz. bunches	3	0 4
Cabbage .....doz.	1	0 1 6	Parsnips .....doz.	0	9 1
Carrots .....bunch	0	6 0	Peas, Continental, quart	3	0 5
Cauliflower .....doz.	2	0 5	Potatoes .....bushel	3	0 5
Celery .....bundle	1	6 2	Kidney .....do.	3	0 5
Chilies .....per 100	1	6 2	Radishes doz. bunches	0	6 1 6
Coleworts doz. bunches	2	0 4	Rhubarb .....bundle	0	6 1
Cucumbers .....each	0	6 1 6	Salsafy .....do.	1	0 1 6
Endive .....doz.	2	0 0	Savoy .....doz.	0	9 1
Fennel .....bunch	0	3 0	Scorzonera .....bundle	0	9 1 3
French Beans .....per 100	1	0 3	Seakale .....basket	1	0 2
Garlic .....lb.	0	8 0	Shallots .....lb.	0	4 0 6
Herbs .....bunch	0	3 0	Spinach .....bushel	3	0 4 6
Horseradish .....bundle	3	0 4	Tomatoes .....small punet	3	0 0
Leeks .....bunch	0	2 0 6	Turnips .....bunch	0	3 0 9
Lettuce (Paris cos) each.	0	4 0 8	Vegetable Marrows, doz	0	0 0

ANSWERS TO CORRESPONDENTS.*

BINFELD (Through any of the large London nurserymen.)—**RALPH** (In its present stage your plant is indeterminate. In New Zealand *Sophora tetraptera grandiflora* is called “Kowhai,” as is also the *Edwardsia grandiflora* of Salisbury.)—**FAR.** (There is no better way than that of allowing swans to graze down your watery meadows.)—**W. B.** (Many thanks. The contribution so kindly promised will be welcome.)—**P.** (The old double Primroses are, or were, not uncommon in Irish gardens.)—**J. L. S.** (Rhodanthes thrive well if sown in the open ground the last week in April.)—**H. RAYLE** (There is at least one of the American Hawthorns earlier than our common British one.)—**Y.** (We shall do our best to assist you.)—**R. M.** (Next week.)—**H. C.** (We are unacquainted with any separate work on the subject.)—**C. H.** (The cutting in of the Ivy on Hornsey Church Steeple will do no harm; on the contrary the bare stems will doubtless soon be again covered with new and beautiful foliage.)—

* All questions likely to interest our readers generally are answered in the several various departments.

J. O. (Mr. Baines recommends scrim, a kind of flax fabric, see p. 531.) **J. C.** and **P. J. N.** (Next week.)—**Miss K.** (*Leptospermum bullatum*).—**O. M.** (Camellias and Azaleas will, at the proper season, bear cutting in, not only without injury but sometimes with advantage. Perhaps your gardener objects to indiscriminate mutilation by those who cut flowers.)

ROYAL HORTICULTURAL SOCIETY.

(MAY 1st.)

LIST OF PRIZES AND CERTIFICATES.

NINE Roses in pots—First, Mr. C. Turner, Slough; Second, Messrs. Paul & Sons, Cheshunt. 6 Roses in pots—First, Messrs. Veitch, Chelsea. 3 Roses in pots—First, Mr. E. Ellis, gardener to J. Galworth, Esq., Kingston; Second, Mr. E. Baxter, gardener to C. Keiser, Esq., Broxbourne; Third, Mr. J. James, Isleworth.

12 Auriculas—First, Mr. C. Turner; Second, Mr. J. James. 6 Auriculas—First, Rev. H. H. Dombrain; Second, Mr. J. James. 12 Alpine Auriculas—First, Mr. C. Turner; Second, Mr. J. James.

6 Azaleas—First, Messrs. H. Lane & Sons; Second, Mr. T. Hill, The Poplars, Regent’s Park; Third, Mr. C. Turner. 3 Azaleas—First, withheld; Second, Mr. J. Herrington, Clapham Park; Third, Mr. C. Baldwin; Third, Mr. G. Wheeler; 3 Azaleas, by amateurs who have not previously taken the Society’s prize for Azaleas—First, Mr. Hill; Second, Mr. J. James.

6 Exotic Orchids—First, Mr. Denning, Tadcaster; Second, Mr. William Bull; Third, Mr. G. Wheeler.

6 Herbaceous Calceolaries—First, Mr. J. James; Second, Mr. J. Dobson.

Cultural commendations were awarded to *Sarracenia flava* and *S. Drummondii* alba, from Mr. Baines, Southgate; to a finely spotted *Odontoglossum Alexandrie* from Messrs. Veitch; to *Odontoglossum lutea purpureum*, from Mr. Green, gardener to W. Wilson Saunders, Esq., Reigate; to a dish of black *Circassian* Cherries, and one of Elton, from Mr. Stephens, gardener to the Duke of Sutherland, Trentham Hall; to a dish of *Violette* and *Brown Turkey* Figs, from Mr. J. Tegg, gardener to J. Walter, Esq., Wokingham; to a dish of *Marguerite* Strawberries, from Mr. McKellar, Colworth; and to one of Dr. Hogg, from Mr. J. Hopper, Hartwell House, Aylesbury; to three bunches of *Black* *Hamburgh* and three of *Buckland* *Sweetwater* Grapes, from Mr. J. Tegg; and also to three bunches of *Black* *Hamburgh* from Messrs. Wright, Lee, Kent.

His Serene Highness the Prince of Teck, president of the Royal Botanic Society, visited the gardens yesterday, and signed the nominations of the following vice-presidents for the present year:—The Duke of Buckingham and Chandos, K.G., the Marquis of Bristol, Lord Alfred Hervey, the Bishop of Winchester, D.D., F.R.S., Lord Calthorpe, Lord Chesham, Lord Tredegar, the Right Hon. Sir William Hutt, M.P., Sir Walter Stirling, Bart., and Sir Charles R. Turner.

EXHIBITIONS DURING MAY.—Royal Horticultural Society, South Kensington: Table decorations, Roses, Rhododendrons, Hardy Perennials in pots, hardy flowering Trees and Shrubs, Gloxinias, Carnations, Agaves, and Peas, 15th and 16th; Royal Botanic Society, Regent’s Park, 8th; last Spring Show, Reading Horticultural Society, 22nd; Crystal Palace, 11th; first great Flower Show, Manchester Botanical and Horticultural Society, 17th to 24th; Royal National Tulip Society, Grand National Horticultural Exhibition, Manchester, 25th; Sefton Park Great Horticultural Exhibition in aid of the new Southern Hospital, 21st to 23rd.

A LETTER FROM A MARKET GARDENER TO THE SECRETARY OF THE HORTICULTURAL SOCIETY.

SIR, The Satiety having Bean pleasd to Complement Me before I beg Leaf to Lie before Them agin as follow in particullers witch I hop They will luck upon with a Sowth Aspic.

This ear I have turnd my Eyes to Gozberis.—I am happy to Say I have almost sucksidid in Making them too Big for Bottlin. I beg to Present sum of itch kind—Pleas observe a Green Goose is larger in Siz then a Red Gooseby. Sir as to Cherris my attention has Bean cheafly occupid by the Black Arts. Sum of them are as big as Crick Balls as will be seen I send a Sample tyed on a Wauking-stick. I send lickwise a Potle of strayberis witch I hop will reach. They air so large as to object to lay more nor too in a Bed. Also a Potle of Hobbies and one of my new Pins, of a remarkably sharp flaviour. I hop they will cum to Hand in Time to be at your Feat. Respective Black red & White Currency I have growd equely Large, so as one Bunch is not to be Put into a Galley Pot without jamming. My Pitches has not ben Strong, and their is no Show on My Walls of the Plumb line. Damsins will Be moor Plentife & their is no Want of common Bullies about Lunnon. Please inform if propper to classify the Slow with the creepers.

Concerning Graps I have bin recommended by mixing Wines with Warter Mellons, the later is improved in its juice—but have douts of the fack. Of the Patgonian Pickleing Cucumber, I hav maid Trial of, and have hops of Growing one up to Markit by sitting one End agin my front dore. On account of its Progressiveness I propos calling it Pickleus Perriginatus if Aproved of.

Sir, about Improving the common Stocks.—Of Haws I have some hops but am disponding about my Hyps. I have quite faled in cultivating them into Cramberis. I have also attempted to Mull Blackberis, but am satisfid them & the Mulberis is of diferent Genius. Pleas observe of Aples I have found a Grafft of the common Crab from its Straglin sideways of use to Hisspalliers. I should lick to be infourmd weather Scotch Granite is a variety of the Pom Granite &

in span-roofed houses; and the hardier varieties of apples, pears, and plums as standards, espaliers, &c., in the open borders, where they would not bloom so early as if trained on walls, and where most probably they would escape spring frosts. Trees planted out in a sheltered situation in this way do well, and the fruit is greatly superior in flavour to that grown on walls. Glass is the only effectual protection for fruit trees on walls. Mr. Ayres' protectors (see p. 476) I consider most efficient and ornamental; but I would say to those who contemplate making new gardens, do not build a wall at all when span-roofed houses can, in many districts, be erected at less cost than a brick wall with stone coping. The keeping of these houses in repair would not exceed the cost of repairing walls, providing temporary copings, canvas screens, &c. If this plan were carried out, it would be a great relief to gardeners, and the "everlasting" coping and other temporary coverings would be at an end. Last year was very disastrous to fruit trees, especially to those on walls; but had the trees been under permanent coverings such as I have described, the crop would have been saved.

Our climate is very variable and uncertain; as an instance of this I may mention what came under my own observation over twenty years ago, when in charge of a garden about seven degrees farther south than I am at present located. This season always brings it to my remembrance, and this very day (25th April) in particular. I had at that time as fine a wall of peaches as could be seen in the district. The fruits were as large as good-sized filberts, and the trees the picture of health. On the above date a sudden snow-storm came on from the south-east, which blew right against the trees, and from the violence of which old herring nets afforded no protection, as the snow could be taken off the trees in handfuls. The fall of snow was succeeded by a sharp frost, which completely destroyed the fruit, and the trees were so much injured that some of them had to be cut back, and others destroyed. This is doubtless only an instance of what others have experienced.

Lochgilthead.

J. R.

NOTES OF THE WEEK.

— We learn that in the neighbourhood of Moscow there has been a regular plague of mice, which have undermined both fields and orchards, destroying everything.

— The largest orchard in the world is said to be in California. It contains 426 acres, and more than 75,000 fruit trees. A good season in that country, it is reported, will produce as many as 20,000 oranges from a single tree.

— THERE are still, we understand, eight million acres of uncultivated land in England and Wales; of these as many as three million acres lie in the lowland counties, at least one-third of which well deserves cultivation. When these million acres are enclosed, one-sixth of the whole acreage of England will still remain free and open country.

— TRING PARK, Herts, comprising 3,643 acres, with a mansion seated in a deer park of 300 acres, together with the manor of Tring and the Royal grant by Charles II. of free warren and sporting over an additional 4,500 acres, and the exclusive right of fishing in the the Tring reservoirs, was sold the other day by auction for the sum of £230,000 to Baron Lionel Rothschild.

— THIS is reported to have been a trying season for trees and shrubs in the United States. The intensely rigorous frosts of March have proved too severe for many of the very hardiest kinds of evergreens; even rhododendrons, that thrive so well in mountainous districts where they are subjected to the keenest frosts, have sustained considerable damage. There are also heavy losses among conifers.

— WE learn that vegetation is completely destroyed all round Vesuvius, which is now quiet, and the weather brilliant. Vast estates are completely ruined. It can hardly be believed that the soil trodden upon is that of *La Bella Napoli*. Orange groves, with their sweet perfume and rich vineyards, are all alike gone. Not a single flower has been left untouched to show forth the brilliancy of its colours. Houses and hamlets and gardens have been buried in burning lava.

— As an instance of expert workmanship, says the *American Agriculturist*, James Markey, one of Mr. Peter Henderson's men, can make more cuttings, or pot off more plants in the same time than any other man in America. It is good average work for one man to pot off in 2½-inch pots 2,000 cuttings in ten hours. Markey potted off in one day of ten hours, this spring, 7,000; while his average work of this kind is 5,000 a day. Of course, such ability commands its price, and Markey is paid quite twice that of most of his fellows. In market

gardening a man, planting cabbages or lettuces, with a boy to drop the plants, can set 6,000 a day; but John Scarry, also one of Mr. Henderson's old foremen, has repeatedly planted 10,000 a day. An average workman can tie 400 bundles of celery in a day, but mention is made of a market gardener who can tie up 1,200 in the same time.

— A LARGE specimen, says the *Scotsman*, of *Rhododendron Nuttalli* is now in full bloom in a seed shop in Edinburgh. Though introduced into this country fully twenty years ago by Booth, who discovered it on the Bhotan Alps, it has as yet been rarely seen in flower. The species is interesting as having the largest flower of any known rhododendron. The leaves are from 5 to 8 inches long, and from 2½ to 4 inches wide, of a bright glossy green, and strongly reticulated on the under side.

— BESIDES the famous horse-chestnut tree which blooms yearly on or about the 18th of March, the Tuileries gardens contain one of the numerous offspring of the willow planted on Napoleon's grave at St. Helena, which had been imported during the Second Empire. This willow, the pilgrimage of fervent Bonapartists, is at present dying, to the intense despair of all whom it interests. But it is to be hoped that the Administration will replace it secretly with another one which will answer just as well.

— DR. HOOKER, we understand, supports the project of a new Polar Expedition, on the ground of the immense service which it will render to botany. He proved the other evening, at a meeting of the Geographical Society, the extremely curious fact that Greenland had, in former times, a magnificent flora, and that maples, beeches, and other forest trees flourished there. He maintained that the disappearance of these trees, and the gradual substitution for them of the most miserable flora in the world, was a circumstance which would amply repay scientific investigation.

— AN East Indian tea expert, Mr. W. G. Howard, says *Hearth and Home*, has been successfully experimenting on the growth of tea in Georgia. He picked from one tea-plant twelve ounces of green leaf, which next day he made into three ounces of tea. This yield, he says, is far ahead of that usual in India, where five hundred pounds is a fair season's yield from an acre. At the rate of yield in Georgia, he would procure 458 pounds at a single picking, and supposing he could get ten pickings—one every twenty days—the crop would amount to 4,580 pounds. The quality also is said to be excellent.

— SAYS a recent correspondent of the *Times*, before arriving at Jerusalem, taking a circumambulatory tour through the wilderness of Judea, by Solomon's Pool, Hebron, Bethlehem, Mar Saba, the Dead Sea, the Jordan, Jericho, and Bethany, I was struck with amazement by the herbal and floral clothing of the mountains and the dense foliage of the valleys, where in previous years scarcely a blade of green or a tiny flower could be seen. Our encampment in the valley of the Kedron, near Mar Saba, where last year all was sterility and barrenness, was this year amid the fragrant perfumes of a carpet of innumerable hues.

— THE *Swiss Times* reports that a fearful thunderstorm passed over Villmergen one day last week. From four o'clock in the afternoon it rained steadily, and about seven o'clock the lightning struck a cherry tree with a crashing report. Pieces of ten feet in length were found at a distance of one hundred yards. Of the stem no trace was to be seen, and the fragments of it, like those of the boughs, which were loaded with blossoms, were scattered in all directions. Half the root—a piece twelve feet long—was found some distance off with one end firmly planted in the earth. The meadow in which the tree stood looked as if some one had sown in it splinters and shavings.

— At a meeting of the Corporation of London it was moved, as an amendment, "That the resolution of the 11th ult., agreeing with the report of the Markets Committee, in reference to Farringdon Market, be rescinded. And that it be referred to the Markets Committee to consider whether the present market could not be improved as a fruit and vegetable market at a moderate outlay. Also to consider whether, if it should be deemed expedient to build a new market at an outlay of £150,000 or more, the present site is the best one, or whether it would not be desirable to consider the advantages of some other site on the vacant land belonging to the Corporation, or some other land in the same locality? And, if thought desirable, to erect a new fruit, flower, and vegetable market upon any site, the committee be directed to advertise for plans, with an estimate of the expense, reporting thereon, from time to time, to this court." It was further moved, "that considering heavy commitments of the Corporation in reference to markets, it is most undesirable that a large outlay should be made upon Farringdon Market, until this court shall have had further time and opportunity for consideration. That the resolution of the 11th April be rescinded, and that the whole question of a vegetable, fruit, and flower market be referred to the Markets Committee for consideration, and to report fully thereon."

HARDY PLANTS (*continued*).

(DURING THE CURRENT WEEK.)

It is our intention to give weekly a list of hardy plants in flower in the neighbourhood of London. Such a record will be useful for reference, inasmuch as such selections may be made from it as will keep our outdoor gardens gay during every month in the year.

Adonis	Cerasus	Euphorbia	Lithospermum
vernalis	duracina	Myrsinites	purpureo-cæruleum
Æsculus	japonica	procera	Lonicera
Hippocastanum	Padus and vars.	Exochorda	Ledebouri
rubicunda	syvestris	grandiflora	tatarica
Ajuga	Chœranthus	Fothergilla	Xylosteum
repens and vars.	alpinus	alnifolia	Lunaria
Allium	Dillenii	Fritillaria	biennis and white var.
odorum	Marshallii	Meleagris	Lupinus
ursinum	ochroleucus	pyrænaica	polyphyllus and vars.
Alyssum	Clematis	Furze	Lychnis
gemmense	montana	double and single	Lagascæ
leucædeum	Cochlearia	Genista	sylvestris plena
montanum	officinalis	germanica	Viscaria
orientale	Convallaria	procumbens	Magnolia
saxatile	majalis	prostrata	discolor
spinosum	Polygonatum	umbellata	obovata
Wiersbeckii	Coronilla	emeroïdes	spectabilis
Amelanchier		Corydalis	Yulan
canadensis		bracteata	Malus
vulgaris		capnoides	floribundus
Anchusa		lutea	Menyanthes
sempervirens		nobilis	trifoliata
Andromeda		Cotoneaster	Mitella
floribunda		laxiflora	cordifolia
Androsace		Cratægus	diphylla
chamejasme		glandulosa	Muscari
eximia		macrantha	armeniæcum
Anemone		nigra	(Osborn)
alba		oxyacantha and vars.	Myosotis
decapetala		prunifolia	dissitiflora
hortensis		Crinum	sylvatica and vars.
neurosa pl.		capense (Osborn)	Narcissus
narcissiflora		Cydonia	biflorus
Pulsatilla		japonica	Bulbocodium
sylvestris		vulgaris	Calathinus
Antennaria		Cytisus	Jouquilla
alpina		elongatus	poeticus
dioica and vars.		Laburnum	Nemophila
Anthyllis		purpureus	attonaria
montana		ramentaceus	insignis
Aponogeton		supinus	Nepeta
distachyon		versicolor	Mussini
Aquilegia		Daisies	Omphalodes
glandulosa		various double	Luciæ (Parker)
vulgaris and vars.		Daphne	Ononis
Arabis		Cucorum	rotundifolia
arenosa		collinum	Ornithogalum
procurrens		Fionianum	exscapum
Arbutus		ponticum	montanum
procera		Delphinium	umbellatum
Arenaria		nudicaule (Ware & Rollisson)	Orobis
balearica		Dianthus	angustifolius
grandiflora		alpinus	hirsutus
purpurascens		hybridus multi-florus	lutea
Armeria		Dicentra	tenuifolius
maritima and vars.		eximia	tuberosus
Asperula		formosa	varius
odorata		spectabilis	vernus
Asphodelus		Diervilla	Orontium
littoralis		coræensis	aquaticum
luteus		Dodecatheon	Ourisia
Aster		integrifolium	coccinea (Rollisson)
altissimus		Medin	Pavonia
calycinostus		Doronicum	daurica
Aubrieta		nasturtium	mollis
columnæ		cucucius	Moutan and vars.
deltoides		Pardalianches	officinalis & vars.
græca		Draba	tenuifolia & var. fl. pl.
Azalea		incana	Pansies in var.
pontica and vars.		Epimedium	Papaver
Berberis		alpinum	litteritum
Bealii		coleolum	orientale
stenophylla		lilacinum	Pentstemon
Box		Muscianum	nitidus
Caltha		niveum	procæus
natans		Erica	Pernettya
palustris and fl. pl.		arborea	angustifolia
Camassia		cineira	Cunninghamii
esculenta		mediterranea	macrocarpa
Caragana		Erigeron	Phlox
arborescens		bellidifolium	divaricata
Carum		Erinus	Nelsoni
Carui		alpinus	ovata
Centaurea		alpinus albus (Parker)	repans
montana and vars.		Erodium	subulata
Cerastium		hymenodes	Platystemon
alpinum		Manescavi	californicum
Hebersteini		romanum	Polemonium
frigidum		Euphorbia	cæruleum and vars.
incanum		coralloides	repans
lanuginosum		cyparissias	
ovalifolium		hibernica	
tomentosum			

Polygonum	Ribes	Saxifraga	Trollius
Bistorta	albidum	Stansfieldii	nepalensis
Brunonis	atrorubens	theensis	Smouti
Potentilla	aureum	umbrosa	tauricus
alba	Beatoni	virginensis	Tulipa
fragariastrum	glutinosum	Whitlavi	Celsiana
Primula	sanguineum	Scabiosa	cornuta
cortusoides	Rock-rose various	amena	Gesneriana
amena	Rosa	Scilla	retroflexa
Prunus	microphylla	campanulata and	Uvularia
sinensis	Rosemary	vars.	grandiflora
triloba	Rubus	cernua	perfoliata
Pulmonaria	acaulis	italica	Vaccinium
mollis	arcticus	nutans	corymbosum
officinalis and	Saponaria	Sedum	amenum
vars.	calabrica	ternatum	frondosum
Pyrethrum	ocymoides	Silene	ovatum
Tschibatchewii	Sarothamnus	pendula	vitis-idea
double garden	scoparius	Zawada-kii	Valeriana
vars.	Saxifraga	Sisyrinchium	alpina
Pyrus	acanthifolia	bermudianum	doica
arbutifolia and	aizoon	Skinimia	pyrenaica
vars.	aretoides	japonica	rubra
Aria	Andrewsii	Smilacina	sibirica
floribunda	atropurpurea	bifolia	Vella
grandifolia	cacspitosa	stellata	Pseudo-Cytisus
Malus	contraversa	Solomon's Seal	Verbasum
melanocarpa	cymbalaria	Spiraea	phoeniceum and
Melichauxii	daurica	cana	vars.
pubens	elegans	chamaedrifolia	Veronica
Sorbus	Gmelini	hypericifolia	chamaedrys
spuria	exarata	laevigata	gentianoides
Quercus	gemmifera	Nickondierti	Guthriana
Egilops	geranioides	Stocks	incisa
Ranunculus	gibraltaria	Strawberries	multifida
acutifolius and	granlandica	Stylophorum	pectinata
var. fl. pl.	granulata	diphyllum	prostrata
acris and var.	Guthriana	Symphytum	Vesicaria
plena	Haworthii	officinale and	corymbosa
asiaticus in var.	hybrida	vars.	utriculata
aureicomus	hypnoides	tuberosum	Viburnum
caneusicus	icelandica	Syringa	Lentago
chacophyllus	irrigua	persica	macrocephalum
Cornuti	leucanthemifolia	vulgaris and	obovatum
Gouani	Malvi	vars.	Opulus and vars.
gramineus	marginata	Thalictrum	plicatum
illyricus	Mawiana	anemonoides	prunifolium
monspeliacus	muscoides	Tiarella	Vinca
parnassifolius	nervosa	cordifolia	herbacea
pedatus	palmata	Trillium	major and vars.
platanifolius	pectinata	grandiflorum	minor and vars.
repens and fl. pl.	pedatifida	Triteila	Viola
speciosus	pennsylvanica	uniflora	californica
spunerianus	pubescens	Trollius	cornuta and vars.
uniflorus	pulchella	acotifolius	lutea and vars.
Raspberries	repanda	altaicus	palmata
Reseda	reticulata	asiaticus and	papilionacea
fruticulosa	recta	vars.	Wallflowers, double
luteola	rosularis	astrabatenensis	and single, in
Rhododendron in	rotundifolia	Demayanus	var.
great var.	rupestris	europaeus	Weigela
Rheum in var.	sponhemica	Loddigesi	rusca

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

PRIVATE GARDENS.

Indoor Plant Department.—Conservatories are now gay with Azaleas, which are coming into flower without the aid of fire heat. In order to prolong their beauty, they are carefully shaded from bright sunshine. New Zealand plants, such as Boronias, Eriostemons, Pimeleas, Tremandras, Everlastings, &c., are now coming into flower and are being neatly staked. These, as well as Heaths, occupy the coolest and most airy part of the conservatory. All plants in active growth receive plenty of water; and those done flowering are freely syringed, and have the benefit of a little artificial heat and shade. Azaleas, Rhododendrons, &c., done flowering are re-potted, pressing the soil rather firmly in the pots. Soft-wooded plants, such as Celosias and Balsams, are not allowed to receive any check from under-potting, but have plenty of root room whilst growing; a little bottom-heat and air being given them at the same time, also a little manure water. When it is desired to retard the flowering of Balsams, the flower-buds are picked off as they appear, until say a short time before they are required for use. A few Balsam seeds are also being sown in pans in gentle heat; as soon as the young plants appear, they are placed near the glass, and when fit to handle are potted off singly. Humæas required for conservatory decoration have now received their last shift, using for the purpose a compost of loam and well-decomposed manure. Stove plants, which are now making good progress, are allowed plenty of light, heat, and moisture; they are shaded from strong sun. Stephanotis, Allamandas, and Dipladenias have their shoots regularly trained as desired. Orchids making growth receive plenty of water, and such as are in flower are removed into a drier house than that in which they have been growing. Ferns are kept well shaded; paths, stages

and walls being kept moist by means of frequent sprinklings with water.

Pits and Frames.—Polyanthuses, Pansies, and Auriculas are being raised from seed in cold frames, in boxes or pans. Cinerarias and Primulas are raised from seed sown in gentle heat. Auriculas done blooming and kept in frames, have the sashes removed; some are also placed out on sheltered places. The seed vessels of all, if seeds are not wanted, are removed. Seedling Cyclamens are kept near the glass in a moderately warm temperature; old plants producing seed are placed on shelves close to the glass in cool houses; some of the others are placed in cool, shady frames, or on a bed covered with ashes behind a north wall. Stocks are being re-potted; the best of the single ones are kept for seed. The propagation of bedding plants is now drawing to a close, except where the demand is in excess, and the pits or frames used for that purpose are now being converted into Cucumber houses. Pelargoniums are being hardened off by setting them in sheltered shady places, and those in frames by removing the sashes completely during the day, except in the case of the finer kinds of zonals and tricolors, which are still encouraged to make a little growth. Verbenas, Calceolarias, Lobelias, &c., are freely exposed, and, where convenient, are sheltered from heavy, cold rains.

Flower Garden and Shrubbery.—Shrubberies are now gay with Weigelas, early Rhododendrons, Ghent Azaleas, Berberises of different kinds, scarlet and common May, &c.; masses of blue Iris and other herbaceous plants also set them off to advantage. Spring flower gardens are yet brilliant with Heartsease, Trolliuses, Daisies, Alyssums, Iberises, Wallflowers, Saxifrages, Tulips, and various other plants. Preparation is now being made for bedding plants, and although many are reluctant to remove the fading beauty of spring for the more gaudy display of summer, they are convinced that unless this is done this month, summer droughts may overtake late-planted beds before their occupants get established. Indeed, in sheltered, warm situations, Pelargoniums have already been planted out. Flower beds are now being edged with Gazania, variegated Arabis, Japan Honeysuckle, and dwarf variegated grasses. Violas are also being divided and planted, as are likewise such plants as were divided and transplanted into nursery lines in February and March. Polyanthuses are divided and planted in lines; the soil for their reception having previously been enriched with fresh loam. Early spring flowering Violets are lifted, the offsets separated from the parents, and transplanted in lines twelve inches apart, a handful of sandy soil being placed around each root. Sweet Peas, Tropæolums, and other annuals, raised from seed in beds, wall borders, or in boxes in frames, are now being planted out permanently.

Indoor Fruit Department.—Pines in active growth are now abundantly supplied with light, heat, and moisture, but as soon as they begin to ripen, watering is, to some extent, discontinued. Successions receive a little weak manure water, and the walls and the tan beds are syringed with the same. In the case of Vines, the fruit on which has done colouring, the temperature is reduced a little and the atmosphere kept rather dry. Pinching, thinning, &c., are being attended to in the case of later crops. Peaches and Nectarines passed the stoning period have the temperature increased to 65° at night, and from 80° to 85° during the daytime. The borders are well watered before the fruit begins to ripen; for if done afterwards the flavour is often deficient. Figs growing receive plenty of water at the roots and overhead; those ripening have the supply diminished a little; but not too much, as that would destroy the second crop. Cherry trees ripening off their crops are kept rather drier than usual, and when the fruit is gathered they are gradually hardened off, and after a time completely exposed. Melons have their laterals stopped, and where the fruit is swelling, if in frames, a piece of slate is placed under each; if in houses, they are allowed to rest on a piece of wood tied to supports with string. Cucumbers fruiting are supplied with a little manure water, and too many fruits are not allowed to remain on the plants at any one time; the syringe is also used freely amongst the foliage.

Hardy Fruit and Kitchen Garden Department.—Fruit trees making wood freely, are being stopped and thinned, so as to induce them to make an even and regular growth. Stone fruits on walls are thinned, and the trees syringed with tobacco water; all curled leaves are examined individually, and any insect pests present killed. Strawberries, now in full flower, are mulched with litter. French Beans are being sown on warm, light, rich borders. A full crop of Scarlet Runners is also being sown. Of Beetroot, the principal crop is now put in, and the produce of the first sowing thinned. Leeks for a late crop are being sown, and earlier ones transplanted. Parsnips are thinned, though at first not too much. Spinach is cleared off as soon as the leaves are gathered, and

another sowing made. White Dutch and White Stone Turnips are being sown, and the produce of former sowings thinned. A few Swede Turnips, for winter use and for tops in spring, are now being sown. Lettuces, Radishes, and other salad plants are sown in cool places. Savoys for late Crops are put in, and plants from former sowings of these, as well as Cabbages, Cauliflowers, and Kales, that are fit for the purpose, are being pricked out four inches apart. Beans are earthed up, and a late sowing of the Broad Windsor made. A few Cardoons are now sown, and also a few Carrots for drawing in a young state. Stems of Angelica are cut back, an operation which preserves the plants. On Asparagus beds that have been in bearing for some time, a few good shoots are left on each crown uncut. Trenches for early Celery are being prepared, plenty of decayed manure being dug into them. Potato crops are being hoed. Sprinklings of lime, soot, or sifted ashes are scattered over the ground in which young vegetables are grown, with a view to keep slugs in check.

NURSERIES.

Indoor Department.—Growing plants that have filled their pots with roots are being shifted into larger ones, and all that have been re-potted are subjected to a high and moist temperature, and well shaded. Plants of Pereskia from spring cuttings are now rooted and planted singly in pots, where, after they have got established, they will be used as stocks for Epiphyllums. In grafting Cacti, care must be taken to unite the inner, or concentric, circles of the stock with those of the scion. Young Marantas are being re-potted, as are also young plants of Dracænas, &c. Ixoras that have not been previously shifted this season, are now being re-potted into a compost consisting of leaf mould and peat, with a good admixture of silver sand. Achimenes started thickly in pans, are now transplanted into small pots, placing three or four roots in each pot. Statice continue to be propagated in cool pits. Auricula seed is being raised in cold frames. Seedling Hollyhocks are being potted off singly. Lachenalias done flowering are set outside in the shade. Lily of the Valley, forced in pits and remaining after the winter sales, are turned out, some into beds of ashes, and others plunged in lines to their rims in beds of soil. Liliums are either kept in frames or plunged outside. Gladioli in pots are also plunged in open beds. Chrysanthemums are re-potted, the young plants being kept in cold frames, and old ones plunged in ashes outside. Hardy Ferns are kept in frames or placed outside between glasshouses. Aloes and Yuccas wintered indoors, are now set on ashes in sheltered places out of doors. All bedding plants are being turned out or into open frames.

Outdoor Department.—Suckers are being removed from grafted stocks as soon as they make their appearance. Hardy Conifers in the seed-beds are being loosened with steel forks, lifted, and transplanted in lines from six to twelve inches apart, according to size. Magnolias and Prunuses are being layered by fixing the branches down by means of strong wooden pegs, and covering over the portion under ground with a few inches of soil, allowing the points of the shoots to remain from six to ten inches out of the earth. Magnolias take a long time to root.

MARKET GARDENS.

EARLY Cucumbers in frames are now in good bearing; others are coming into flower, and some are still being planted in frames, and also under hand-lights on ridges. Litter is still kept around the frames, and some is also spread over them at night. Vegetable Marrows are protected with hand-lights and also with round baskets, around which litter is closely packed. Preparation is also made for another plantation of Vegetable Marrows by scraping the surface off Radish beds that have been drawn for market into the alleys, and digging it in, leaving the beds undisturbed. In every alternate bed holes about eight feet apart are taken out to be filled with fermenting manure, over which the soil will again be placed, the plants planted and covered with hand-lights, around which litter will be packed. Six or eight inch pots are filled with ordinary garden mould, and plunged to their rims in frames having a gentle heat; into these pots are planted with a dibber two young Vegetable Marrows as soon as they begin to form rough leaves. Tomatoes in pots, still kept plunged in frames, are now strong plants, and during all favourable weather the sashes are drawn completely off them. Kidney Beans are being sown in lines two feet apart, in open yet sheltered positions. Those of the first sowings have now appeared; before coming through the ground, the surface just over the seed was broken a little by means of small iron rakes. The first sowings were made amongst fruit bushes, and also on sheltered borders. In early spring, Shallot Onions were planted in lines eighteen inches apart, and little ridges of earth drawn over them; between every two lines so planted a space of three feet was left, and in this space a line of French Beans is now sown.

THE FLOWER GARDEN.

THE CASTOR-OIL PLANT.

(RICINUS COMMUNIS.)

WHEN well grown in the open air, there is not in the whole range of cultivated plants a more effective subject than this. It may have been seen nearly twelve feet high in the London parks of late years, and with leaves nearly one yard wide. It is true we require a bed of very rich deep earth under it to make it attain such dimensions and beauty; but in all parts, with ordinary attention, it forms a noble object. In warm countries, in which the plant is very widely cultivated, it becomes a small tree, but is much prettier in the state in which it is seen with us—i.e., with an unbranched stem clothed from top to bottom with noble leaves. It is as easily raised from seed as the common bean, requiring, however, to be raised in heat. It should be sown about the middle of February, and the plants gradually hardened off so as to be fit to put out by the middle of May. The Ricinus is a grand plant for making bold and noble beds near those of the more brilliant flowers, and tends to vary the flower garden finely. It is not well to associate it closely with bedding-plants, in consequence of the strong growth and shading power of the leaves, so to speak. A good plan is to make a compact group of the plant in the centre of some wide circular bed and surround it with a band of a dwarfier subjects, say the Aralia or Caladium, and then finish with whatever arrangement of flowering plants that may be most admired. A bold and striking centre may be obtained, while the effect of the flowers is much enhanced, especially if the planting be nicely graduated and tastefully done. For such groups the varieties of the Castor-oil plant are not likely to be surpassed. It is also a grand subject for dotting amidst smaller plants in sheltered spots.

HARDY GLOIRE DE DIJON ROSES.

A FEW words on "Tea-scented Noisette Roses" for Camellia houses may be supplemented by some mention of Roses likely to play the same part out of doors. Good hardy white, yellow, buff (aye, and crimson—but of these anon) climbing Roses are a want. There is springing up quite a race of seedlings from Gloire de Dijon, from amongst which I would select the following as the best and most distinct. We all know our old friend Gloire de Dijon; but all do not know that it grows and does as well on a wall of northern aspect as when facing the sun. An amateur, whose little garden of Roses I should like to describe (his wife always ascribes his recovery from an illness to be due to a bunch of Roses the writer one day sent him in March, so you may guess how he loves them), has plants on east, south, and north-west aspects respectively, and from May to July these plants keep up in succession a perfect chorus of Gloire de Dijon. What say you to a first batch, on the south, of five hundred blooms, and so on? He gives plenty of nourishment, thus securing plenty of young wood, and his plants last for some years.

Well, first comes Gloire de Bordeaux, a rose-colour, with white

shading on petals; few can bloom it: it does not like the knife, which some people use irrespective of habit. It is useful, but we would welcome a freer flowering rose. It reached us in two instalments (a guinea a plant each time), first as Gloire de Bordeaux, and the second time as Belle de Bordeaux; on examination, in the course of a year or two, both proved to be the same variety. Well, in 1869, some of our Lyons friends sent us some interesting seedlings of Gloire de Dijon. Our hopes were raised, and some turned out to be distinct. Belle Lyonnaise proves first rate; it loses the buff tint of Dijon, and is a deep-lemon colour, with the good habit of that variety. Madame Levet has a slight tint of violet sufficient to render it distinct. The others of that year are not to be recommended as distinct, so are not named.

Tour Bertrand has a slightly dwarfier habit, and may prove useful as a more compact headed standard Rose than its progenitors of 1870; and perhaps the best French Rose of last year is Madame Berard, a light salmon, with a fine reflexed petalled flower, and seemingly free in blooming.

Here are therefore five varieties, all hardy as their first parent, in colour buff, rose, lemon, salmon, tinted slightly with violet, and light salmon, with a distinctly-shaped flower. They are all worth growing.

G. PAUL.



Castor-Oil Plant. Sketched at Berry Hill, September 1871.

THE SNAKE'S HEAD.

(FRITILLARIA MELEAGRIS.)

THE pleasure of wild flower culture in the garden is greatly enhanced by the delight and excitement of discovery; I enjoy my white Bluebells and the double-flowered Ladies' Smock with much more zest on account of having discovered and unearthed them in their native homes, than if they had been introduced to my garden by the more prosaic means of ordinary purchase.

I first became acquainted with the speckled Fritillaria in the following manner:—Some of our village girls came on the first of May, a few years ago, to dance on the lawn in front of our cottage retreat, and I was much struck on observing that some of the garlands they carried were composed almost entirely of Fritillarias, one of them being wholly made up with the white variety of that pretty drooping flower. I eagerly inquired where they had gathered them, and was

informed that they grew in two old pastures not half a mile from the back of the village.

One day soon after I found myself in a meadow with great dots of dusky crimson here and there, which proved, on nearer approach, to be a profuse growth of the beautiful Fritillaria Meleagris, which I had never seen growing wild before, not even a single specimen, and here under my feet the flowers were as thick as Buttercups and Daisies, so much so that in a few minutes I had gathered as many as I could carry, and my somewhat sombre coloured bouquet was pleasantly varied by a few flowers of a white variety, which grew here among the dark ones, but not in the same profusion. This elegant wild flower might be said to resemble the Tulip in the shape of its bloom, but that instead of its stately and erect habit of growth, the drooping flower of the Fritillaria assumes a bell-like modest character. There are a good many species of Fritillaria, but all of them are exotic with the exception of Fritillaria Meleagris, generally known as the "common Fritillary." It has other popular names, one of which, Snake's Head, has doubtless been given in consequence of the peculiar colouring and shape of the bud. It has also been called the chequered Daffodil, from a slight resemblance in the bell-like form of its corolla to that flower.

The locality where I found my Fritillarias being literally empurpled with their hanging bells, I ventured to take up a few

roots and bear them home in triumph to our garden. The plants, both of the common form and the white variety, bore the transplanting to my garden without complaining, and several handsome patches have ever since continued to decorate the favourite borders of my wild garden, in which careful culture has made them surpass in beauty of form and luxuriance many of my regular garden *habitués*.

I have just lately visited meadows in various parts of Kent, which are literally carpeted with the richly sombre tints of this lovely flower, *Fritillaria*. I may add that this flower is not difficult to obtain in nurseries, and from which the bulbs may be easily transplanted when at rest. As a rule, it is best not to lessen the numbers of such uncommon wildlings. G. C. H.

THE ALPINE GARDEN.

(Continued from page 497.)

ESSENTIALS IN THE CONSTRUCTION OF ROCK-GARDENS. POSITION.

THE position selected for the rock-garden should never be near walls; never very near a house; never, if possible, within view of formal surroundings of any kind. It should generally be in an open position; and of course a diversified spot, or one with bold prominences, should be selected, if available. No efforts should be spared to make all the surroundings, and every point visible from the rockwork, as graceful, quiet, and natural as they can be made. The part of the gardens around the rockwork should be picturesque, and in any case display a careless wildness resulting from the naturalization of beautiful hardy herbaceous plants, and the absence of formal walks, beds, &c. No tree should occur in or very near the rock-garden; hence a site should not be selected where it would be necessary to remove valuable or favourite specimens. The roots of trees would be almost sure to find their way into the masses of good soil provided for the choicer alpine, and thoroughly exhaust them. Besides, as the choicest alpine flowers are usually found on treeless and even bushless wastes, it is certainly wrong to place them under trees or in shaded positions, as has generally hitherto been their fate. It need hardly be added that it is an unwise practice to plant pines on rockwork, as has been lately done in Hyde Park and many other places. In large rock-gardens rhododendrons may be planted, if desired, without letting them occupy the surface suitable for alpine vegetation. It will, however, generally be in good taste to have some graceful, tapering young pines within view, as this type of vegetation is usually to be seen on mountains, apart altogether from their great beauty and the aid which they so well afford in making the surroundings of the rock-garden what they ought to be. In small places, and in those where from unavoidable circumstances the rock-garden is made near a group of trees, the roots of which might rob it, it would be found a good plan to cut them off by a narrow drain, descending as deep as, or somewhat deeper than, the roots of the trees; this should be filled with rough concrete, and will form an effectual barrier.

CONSTRUCTION.

In no case should regular steps be permitted in or near the rock garden. Steps may be made quite irregular, and not only not offensive to the eye, but very beautiful; with violets and other small plants jutting from every crevice. No cement should be used in connection with the steps. Rockwork which is so made that its miniature cliffs, &c., overhang, is useless for alpine vegetation; and all but such wall-loving subjects as *Corydalis lutea* quickly perish on it. The tendency to make it with overhanging peaks is everywhere seen in the cement rock-gardens now becoming rather common. Into the alpine garden this species of construction should never be admitted, except to get the effect of bold and distant cliffs, where that is desired and cannot be obtained in a more natural manner. When this system is admitted, the designer should be requested to obtain his picturesque effect otherwise than by making all his cliffs and precipices overhang. It is erroneous to suppose that heaps of stones or small rocks are necessary for the health of alpine plants. The great majority will thrive without their aid if the soil be suitable; and though all are benefited by them, if properly used as elsewhere described, it is important that it should be generally known how needless is the common system of inserting mountain plants among loose

stones, burrs, &c. Half-burying rocks or stones in the earth round a rare species, which it is intended to save from excessive evaporation, and which has a deep body of soil to root into, is, however, quite a different and an excellent practice.

MATERIALS.

As regards the kinds of stone to be used, if one could choose, sandstone or millstone grit would perhaps be the best; but it is seldom that a choice can be made, and happily almost any kind of stone will do, from Kentish rag to limestone; soft, slaty, and other kinds liable to crumble away, should be avoided, as also should magnesian limestone. It can hardly be necessary to add that the stone of the neighbourhood, if not very unsuitable, should be adopted for economy's sake, if for no other reason. Wherever the natural rock crops out, it is sheer waste to create artificial rockwork instead of embellishing that which naturally occurs. In the Central Park at New York there are scores of noble and picturesque breaks of rock, which have not been adorned with a single alpine flower or rock bush. Something of the same kind might be said of many of our country seats. In many cases of this kind nothing would have to be done but to clear the ground, and add here and there a few loads of suitable soil, with broken stones, &c., to prevent evaporation; the natural crevices and crests being planted where possible. Cliffs or banks of chalk should be taken advantage of in this way, as well as all kinds of rock; many plants, like the dwarf campanulas, rock roses, &c., thrive vigorously on such places. No burrs, clinkers, vitrified matter, obscene crockery, portions of old arches and pillars, broken-nosed statues, &c., should ever obtain a place in a garden devoted to alpine flowers. Stumps and pieces of old trees are quite as objectionable as any of the foregoing materials; they are only fitted to form supports for rough climbers, and it is rarely worth while incurring any expense in removing or arranging them. Begin without attempting too much. Let your earliest attempts at "the first great evidences of mountain beauty" be confined to a few square yards of earth, with no protuberance more than a yard or so high. Be satisfied that you succeed perfectly with that before you try anything more ambitious. Never let any part of the rock-garden appear as if it had been shot out of a cart. The rocks should all have their bases buried in the ground, and the seams should not be visible; whenever a vertical or oblique seam of any kind occurs, it should be crammed with earth, and the plants put in this will quickly hide the seams. Horizontal fissures should be avoided as much as possible; they are only likely to occur in vertical faces of rock, and these should be avoided except where distant effect is sought. No vacuum should exist beneath the surface of the soil or surface-stones. The *détritus*, &c., should be so disposed that a vacuum cannot exist. Myriads of alpine plants have been destroyed from want of observing this precaution, the open crevices and loose texture of the soil permitting the dry air to destroy them in a very short time.

In all cases where elevations of any kind are to be formed, the true way is to obtain them by means of a mass of soil suitable to the plants, putting a rock in here and there as the work proceeds; frequently it would be desirable to make these mounds of earth without any strata or "craggs." The wrong and the usual way is to get the desired elevation by piling up arid masses of rock.

The surface of every part of the rock-garden should be so arranged that all rain will be directly absorbed by it; here, again, the objection to precipitous and overhanging faces holds good. If the elevations are obtained, as they should be, by gradually receding, irregular steps, rather than by abrupt crags, walls, &c., all the plants on the surface will be equally refreshed by rains. The upper surfaces of crags, mounds, &c., should in all cases be of earth, broken stones, grit, &c., as indeed should every spot where projecting stones or rock are not required for the sake of effect. All the soil-surfaces of the rock-garden should be protected from excessive evaporation by finely broken stones, pebbles, or grit scattered on the surface, or by means of small pieces of broken sandstone or millstone half buried in the ground.

(To be continued.)

A CHINESE NARCISSUS.

("THE GRAND EMPEROR.")

NOTICING that one of your contributors is interested in collecting facts about varieties of Narcissus, I think it possible that what I have to offer may be new. Some of the Chinese who have been tempted by high wages to emigrate to this country have brought with them a few bulbs of a Polyanthus Narcissus, which they call the "Grand Emperor." Its growth seems to me remarkable. Two bulbs which came into my hands about the first of January, threw up shoots more than two feet high before the end of the month; and by the middle of February there were five or six stalks from each bulb, all in blossom. I do not think I should be able to distinguish a stalk of these flowers from one of the Staten General, except by its length; the flowers appeared to me to be exactly similar to those of that well-known bulb, but as I had not any of the latter in bloom at the time, I could only depend upon memory in this comparison.

But its rapid and tall growth is perhaps less remarkable than the treatment this Narcissus requires. I was specially cautioned by the Chinese from whom I received the bulbs that no earth must be used in "planting" them. They were simply to be covered with water, which was to be renewed every day. Some clean pebble-stones might be piled on them to keep them from floating. All further care was to consist in giving them light and keeping them from frost. I complied with the instructions, except that I substituted bright sand for pebbles; and I was fairly successful, for although a few buds failed to mature, I had an abundance of flowers, the offsets as well as the bulbs producing flowering stalks. Preferring to watch their growth in transparent pots, I was very much puzzled to find suitable glass vessels for them, but at length discovered that the "battery cups" of a telegraph apparatus were exactly what I wanted. The plants are now about three feet high, and the leaves are green, showing no signs of dying down, though the flowers are long since dead. As I was instructed to keep the bulbs wet and not to plant them in earth, I begin to think they may prove troublesome in the coming summer, if they are to be ever thus.

There is a Chinese legend which accounts for the "origin of species" as regards this Narcissus. It seems that once upon a time a father left his property to two sons, with the understanding that it should be equally divided; but the elder son seized all the tillable land and left the younger nothing but an acre covered with rocks and water. The younger son, unable to obtain justice, sat down at the water's edge, bemoaning his misfortune. A benevolent fairy appeared, and giving him these Narcissus bulbs, told him to drop them into the water. Shortly afterwards their flowers were developed, and neighbours crowded to admire the fairy gift. In the course of a few years he accumulated a fortune by the rapid increase and sale of his bulbs. Then the elder brother, envious of the younger's prosperity, bought great numbers of the bulbs—hoping to obtain a monopoly by getting all of them—at so heavy an expense that he was obliged to mortgage his property to procure funds for the purchase. He planted all his land with the bulbs. They soon began to die, as they cannot live long out of water. He was ruined, while his brother, who had bought the mortgage, foreclosed it, and became possessed of the whole estate in time to re-plant some of the dying bulbs in the watery acre.

Nevertheless, I put down one of the offsets in damp garden soil some weeks ago, and at present it is still flourishing. P.

New York.

CULTURE OF SPRING-FLOWERING PLANTS.

Now, before they finally leave us, seems an opportune moment for saying a few words on the treatment of these. All enjoy the sweetness and beauty of the Violet, Primrose, Forget-me-Not, Aubrietia, Arabis, &c., but comparatively few have yet learned that the foundation of that beauty must be laid presently if a bountiful harvest of it is to be reaped next spring. Each tuft must be divided into single stems, hearts, or runners, and these tiny bits planted in good soil in the open border to insure patches from six inches to a foot wide, bristling with flowers in embryo next October. Even Daisies should be separated into single crowns if they are to bloom in perfection next year. In regard to Violets, only the runners rooted, on the plant or off, should be saved. The old plants, if divided even, never blossom so profusely a second time; while as to leaving them undisturbed to flower again, is a mere waste of ground, as they will only yield tens of flowers to hundreds borne on the young plants. The same rule holds good with all such running plants as Arabis, Aubrietia, and Candytuft. Annual subdivision and liberal culture throughout the summer months are the ways to make the best of them.

There are a few exceptions possibly to this rule of annual subdivision. That grand golden plant the *Alyssum saxatile* flowers best the second season after subdivision, and will go on flowering grandly in the same spot until a single plant converts a yard or more of ground into a veritable miniature Field of the Cloth of Gold. *Iberis sempervirens* again, and some of the Saxifrages, do likewise, though they also bear division well. On the other hand, *Myosotis dissitiflora* is comparatively poor and apt to lose its heart if left two years in one place without complete subdivision. The fact is, that, where spring gardening is carried out on a large scale and to any degree of perfection, a supplementary staff and a reserve garden are requisite. This must be borne in mind by all who would have their gardens filled with beauty from February to May. As well expect to gather grapes off thorns as to reap a harvest full of spring beauty without preparing the plants for it by previous culture. The spring sun only loosens and brings forth those treasures of sweetness and charms of colour that the winter frosts had barred in; but the fragrance and the glory are the products of the previous summer's sunshine, its balmy airs, soft dews, and refreshing rains. As we sow so shall we reap. D.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Native Heaths.—*Erica vagans* and its varieties are among the best growers, and soon become large plants. They can be trained, or rather cut, to any shape, and would be useful ornaments in many spots in our gardens.

Eccecmocarpus scaber.—Among neglected and unappreciated plants may be classed *Eccecmocarpus scaber*. It is a pretty creeper and a rapid grower, producing spikes of orange-coloured flowers in profusion. The number of seeds which it bears is incredible. Last June I sowed some, the produce from which remained green through the winter, and in February blossomed sparingly; no seeds resulting, blossoms have appeared at intervals ever since. My garden is on one of the highest hills in Kent; aspect, due east.—BOTANIC COTTAGE.

Arabis blepharophylla.—I have now a bed of this beautiful and most effective rock cress in full bloom. Like *Myosotis dissitiflora*, it has had the edge taken off its beauty by the late sudden and severe frosts and snow-storms, but it is still a very effective mass of magenta, and quite unique in its way; it seems to like our dry, chalky Buckinghamshire soil, almost rivaling its congener, *Lunaria biennis*, in the size of its blossoms. It seeds freely, and also strikes readily from cuttings.—H. HARPER CREWE, *The Rectory, Dighton-Beauchamp, Tring.*

Camellias and Myrtles in Leicestershire.—We are often apt to associate myrtles and, above all, healthy bushes of camellias in the open air, with the balmy sea-coast districts. Few would suppose it less than folly to plant such subjects in the open air in the midland counties; yet at Belvoir the other day we saw perfectly healthy camellia bushes in full blossom, and myrtles as glossy as they are in Devonshire. They grow on the elevated slopes, well sheltered by surrounding shrubs and trees. Of course, similar success could not be hoped for in low-lying and exposed grounds. It is the elevation, with the shelter, which accounts for the success. These conditions occur frequently, without advantage being taken of them.—W. R.

Rose Showing.—I intend competing at a flower show, and there are offered prizes for the best light rose and best dark, and I wish to ask the Rev. Reynolds Hole if I might show Madame de Cambacères or Coupe d'Hebe as light roses. I never had any doubt about them being light roses myself; but to a friend who came to see me I told my intention of showing them in the light class, and he said I should be disqualified if I did, as they are not light roses. I certainly should never think of showing them as dark roses, as I take General Jacqueminot, Fisher Holmes, &c., to represent the dark class. In his book on roses, Mr. Hole says, avoid using leaves to help to set them off, as they would be disqualified. The schedule belonging to the society's show at which I intend to compete, says buds and foliage will be allowed; would it make any difference, provided the collection was superior, if I used foliage as allowed in this schedule?—W. E. J. Y.—[Mr. Hole, to whom your case has been submitted, says Coupe d'Hebe and Madame de Cambacères may undoubtedly be shown as "light" roses, but such varieties as the Baroness Rothschild, Marguerite de St. Amand, La France, Mlle. Eugénie Verdier, Madame Vidot, Madame Rivers, Miss Ingram, Devoniensis, &c., would be much more likely to win the prize alluded to. If additional foliage is allowed in the schedule, and the flowers shown are not naturally accompanied by ample and healthy leaves, let advantage be taken by all means of the permission given.]

Hardy Variegated Plants.—We may safely predict that in a very few years we may produce the grandest effects on our parterres with such of these plants as will bear the open air in our country, or at least with the protection of a cold, frame during the winter period. This will be a revolution in flower gardening and will vastly lessen the labour of the flower gardener, who has to produce I do not know how many thousands of tender exotics, often with means totally inadequate. The greatest want of the hardy flower gardener is a suitable reserve ground with a few cold frames for propagation, increase, and protection of the choicer species and varieties, some of them equalling if not surpassing in beauty many varieties of tender plants fostered in our stoves and greenhouses. The practice of devoting a few beds in the kitchen garden, or any spare space to little unprotected nursery beds for the increase of this class of plants is also very desirable. They are becoming very popular, and are within the reach of peasant as well as peer. From what I can see of our native plants, the variegated forms of them are interminable. I have seen a dock (*Rumex crispus*) so handsomely variegated that I shall not be far wrong in stating that it is as handsome a hardy plant as ever was introduced. The variegation is in the form of bright yellow reticulation over the entire surface of the leaves, it being perfectly hardy, and as lovely as any Croton I ever saw in our stoves. If this comes true from seeds, it must become a general favourite. One of the finest plants for marginal effects is another British plant, and only a "nettle" (*Lamium maculatum aureum*). This is more adapted for shady situations than in the full sun, or it would have proved a formidable rival to Henderson's Golden Everfew, and I assert that when well grown it beats anything else for an edging of gold. During the summer season it has a distinct orange tint; this, combined with the white stripe up the centre of each leaf, renders it at once most brilliant and unique.—W. E.

PUBLIC GARDENS.

THE CENTRAL PARK, NEW YORK.

(Continued from p. 525.)

It is pleasant now to turn to the many charming features of this noble national garden. Although its oblong shape, and the immense space occupied by the stiffly outlined reservoirs that supply the city with water, were in the way of very great breadths of turf being formed, yet the designers deserve great praise for the happy manner in which they have succeeded in creating large and pleasant lawns.

Another admirable feature is the way in which certain roads are carried across the park. There are four of these transverse roads in its whole length: one at Sixty-fifth Street; another at Seventy-ninth; a third at Eighty-fifth Street, on the Fifth Avenue, but as it follows the curved southern wall of the new reservoir, this road comes out at Eighty-sixth Street on the Eighth Avenue. The fourth road is at Ninety-seventh Street. The original instructions to the competitors called for these transverse roads; but none of the designs, except Mr. Olmsted's, the designer of the park, offered any solution to the very serious problem presented by the necessity of making provision for the traffic that must at some day be provided with roadways across the park, and which must yet, at the same time, be prevented from interfering with the objects for which the park has been created. All the other competitors merely carried their transverse roads from one side of the park to the other, on the surface, keeping the same level with the other roads, and



Native Oaks in Central Park, New York.

not in any way distinguished from them. Of course, such an arrangement as this would have even now been sufficient to interfere seriously with the comfort, the retirement, and even the safety of the park.

The trees in the park are nearly all young. There were few trees of any importance in the place originally; of these, however, the best were preserved, and among them the group of native oaks illustrated above. The planting is, as a rule, well varied and well arranged.

It has been several times proposed to establish in the park a formal arboretum, or a scientifically arranged botanical garden. But, to our thinking, it is quite as agreeable a way of studying the different varieties of plants, and trees, and flowers, to find them scattered naturally over the whole park, as it would be to have them planted more scientifically in rows and squares, as for convenience of classification and reference they must be in a botanic garden. For our part we like to come upon these pretty strangers unawares; to catch them, as it were, off their guard, rather than to go through the formalities of an introduction. Rather, in this particular case, make the whole park a botanical garden, giving each plant as far as possible its native habitat and surroundings, and fixing near it, in a quiet, informal way, a label with its name. The scientific man and the poet can then enjoy it, each in his own way.

The park is distinguished from any we have seen in Europe by often happy attempts to introduce such features as bird-houses, a dairy, and various other structures, very suggestive

of rural life; most conspicuous among these being well-constructed shade or summer-houses, one very large one of which, called the vinery, is shown below. The warm climate renders such structures very agreeable, if not absolutely necessary.

The material employed in the construction of these structures is the common American cedar, which abounds in the vicinity of New York. The limbs and trunks are stripped of their bark, and they are then put together in a solid and



The Vinery, Central Park, New York.

workman-like fashion, very unlike the frail and flimsy structures which we commonly meet with under the name of summer-houses. Nor is it merely the workmanship that make them noticeable—the design is always artistic and agreeable, and they are no less an ornament to the park than useful and convenient buildings, without which the place would lose one of its chief attractions. Nearly all of them are now covered with vines which, in many cases, almost conceal the frame-work, giving us, instead of artificial decoration, a profuse tracery of the most graceful creepers. Over some, the Chinese Honeysuckle spreads a fragrant shade; over others the Wistaria, with its parti-coloured leaves of tenderest brown



Summer-House in Central Park, New York.

and green, and its delicate lilac flowers; or the rampant Trumpet-creeper, that with the larger, and that with the smaller and finer flowers; or the wild grape with its spring-scent sweeter than mignonette; or the pretty gourds with their pendent bottles of yellow, green, and orange, the delight of children.

The only objection we could see to such structures was that they were often too much exposed to view, and occupied positions of too great importance to be given to any such structures. A great many of the smaller type of summer-houses may also be seen. They are, however, usually so well and tastefully built that they do not fail to please. They will look very much better when time or the gardener clothes them with the wild grace and loveliness of climbing plants.

Among other rusticities of this sort are the boat houses, the swan rests, the houses for English sparrows, and the various strong and very prettily arranged rustic bridges. The



Rustic Bridge in Central Park, New York.

sparrow, pelted from the ivy, and mercilessly dragged out of the eaves with us, here finds himself provided not only with a house, but with a palace. Here he may increase and multiply in peace, and by his vigorous and successful onslaught on the hordes of ugly caterpillars with which the trees in New York used to swarm, he has well rewarded the New Yorkers for their good treatment of him. There is a rumour, however, of



English Sparrow House in Central Park, New York.

Mr. Sparrow fighting with and exterminating some of the American songsters, and, if so, he may some day be deprived of his lordly dwelling, especially if in the meantime he should succeed in exterminating the "measuring worm," enemy of trees, and of tree-loving and shade-haunting men. Swans have been presented to the park by the City of London and Hamburg, and now thrive there.

(To be continued.)

THE LIBRARY.

BOTANY FOR BEGINNERS.*

A PRETTY little volume, well illustrated, and clearly written by one of our most accomplished botanists. Happy should be the little budding botanist in having such a good and simple guide as this. The most zealous students, as Dr. Masters remarks, not unfrequently chafe at the irksome task of making themselves acquainted with a series of abstract propositions, couched in harsh unfamiliar language, and whose significance they are unable to appreciate. An attempt has therefore been made in "Botany for Beginners" to correlate these details from the first, and to give the pupil an interest in them, by making manifest to him their importance as illustrations of the principles of plant-construction. The simplest flowers have been chosen as examples in the first instance; afterwards others of more complicated construction have been selected. An effort has been made in each case to show how and why the various modifications have been brought about. The life-history of the several plants has been incidentally touched on, and occasional hints have been furnished with a view to show the real aim and scope of botanical science, concerning which many students hold far too limited views.

We heartily recommend this book to all who want a pleasant and accurate guide to elementary botanical knowledge.

THE FAIRFIELD ORCHIDS.†

WE have before us a well-printed, neatly-bound volume of 128 pages devoted to the general history, culture, and description of the Orchidaceous plants cultivated by James Brooke & Co., at their nurseries, Fairfield, near Manchester. This useful little work is the result of a well-directed attempt to elevate the tone and introduce strictly correct and reliable information into a trade catalogue, and if we judge it from the latter stand-point we must confess that it is the best issued by any nurseryman up to the present date. It is, however, something more than a mere catalogue; it contains a good deal of sound practical cultural information, together with able and lucid descriptions of between three and four hundred species and varieties of the best garden orchids, with date of introduction, native country, season of flowering, duration of the flowers themselves, and other information interesting both to cultivator and exhibitor.

We could have wished it had been carried out still further, however, since we find one or two genera omitted which are just now deservedly popular with orchid-growers; as *Masdevallia*, for example, a lovely genus of cool orchids from the highlands of the New World. Again, many good showy species are omitted which might with advantage be added in the future editions through which we hope this instructive work will pass. We notice one or two irregularities; notably one at the foot of page 79, where the author has been singularly unfortunate in selecting illustrative examples of the yellow-lipped *Odontoglossum*; since all cultivators will agree with us that both *O. læve* and *O. biconense* have white lips, or rather lips the ground colour of which is white, certainly never yellow; and on referring to the specific descriptions of the two species named (see p. 80 and p. 82), we find the author there himself admits that they have white grounds.

The latter part of the volume contains a valuable glossary of generic, specific, and descriptive terms used when speaking of these beautiful plants, besides some useful general information connected therewith. We add a short extract to give an idea of the information given, and wish this handy little volume all the success which it deserves:—

"*LIMATODES*.—Ground orchids, natives of India and Java, and in structural characters nearly allied to *Calanthe*. 236. *L. rosea* [ab], Moulmein, in the Province of Martaban, 1850. Leaves oblong-lanceolate, plaited, and deciduous. Scape erect, ten inches high, bearing a raceme of many loosely placed and deep rose-coloured flowers two inches across. A sparkling and delightful species, presenting all the features of a *Calanthe* (with the addition of long and fusiform pseudo-bulbs), blossoming in winter very abundantly, and easily grown. 10s. 6d. *Bot. Mag.*, 88, 5, 312; *Part. Fl. Gard.*, 3, 81."

* *Botany for Beginners*. An Introduction to the Study of Plants. By Maxwell T. Masters, M.D., F.R.S., late Lecturer on Botany at St. George's Hospital. London: Bradbury, Evans, & Co.

† "The Fairfield Orchids. A Descriptive Catalogue of the Species and Varieties of Orchids Grown by J. Brooke & Co., Manchester.

THE INDOOR GARDEN.

GESNERAS.

To all who wish to provide for a fine and not too evanescent autumn and winter bloom, these lovely and stately plants are invaluable; and no time should now be lost before laying the foundation of the hoped-for harvest of brilliant blossoms. In point of treatment the Gesneras are not exacting, the chief requirements being a rich open vegetable soil, a bottom heat of 75° to 80° to start them into growth, a moist atmospheric temperature of 65° rising to 80°, with sun heat and partial shade, in bright weather. Provide these conditions and success in cultivation is certain. For the purpose, however, of having a continuous succession of bloom the plants should be started at three different times, say the early part of April, May, and June—a sufficient number of bulbs being put in on each occasion to furnish the plants you may require at each period. Those started into growth first will come into bloom by the end of September, and the others will follow in succession through the winter and spring.

The bulbs should be planted entire, placing one in each small pot, when they are to be bloomed in four or six inch pots; but three, five, or seven bulbs when plants of larger dimensions are required. For soil, take fibrous sandy loam two parts, broken so as to pass through an inch meshed sieve, and with the fine soil sifted out, leaf mould one part, and turfy peat, broken small, in the same proportion. To each peck of the preceding ingredients add a pint of silver sand, and about the same quantity of charcoal, broken to the size of horse beans. Mix these intimately together, and the compost is fit for use. Then procure the requisite number of clean three-inch pots, drain them properly, fill lightly, and press into each one or more bulbs, as you may decide to grow them, leaving each bulb about half an inch below the level of the soil. When the variety is scarce, or a large quantity of plants is required, each strong bulb may be broken into four or five pieces. Thus broken, they will not start so quickly into growth, but still they will start and make good plants. After potting, plunge the pots in a hotbed of 80°, and, until the young plants begin to show through the soil, keep the soil moist, but not wet. As the plants progress in growth, they must be shifted into larger pots, using the same compost, and they must receive the moist atmospheric temperature before indicated.

As Gesneras are very liable to burn, it is particularly necessary that they be shaded early by a piece of very thin net, or, what is better, and what will prevent the possibility of injury from neglect, wash the glass, under which the plants are placed, quite clean, and when quite dry, coat it thinly with boiled linseed oil. This will stand for a season, and in the autumn may be washed off with strong soda water. As the plants progress in growth they will require to be shifted into larger pots, always using the same compost, and pressing it quite firmly. For the largest specimens, pots eleven to fifteen inches in diameter may be required, but for these, pans of about nine inches deep, and of the necessary size otherwise, are the best. Maintain a mean atmospheric temperature of 70° throughout the growing season, but, as the plants begin to show bloom, the temperature may be gradually lowered, and 55° to 65° should be the medium through the blooming season. More than this will cause the flower stems to be drawn and the flowers to drop prematurely; neither will they attain so fine a colour. The atmosphere of the house through the winter should not be moist, but rather dry. Thus managed it will be found that plants of *G. exoniensis* will maintain a "blaze of bloom" for three months in succession. We have said nothing of liquid manure. That prepared from sheep or cow dung and soot, clarified by throwing a lump of lime into it, may be used weak and warm at all times after the plants are thoroughly established and the pots full of roots. Take care, however, that it is weak; and in order that we may not be mistaken, we may say that a quart of the prepared liquid thrown into a gallon of clean soft water will be ample for repeated use. F.

A REVISION OF THE GENUS DRACÆNA.

BY DR. REGEL.

This noble genus of fine-leaved plants is now becoming so deservedly popular that the following revision of it by Dr. Regel, cannot fail to be useful to all who take an interest in them:—

DRACÆNA UMBRACULIFERA.

Stem simple, erect, sometimes seven feet high; leaves sessile, half-clasping, those on the top of the stem forming an umbel, drooping, elongated linear-lanceolate, 1 inch to 1½ inch broad, 2 feet to 3 feet long, with a prominent nerve in

the middle on both sides, and striated with fine longitudinal veins or nerves; panicle terminal, very short and densely corymbose; flowers red on the outside, white inside, of a long tubular shape (the divisions of the corolla being less than one-fourth of the length of the tube), with short and thick flower-stalks, and arranged in fascicles on the ends of the branches. Native of the Mascarene Islands.

Synonyms—*Cordylone umbraculifera* (Fl. d. Serres).

DRACÆNA ARBOREA.

Stem simple, thick; leaves crowded together at the top of the stem, recurved-patent, sessile, clasping, narrowly lanceolate, 2½ inches to 3 inches broad, 2 feet to 3 feet long, parchment-like, with a thick prominent nerve in the middle on both sides, with small longitudinal folds and nerves of a shining green on the upper surface (margin of the same colour), and often marked with darker anastomosing small veins. Native country and flowers unknown.

Synonyms—*Aletris arborea* (Willd.), *Dracæna Knerckiana* (C. Koch).

DRACÆNA ANGUSTIFOLIA.

Stem erect, simple or branching; leaves crowded together at the top of the stem and branches, sessile, erect-patent, linear-lanceolate, 1 inch broad, 1½ to 1¾ foot long, with a central nerve on both sides which is very prominent on the under side, striated with veins; panicle terminal, simple, erect, with loosely racemose branches. Flowers in fascicles of two to five blooms, with scarious bracts, which are shorter than the slender flower-stalks. East Indies.

DRACÆNA FRUTICOSA.

Stem shrubby, with leaves only at the top; leaves sessile, linear-lanceolate, 2 inches broad, 17 to 20 inches long (according to Rumph., but only 12 or 13 inches in the specimen which I have seen), with a conspicuous midrib on both sides, stem-clasping, concealing the internodes with their bases; panicle simple, terminal, with loosely racemose branches; flowers in pairs or solitary; bracts scarious, ovate, acute, shorter than the pedicels; style as long as the stamens. Java. The specimen which I have seen was gathered near Pellowa (Pegu).

Lamarck considers the *Terminalia angustifolia* of Rumph. identical with *Dracæna reflexa*, but the latter is a very different plant, as the internodes are not concealed by the bases of the half-clasping leaves. *Dracæna fruticosa* of Blume comes very close to *D. ensifolia* of Wallich and *D. Kochiana* of Regel, but they are easily distinguished, as the former has narrower and shorter leaves which cover the stem entirely or as far as the middle; flowers in threes or fours, and the style longer than the stamens. In the latter the leaves are slightly margined with red, and the bracts are of a violet colour and as long as the pedicels.

Synonyms—*Sansevieria fruticosa* (Blume), *Terminalia angustifolia* (Rumph.).

DRACÆNA FRAGRANS (GAWL.).

Stem tree-like, branching, 15 feet to 20 feet high, clothed with leaves from the base to the top, or from the middle to the top; leaves sessile, clasping, recurved-patent, lanceolate, 2½ to 3½ inches broad, 1½ to 2 feet long, slightly undulated, with a midrib sunken on the upper surface and prominent on the under-side, and striated with fine nerves; panicle terminal, nearly erect or recurved, bent at the joints; branches divaricated-patent; flowers in dense racemose heads and very fragrant. Guinea and Sierra Leone.

Synonyms—*Aletris fragrans* (L.), *Sansevieria fragrans* (Jacq.), *Cordylone fragrans* (Fl. d. Serres).

DRACÆNA KOCHIANA (RGL.).

Stem shrubby, erect, simple or branched, clothed with leaves at the top; leaves sessile, patent-recurved, leathery, narrowly linear-lanceolate, attenuated, acute, about 1½ inch broad, and sometimes as much as 1½ foot long, with a stout midrib which is sunken in the upper surface of the leaf and prominent on the under surface, striated with fine veins, and with a faint red margin which in some specimens is hardly visible; panicle terminal, simple; flowers crowded together in threes, and accompanied with violet-coloured bracts of the same length as

the pedicels. Native country unknown. I have seen a specimen in cultivation.

Synonyms—*Dracaena arborea* (C. Koch.), *Dracaena fruticosa* (Hort. Berol.).

(To be continued.)

PALMS FOR THE GARDEN.

(Concluded from p. 462.)

THRINAX.—An elegant and useful genus, belonging to the fan-shaped section, the foliage being compact, and more gracefully than even that of *Chamærops* or *Latania*. The different species will succeed in moderately cool-houses; they are free growers, and may be exposed to the sun without damage. For table and room decoration they are exceedingly useful, especially *parviflora* and *radiata*. Not being fast growers, they last for years in a small state, and are therefore very suitable for small houses. The different species are:—

THRINAX EXCELSA (SYN., *TRITHRINAX ACULEATA*: JAMAICA).—This is sometimes called *Chamærops stauracantha*.

T. Chuco (West Indies). **T. gracilis** (Jamaica), **T. parviflora** (syn., *Sylvestris et elegantissima*: Jamaica), **T. pumila** (Jamaica), **T. radiata** (syn., *tunicata*: Cuba), **T. argentea** (Silver Thatch; syn., *elegans*: West Indies).

VERSCHAFFELTIA SPLENDIDA (SEYCHELLES).—A grand palm, with foliage standing out flat from the stem, and when fully developed, three feet wide. The leaves are borne on slender stems, which are furnished with strong black spines, and they move gracefully with the slightest breeze. For a stove slightly shaded this is a fine plant; but care should be taken to keep it from cold air, which turns it yellow.

V. MELANOCHACTA (SYN., *ROSCHERIA*).—From the same island. It is a useful plant, though inferior to *V. splendida*.

VEITCHIA JOHANNIS (TROPICAL AUSTRALIA).—This somewhat resembles *Seafortia elegans*, but is more erect, and narrower in the foliage. As a vase or room plant, or for table decoration, it is very elegant—in fact, not to be surpassed. It also makes a good plant for mixing with Orchids; being slight in stature, it does not obstruct the light.

WALLICHIA.—A genus of palms allied to *Caryota*, from which they differ in their fronds, being simply pinnate. They are free growers, though fond of heat and water; the undersides of the leaves are white. They will stand a considerable amount of ill usage; they are, therefore, useful for furnishing purposes. Otherwise, they cannot be said to stand in the first rank. The species are:—*W. caryotoides* (Chittagong), *W. densiflora* (Assam), *W. tremula* (Siam and Philippines). *Caryotoides* is the best.

WELFIA REGIA (TROPICAL AMERICA).—A good plant for stoves. Being of a red tint, it contrasts with others; must have plenty of heat. In habit resembles an *Areca*.

ZALACCA.—The different species of this genus are allied to *Calamus*, from which they differ in being denser; they also grow to a larger size. For decorative purposes, much cannot be said in their favour, though, when young, the following are good kinds, especially as sub-aquatics:—

Z. EDULIS (JAVA).—Habit, spreading.

Z. WALLICHIANA (SYN., *WAGNERII*: INDIA).—Dense.

Z. CONFERTA (JAVA).—Frond, nearly round; green.

Z. AFFINIS (JAVA).—Near the above, but larger.

To palms, as to other popular plants, names have been given to which they have had no kind of claim. In the foregoing enumeration, now brought to a close, these have been either omitted, or given as synonyms. J. CROUCHER.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Brownæa grandiceps.—This noble stove-plant is now in flower in the old orangery at Kew. In leaf or in flower, there are few subjects to surpass it; all large stoves should be embellished with its great globes of brilliant blossom. *B. coccinea*, which blooms more freely, but is not so fine a species as the preceding, is also now in blossom.—W. F.

Geranium v. Pelargonium.—Is a *Pelargonium* a *Geranium*? and, if not, how are they distinguished?—G. F.—[A *Pelargonium* is not a *Geranium*, though frequently so-called. The *Geraniums* are easily distinguished from the *Pelargoniums* by their extreme hardness; whereas no *Pelargonium* that we know of is hardy, except *P. Endlicherianum*, and that is very rare, if in the country. All the bedding and show plants often referred to under this name are true *Pelargoniums*. The *Geraniums* may also be readily known by their regular flowers, and by having ten stamens, whereas *Pelargoniums* have irregular flowers, and usually seven stamens, and have moreover a peculiar feature in the narrow tube which runs down the stalk, and is a prolongation of the base of a sepal. There is, however, good excuse for the common mistake of confounding these plants, as at one time the genera we now call *Erodium*, *Pelargonium*, and *Geranium*, were all known to science by the last name.]

GARDEN DESTROYERS.

BARK-BORING INSECTS.

(SCOLYTUS DESTRUCTOR.)

THERE is one question regarding bark-boring insects which, however thoroughly examined and apparently finally settled, every now and then reappears, and offers itself afresh for discussion, according as new facts show themselves or old ones assume a new face; viz., whether these insects attack sound trees, or confine themselves to those which are moribund or in a bad state of health.

The question relates not only to our present subject, the *Scolytus destructor*, but to a great many other bark-boring insects; and it may be well, therefore, that in dealing with the first on our list, we once for all explain what we believe to be the true statement of facts regarding it. In the first place, we believe the fact to be that, while in general the trees which they attack are old or failing in health, there are also occasionally instances where they are found attacking and more or less injuring trees which to all outward appearance are in perfect health. A few weeks ago, for example, a specimen of a small branch of an elm was shown at a meeting of the scientific committee of the Horticultural Society, which was found to have the bark literally crowded with the burrows and grubs of the *Scolytus*; and the branch was sound; perhaps a little dry, and as if not quite recently cut. We remember a similar instance occurring at Brussels a few years ago, where the efforts of the municipality to plant rows of elms in their new streets and boulevards were frustrated or greatly obstructed by the ravages of this insect; and, if we look nearer at home, in our parks, we shall not have much difficulty in detecting them in trees which, although perhaps past their best, are yet fresh and green. Notwithstanding these apparently opposed instances, and many others which could be cited to the same effect, we believe that it is only in failing trees that there is any reason to dread the attacks of the insects of which we speak; and this simply because if the *Scolytus* makes its attack on a healthy young plant which yields abundance of sap, the grubs are incommoded or drowned by its overflow into their burrows and around themselves. The dead and mummied remains of these insects, which may occasionally be found in their burrows, are the result of such an incident. It is only where there is such a lack of free-flowing sap that the grub can work away in a moderately dry medium that it can proceed with comfort to itself, or indeed can long proceed at all. This being the case we might expect that the parent insect will be endowed with an instinct to guide it to the selection of the tree suited for the abode of its progeny; and, in point of fact, it is guided to such a selection, but not by any remarkable faculty, or wonderful display of unreasoning instinct. Like a great many other instances of apparent design for which instinct gets credit, the wisdom in this case is simply the necessary result of the natural habits of the insect. The mother lays her eggs not on the exterior of the bark, but in the gallery which she herself makes in feeding under or in the bark, and if the bark be in an unsuitable state for her living and feeding in it, she goes away after trying it, or only remains (taking the chances of her condition) if she can find no other refuge. It is also to be observed that the perfect beetle may be able to stand and struggle through an overflow of sap, which might envelope and be fatal to small grubs.

In giving this explanation, we have assumed that it is only in trees where the sap is deficient that the *Scolytus* can live in comfort; but although we have only made the assumption to explain the principle, a moment's consideration of the manner of life of the insect will show that it cannot be otherwise. If we make due inquiry, we shall find that in every case to the contrary there is one of two things present—the trees attacked are themselves back-going and deficient in sap, which we imagine to have been the case in the example shown to the scientific committee of the Horticultural Society the other day; or there are special circumstances about the locality which provide an unusual quantity of the old beetles, accompanied with a scarcity of their special trees in a state fitted for them; they are thus

driven by the want of these to settle on the thriving young trees of the same kind, where they may survive for a short time until drowned by the sap; and if a constant fresh supply of old insects be from year to year provided to renew the attack, they may perhaps succeed in reducing the trees to a state of debility suited to their requirements, and then their progeny will run their course unmolested, and rapidly finish off the trees. This, we imagine, is what took place in Brussels. It is a city in which a large amount of wood is used for fuel, and large forests in the neighbourhood are grown for the purpose. There is thus constantly a large quantity of recently-felled wood around the city. This is brought in and stacked in its heart, bearing along with it myriads of bark-boring insects, which, by and bye, come out and search for trees suited for their purpose. The Scolytidæ search for old elms, find none, and are driven to attack the young ones planted in the boulevards. As a matter of course, the trees there, having been transplanted when large, and breathing the air of a great city, are not in the most prosperous or vigorous condition, and are thus, although young, sufficiently feeble and languid in their circulation to be suited to their attacks. But even although they had been the most vigorous trees in the world, it would not seem extraordinary if, in time, they were to give way before the constantly renewed attacks of fresh hosts, annually brought in with the new supplies of firewood from without. We do not, however, know as a fact that this would be the case, for from an analogous case, cited by a great authority in such matters (M. Perris), it would appear to be doubtful whether that effect would really be produced. He states that in his district (the Landes) there are a good many industrial establishments which burn great quantities of logs of pine, and for that purpose make large stores of them. From these immense heaps of logs of all sizes there proceed innumerable swarms of *Bostrichi*, and above all of *Hylurgus piniperda*, and in the neighbourhood, quite near, occur some pine trees, either isolated or in groups of greater or less extent which nothing would seem to guarantee against their assaults; and yet M. Perris states that he never knew an instance of any one of these trees owing its death to them. They suffer more or less in their young shoots, which serve in the summer for refuge and nourishment to the *Hylurgus*, and, notwithstanding the apparently very grave disturbance which these attacks, when much multiplied, cause to the economy of the trees, there still remains to them sufficient vigour and health to discourage more serious enterprises. The reason of their immunity he supposes to be that the Stone Pine (*P. pinaster*) is there in its own country, and that the climate and soil agree with it so completely that it is there able to resist morbid causes to which it elsewhere proves more vulnerable.

"On the other hand," says he, "I could show—for the traces still exist—pines, and more especially elms, attacked and riddled by ill-advised *Bostrichi* and *Scolyti*, born in the neighbourhood, and without doubt pressed to lay their eggs, and whose attempts have been defeated and projects disconcerted by the powerful sap. I have quite recently predicted a similar result to one of my friends who was in much alarm at the invasion by *Scolyti* of an avenue of young elms, which he was anxious to preserve, and which came from felled trunks lying not far off, and the event bore out my predictions, which I had based on the evident vigour of these trees." The practical conclusion to be drawn from these considerations is that where the trees are strong and vigorous we need not fear insects, and that if they are attacked, the best remedy is to supply it with nourishment, so as to improve its vigour and strengthen its constitution.

A. M.

(To be continued.)

"War with Insects" (see p. 445).—This should have been called "War with Peach Trees." I can conceive nothing more injurious to a Peach tree than the application of wet paint, or even the proximity of wet paint; the very scent of the paint would inevitably kill the tree. As to aphides and "thousands of little snails being captured darting out," I would say with Tennyson of the departing year, "let them go;" but I can assure your correspondent, after noting aphides for fifty years, that they never dart;

they insert their trunks in the epidermis, and generally remain firmly fixed for life. At the end of the season, a last brood of aphides appears, and these have wings; but they never "dart." Each particular aphid opens his filmy wings, and waits for the breeze to take him off his legs, when he is borne, *volens volens*, wherever the breeze likes to carry him. The motion is floating, not darting; like a little feather, he has no will of his own; he must go where the wind pleases. I will not contest the point about the snails; they may "dart in and out"; but from some little acquaintance with their habits, I think it unlikely. We entomologists are continually evincing a very strong desire to help the gardeners, but the gardeners invariably reject our services on the plea that we are *not practical men*; and I feel there is no help for it until an entire change comes over the spirit of the gardener—until he will consent to learn of the entomologist, and try to attain some knowledge of his insect enemies. Thanks to the late Mr. Walsh, to Dr. Park, and to Mr. Riley, this great work is progressing nobly in America; there a man who understands entomology is respected as a teacher, here he is condemned as a visionary; he who can train a Peach tree or a Pear tree to a particular pattern on a wall, is regarded as the only practical man. Believe me, some knowledge of insects is as needful as a knowledge of the use of the spade, or the hoe, or the pruning-knife; and until we can induce gardeners to acquire that little knowledge, they will handle the spade and the hoe and the pruning-knife in vain.—EDWARD NEWMAN.

THE ROYAL GARDENS, KEW.

THE PALM HOUSE.

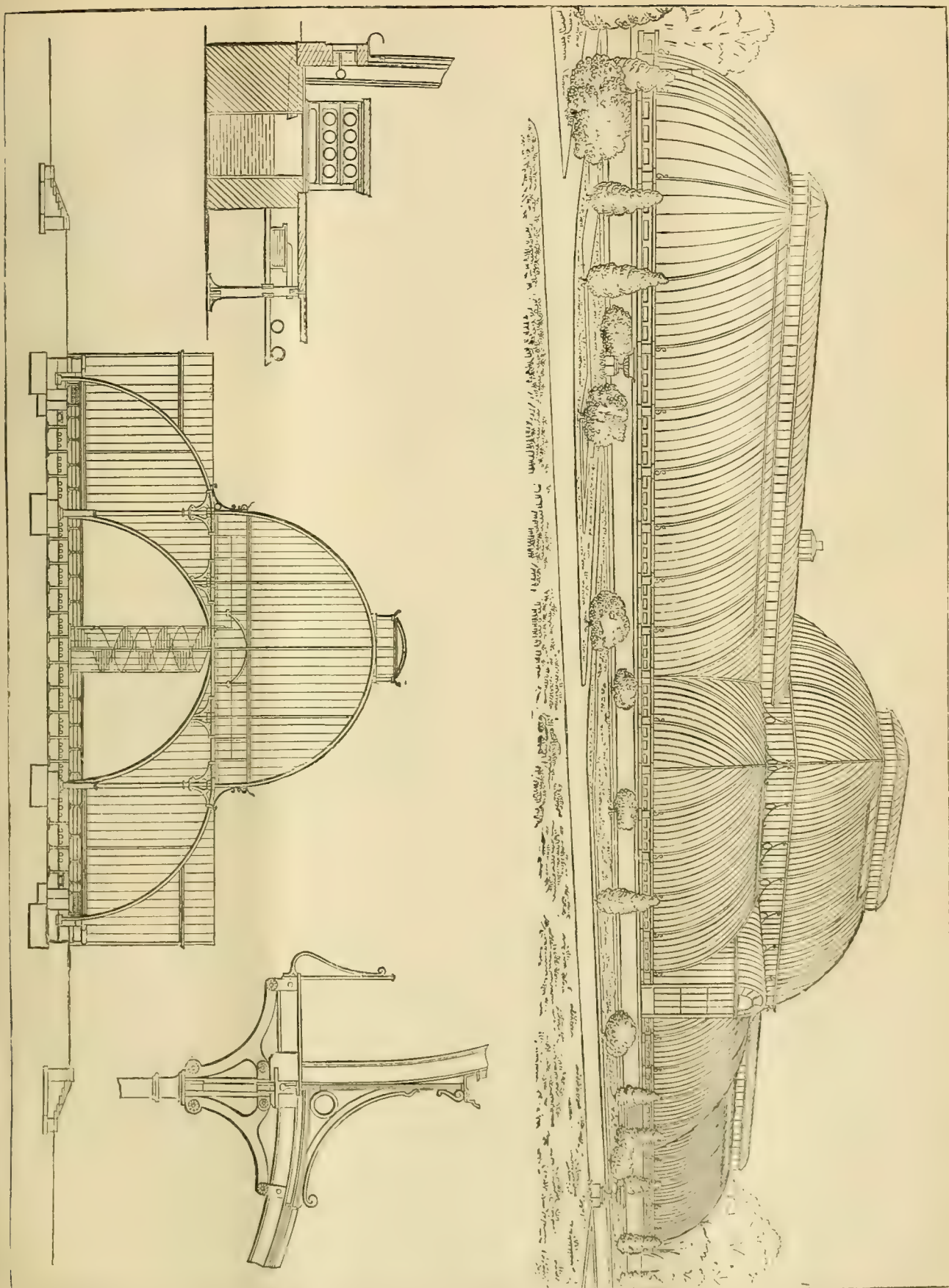
THIS noble structure still ranks amongst the finest erections of the kind that exist in any country. It was designed by Mr. Decimus Burton, and erected by Mr. Richard Turner, of Dublin, in 1849. It represents the first application, on a large scale, of malleable iron beams for the support of curved roofs, set on foundations of masonry. No timber whatever is used in its construction.

As regards general arrangements they can be easily understood by a glance at the annexed illustrations and at the ground-plan and sections which we published last week. The central portion consists of a square with two wings, each having semi-circular ends, the centre being raised above the rest of the building so as to afford accommodation for large plants. The roof is furnished with a continuous lanthorn, in which the sashes for ventilation open and shut simultaneously by means of machinery. This lanthorn is in keeping with the base and plinth, which is also provided with ventilators for the admission of air.

Round the central portion is a gallery which is reached by two cylindrical iron staircases, one for ascending and the other for descending, and from this gallery the whole of the magnificent palms and other tropical vegetation, with which the house is furnished, can be viewed with advantage. The exterior outline or contour is semi-ellipse, a form very suitable for a house of such large dimensions. The extreme length is about 362 feet, width of centre 100 feet, wings 50 feet, length of centre 137 feet, wing (each) 112 feet, height of centre 63 feet, wings 27 feet. It is set on a slightly elevated terrace, where it has remained without a single settlement or subsidence in any part, or almost the fracture of a pane of glass, since its erection. The glass and glazing were entrusted by Mr. Turner to Messrs. Chance, of Birmingham, the glass being of a peculiar tint of green, then thought to be most suitable for palms and other plants intended to be grown under it.

The interior arrangements are very simple. They consist of a wide side-shelf all round, with a series of ranges of hot-water pipes underneath it; the flooring, supported on piers of masonry, is of perforated cast-iron, under which is the main heating apparatus, consisting of hot-water pipes spread over the whole surface. No other material but iron could have answered the purposes for which this building is intended

VIEW AND SECTIONS OF THE GREAT PALM HOUSE AT KEW.



—for plants requiring great space, great heat, and great moisture. This building, in short, well illustrates the great superiority of curvilinear iron houses for all very large structures in gardens, its effect being very satisfactory from every point of view. We have seldom seen large conservatories of the opposite style pleasing in effect, and it is certainly a fallacy to suppose that they are better for plants. The great Temperate House at Kew is a noble structure, but there are few who would not prefer the older Palm House. It is difficult to say how any persons loving their country, not to say loving gardens, should erect such a structure as the new palm house in the Glasnevin Garden, with this in existence as an example. Of course, we do not expect every botanic garden to rival Kew with a palm house, but the principle may be applied on a smaller scale. There is only one style of palm house that we should think worthy of being named in connection with that at Kew, and that is such as the palm house at Edinburgh. In this case the sides of massive stone lend a more stately air to the structure than if the curvilinear ribs started from near the ground. Palms, as Mr. McNab has shown, thrive perfectly in such a structure.

We are indebted to Mr. H. M. Burton for the loan of some of the noble series of drawings, originally made by Mr. Decimus Burton for the larger structures at Kew, and from these the drawings for THE GARDEN have been made. We feel bound to state in conclusion that this and other houses built by Mr. Turner, of Dublin, do him great credit. We have now seen them in many gardens, private and public, and they always seemed to us, judged from an ornamental point of view, worthy to stand in the fairest garden, and always constructed with a view to the perfect health of the plants. The iron range at Glasnevin, the conservatory in the Regent's Park, and the range at Killakee are cases in point.

THE ARBORETUM.

THE PLANES.

BY GEORGE GORDON, A.L.S.

II. —THE ORIENTAL PLANE (*PLATANUS ORIENTALIS*—LINNÆUS).

THIS is one of the noblest trees of the East; it has wide-spreading branches and a massive trunk. Its peculiar character, however, is its being massive and graceful, yet open and varied in outline, with the lower branches extending horizontally to a considerable distance. Under favourable circumstances it attains a height of from sixty to seventy feet, with a trunk of large dimensions near the ground; but it soon divides into numerous huge spreading arms or branches, which, together with the stem, are covered with smooth, whitish-grey bark, that scales off every year in rather large, irregular patches, while the bark on the smaller branches and younger portions of the tree is more persistent, and of a brown colour, sometimes tinted with purple.

The *Platanus orientalis* is a native of Asia Minor, Persia, Greece, and Western India, where it extends as far as Cashmere. It is also found on the coast of Barbary, the south of Italy, and in Sicily; but most probably it is not indigenous to those countries. It is likewise found on Mount Etna, as high as two thousand feet above the level of the sea.

It is the "Chinar" of the Persians and the people of Western India, and the "Doobl" of the Arabians. Griffith, in his "Notes on Western India," says the "Chinar" is common in Affghanistan at a place called Otipore, where it forms a large and handsome tree, but with a trunk never of any great height, and with the branches, when left to themselves, dependent, and of a great size. He also found the "Chinar" common in the province of Khorassan, at Ghuznee, in Cabul, Jalalabad, and Candahar. He states that a long avenue of it is a distinguishing feature in the city of Ispahan.

Dr. Walsh, in his "Residence at Constantinople," says that the great tree of Buykdere is an Oriental Plane of tremendous size, rising from the middle of a valley; it measures forty-seven yards in circumference at its base, and the branches afford shade to a circular area of 130 yards; he also assures us that there is no exaggeration in the statement, as he measured the tree himself in 1836. He says, however, that this vast stem divides into fourteen branches, some of which issue from

below the present surface of the soil, and some do not divide till they rise seven or eight feet above it. One of the largest has been hollowed out by fire, and affords a cabin to shelter a husbandman. This, if it can be considered a single tree, is certainly the largest of its kind in the world, and, as is conjectured by De Candolle, must be more than two thousand years old.

The leaves of this Plane are large, frequently measuring nine inches and a half in length, and eight inches in breadth; they are palmate, wedge-shaped, or tapering to the footstalk, and deeply divided into five pointed lobes or acute segments, the three outer of which are cuneate, and sometimes again slightly lobed, and all are furnished towards the points with acute indentations or large serratures on the margins; the petioles are rather long, and the principal veins palmately divided. The young leaves and shoots when they first appear in spring, are covered all over with a dense silky wool of a rusty brown colour, but which soon sheds, and, by the time the leaves are fully matured, totally disappears; the upper surface of the leaves becomes quite glabrous and of a shining green colour, while underneath they are much paler, and slightly tomentose in the angles of the veins and on the principal ribs; the stipules are entire, and the petioles so swelled



Leaf of the Oriental Plane.—Natural size, 8½ inches long, including footstalk, and 7½ inches broad.

at the base as to cover the buds; the flowers are small and in close balls or heads, which appear before the leaves in spring, and the seeds in fine seasons ripen late in autumn, but the balls which contain them mostly hang on the tree until the following spring; the balls or seed-heads of this Plane are thickly furnished externally with stiff, bristly points, and elevated conical-shaped nipples, covered with a silky down, and vary very much in size, some of the balls being one inch and a half in diameter, while others are not more than three-fourths of an inch. They are produced on long, zig-zag, pendulous peduncles, sometimes six inches in length, and bearing from three to six balls or heads on each, generally crowded together, or but at short distances apart.

The Oriental Plane was first introduced into England about the middle of the sixteenth century, and some of the oldest and finest trees of it, near London, are at Mount Grove, Hampstead; in 1838 these had attained a height of from seventy to eighty feet, with massive trunks. It has the following synonyms, viz., *Platanus cashmeriana*, *nepalensis*, and *indica*.

BRITISH COLUMBIAN CONIFERS.

(Continued from page 503.)

JEFFREY'S DECIDUOUS TREES, SHRUBS, AND HERBACEOUS PLANTS.

BESIDES conifers, Jeffrey also introduced many deciduous trees, shrubs, and herbaceous plants. Many sent home by him had been introduced, while others were known only by name, but had not been previously sent home. One of the latter is *Nuttallia cerasiformis*, a shrub belonging to the Rose tribe. This plant ranks amongst the earliest leafing shrubs now cultivated in the open garden. The flowers are in racemes not unlike the white variety of the *Ribes sanguineum*. Although the *Nuttallia* flowers freely in the open border, it is wonderfully improved in appearance when grown against a wall. Among the numerous herbaceous plants sent home, those really new which have come under my observation are the *Dodecatheon Jeffreyi* and *Pentstemon Jeffreyi*.

As Jeffrey's expedition to British Columbia turned out a prosperous undertaking, its promoters were induced to organize another expedition for the further exploration of these coniferous regions. After several preliminary meetings, it was ultimately arranged to send out another collector, and Mr. Robert Brown, an enthusiastic Scotch botanist, was selected to undertake this second expedition. He started in March 1863, and was absent for nearly four years. Of conifers (the collection of which was one of the chief objects of the mission), comparatively few, however, were received from him; but these I shall now enumerate.

Of the genus *Pinus*, seeds of the true *P. Murrayana* of Jeffrey came up freely, being readily distinguished by the green colour of the leaves and beautiful upright habit of growth. Of the genus *Picea*, one kind only came up, named *P. grandis*. This plant is evidently one of the forms previously introduced as *P. lasiocarpa*, certainly not the true *P. grandis* of Douglas.

ABIES.

Of this genus seeds of several kinds were received, and two sent home as new were provisionally named—one, *Abies Parryana*, and the other, *A. Hanburyana*. The former has turned out to be identical with the *Abies Pattoniana* first introduced by Jeffrey, while the *A. Hanburyana* seems to be nearly allied. Its leaves, however, are longer, broader, and somewhat undulated. Some seeds of *Abies Douglasii* were sent home by Mr. Brown. They soon grew, but have a light-green colour, and much covered with resinous blisters in the young state, like those raised from Jeffrey's importations, having a habit almost identical with the early plants raised from British ripened seed, certainly very different in colour from those sent home by Drummond during the Franklin expedition, or by the ill-fated David Douglas during 1826. I feel convinced that there is a variety of the *A. Douglasii* yet to be sent from the Rocky Mountain district, infinitely superior to the generality of *A. Douglasii* seedlings received during recent years, having dark overgreen leaves, perfectly hardy, very upright in growth, and admirably adapted for forest purposes. Those sent home by Drummond are of this character. Some plants sent out by nurserymen under the name of *A. Douglasii taxifolia* may be this variety, but certainly not all, as some varieties cultivated under this name are rather tender, and have more or less a drooping habit.

SEED COLLECTING.

There is a circumstance to which seed collectors pay very little attention, but which calls for careful observation. Seeds are not unfrequently procured from medium-sized trees growing along the outskirts of pine forests. In such situations it is often impossible to depend on the progeny. The pollen of most coniferous trees is produced in very large quantities, and is often blown about to a considerable distance. To this cause I attribute the sickly condition of the plants raised from much of our home-ripened seeds, as is observable in *Abies Menziesii*, *A. Douglasii*, *Picea nobilis*, *Pinus monticola*, *P. Laricina*, and others. Such examples prove the necessity of foreign seed-collectors penetrating the pine forests in order to secure seeds in a pure and perfect state. The rarer species of conifers now cultivated in this country are not yet to be had in such quantities as to be grown in a forest condition. The chances, therefore, of impure seed are very great.

EARLY CONING.

A circumstance connected with the early coning of certain recently introduced conifers into this country deserves investigation. On inquiry, it will be found that early coning may be attributed to several causes. For many years the newer conifers were generally grown in pots perhaps for a much longer time than they ought to have been, and when planted out the roots were often matted together, rendering it often impossible to extricate them without injuring the plants. Such specimens were generally

planted with their balls of adherent earth entire. For several years these trees get on well, but in time sicken from a stragulation of their roots, which results in early coning. Another mode of bringing young trees into a coning condition, is the tying the stems upright which happen to be leaning to one side, from wind or other causes. The tying which some of these plants are often subjected to, and the after neglect of taking off ligaments used, has a tendency to cut into the bark on one side, and often weakens the top, which results in early coning. Another cause is from transplanting, and is particularly noticeable in plants of the *Picea nobilis*. Although transplanting is often done for this express purpose, I have my doubts if the progeny of such trees can be relied on for producing permanent healthy plants. I am inclined to think that all these premature methods of inducing cones will produce a sickly progeny. It will be a service if those who have had experience in seedlings thus produced will kindly give the results of their experience; it would confer a favour on many cultivators, by saving the extensive planting of trees that will not ultimately succeed. The sickly state of many of our young larch plantations, I much fear, is owing to carelessness in seed collecting.

THUJAS.

Of this genus a considerable quantity of seeds was sent home by Mr. Brown, under the name of *Thuja Craigana*. These have the appearance of *T. gigantea* sent home by Jeffrey, or the varieties sent by other collectors under the names of *T. Lobbii* and *T. Menziesii*. The varieties of *Thuja* received at different times from British Columbia are numerous, and from the slight difference observable in them, I am inclined to think that the seeds must have been collected from trees growing on different soils and situations.

JUNIPERUS.

Of this genus several interesting species are to be seen amongst the dried specimens received from Mr. Brown. Several packets of *Juniperus* seed were also sent home. The only one named by him was *J. Henryana*, of which two distinct varieties have come up, and are now in cultivation. As the true plant has not been described, it is difficult to know which was originally intended to bear that name.

DECIDUOUS TREES AND SHRUBS.

Seeds of these were also distributed; of the former, *Prunus Pattoniana* appears to be distinct, although more of a shrub than of tree growth. *Mahonia Balfouriana* seems to be identical with *Mahonia Aquifolium*, introduced from California in 1824. A species sent without a name has turned out to be *Spiræa arizæfolia*.

THE BUNCH AND OTHER GRASSES.

Perhaps one of the most useful introductions by Mr. Brown was the Bunch grass (*Elymus condensatus*). This grass is, without exception, one of the earliest we have in Britain, the leaves can be cut about twenty-four inches long at the beginning of March, while this year it was nearly thirty inches, and before the end of September the plants measure from eight to nine feet in height. Although introduced during 1864, it does not appear to be receiving that attention which I think it justly deserves. This grass should be thoroughly analyzed by competent parties, and its merits given to the public. It seeds abundantly in this country, and if found to possess sufficient nutritive qualities it could be readily increased. Seeds of several pasture grasses were also received and grew freely, but I have not heard of any good that has resulted from them. Besides grasses, seeds of many herbaceous plants were also distributed.

ENCOURAGEMENT FOR FURTHER EXPLORATION.

Mr. Brown's mission ended in the autumn of 1866. Looking through the dried specimens sent home by Jeffrey and Brown, as well as the introductions of Douglas, there appears yet to be ample scope in North West America for a collector to go over the same ground again. The original habitats of *Picea amabilis* and *P. grandis* of Douglas do not appear to have been touched upon by any other party, as no true seeds of these two species have again been procured. The *Pinus Balfouriana* and the true *P. flexilis* have only been sent home by Jeffrey; and the *Abies Hanburyana* and *Juniperus Henryana* only by Brown. Judging from the dried specimens received from the various collectors, interesting specimens of *Pinus*, *Picea*, *Abies*, *Thuja*, and *Juniperus*, have yet to be introduced. In these extensive and comparatively unexplored regions, a variety of soils and situations must be met with particularly adapted for certain species of conifers. Suitable spots, as damp, dry, loamy, or peaty, favourable to the growth of certain plants, are frequently very limited in extent. A collector may therefore pass within a few hundred yards of some rare species and never see them. From these regions a vast amount of novelties have yet to be procured, and such as would reward any young and enterprising collector.

JAMES McNAB.

THE GARDENS OF ENGLAND.

MOUNT EDGCUMBE.

THIS is a noble and extensive place, surrounded by a finely undulated park, stocked with deer and furnished with fine trees, consisting of Oak, Beech, Elm, and Chestnut. It also contains some very large evergreen Oaks, Cedars of Lebanon (which, for spread of branches or size generally, one seldom sees elsewhere), Thorns of select and beautiful kinds, and other ornamental trees. From the higher lying ground the views, both of sea and land, are marvellously fine, embracing, as they do, the town of Plymouth, with its bay, shipping, and dockyard, Drake's Island, and extensive inland tracts of the lovely counties of Devon and Cornwall. In short, few places are so charmingly situated as Mount Edgcumbe, from which can be seen Dartmoor, with its wonderful rocks and tors, as well as Lord Morley's park and domain, and other gentlemen's seats.

The wide and diversified prospects that rise on every side, of towering hill, flowery vale, furzy down, and fertile field, are such as cannot fail to awaken the most pleasing sensations. The peninsula occupied by Mount Edgcumbe stretches out its majestic heights, crowned by the noblest woods, into the ocean, where the waves break over reefs of black rock that lie at the base of the cragged cliffs. This beautiful domain is one of the most noticeable features in the landscape of Plymouth Sound. It may be viewed to perfection from the commanding eminence opposite Mount Wise. Here the whole of the expanse of its magnificent scenery, as well as the neighbouring landscape, is spread out un-

broken to the view, and may be taken in at one comprehensive glance. Its appearance from the Plymouth Hoe is also particularly fine. The noble woods, rising tier above tier, with here and there patches of bright green, the blue sky beyond, and the deep tints of the water around, dotted with vessels, all combine to form a very pleasing picture.

At the entrance to the park is a splendid avenue of gigantic trees. These extend in unbroken order nearly up to the house itself, which occupies a commanding position. The trees are so arranged as to form three avenues—one very wide central promenade with side aisles. To our left we catch pretty glimpses of the sea, through the openings in the trees, which are here tastefully arranged. To the left of the house is a high walk, leading to the most beautiful part of the grounds, while further to the left is a lower path, which passes in many places close to the sea.

What is called "Lady Emma's Cottage" is a pleasant resting-place, situated at the foot of a wood, a "most delightful solitude of venerable trees," which tower up to a great height rendering the neighbourhood of the cottage shady and enjoyable. There is, too, a pretty little garden in front of this cottage, offering a pleasing contrast to the overhanging woods. In due course we arrive at an upper walk, called the Great Terrace, or Laurel Walk, and proceed along through a dense

plantation of fir and other trees towards Picklecombe, our path being at a considerable elevation from the sea, which lies far below us. The Valley of Picklecombe has, at its upper extremity, a building intended to represent a ruined chapel, from which the prospect is strikingly pretty, the little valley sloping away gradually towards the sea. On the further side of this valley is one of the most delightful parts of this charming domain. A portion of the Great Terrace continues in this direction, the road winding along among the most delightful variations of foliage, arranged in the most perfect order, and with true artistic taste. Here we find the Portugal Laurel, the Laurustinus, the Arbutus, and other evergreens and flowering shrubs, covering the whole surface of the cliff on either side; while on our left, as we proceed, we are attracted to various openings in the shrubbery, through which we catch tiny glimpses of the sea dotted with sails, while ever and anon our ears are pleasantly assailed by the murmur of the waves as they beat in regular cadence some hundreds of feet below. This walk retains the same charming appearance throughout the year, the woodlands being almost entirely composed of evergreens. One Laurel tree has reached the astonishing altitude of fifty feet, and is supposed to be the

largest of its kind in Europe.

The mansion itself boasts of considerable antiquity, having been erected in 1550 by Sir Richard Edgcumbe. It is in the castellated style, battlemented, and had originally circular towers at each angle, but during the latter part of the last century these towers were converted into an octagonal form.

The gardens, which are very extensive, possess some fine terraces, from which are obtained the most delightful views imaginable in every direction. The rosary itself is worth travelling a great many miles to see;

and the flower gardens are both extensive and varied. The English flower garden, as it is called, is of considerable extent, and is embellished with some very fine trees, among which may be noticed a grand old Cedar, one of the largest in England, which has so outgrown its space as to render it necessary for some of the boughs to be lopped off, while others are chained up. On a seat beneath this tree are inscribed some appropriate lines from Cowper's "Task." Another large Cedar measures twenty-one feet in circumference at six feet from the ground, and its branches spread ninety-five feet in diameter. There are besides some Cork trees, and fine specimens of the brave old English Oak. What is called the French flower garden is a small square enclosure bounded by a high hedge, cut close, of various evergreens. The garden is laid out as a *parterre*, with a basin and *jet d'eau* in the midst issuing from rockwork intermixed with shells, and surrounded by trellis work, on which numerous creepers are trained. In the Italian garden is a lofty orangery, one hundred feet in length, having a Doric front, designed by Lord Chelmsford. Into this building the orange trees, which include many fine specimens, are removed during the winter months, but in summer they are tastefully arranged in long avenues in the garden. This garden is encircled by a fine bank of flowering shrubs and evergreens, in the centre of which



Mount Edgcumbe from the Sea.

is placed a basin of water, with a superb marble fountain. In the shrubberies, one of the most striking features belonging to the place, are some magnificent examples of *Arbutus* and common and Portugal Laurels, of a height and size equal to those of some timber trees; other evergreens, too, acquire proportionate dimensions. The Bamboos here are unequalled for beauty and elegance; and the scarlet Indian Tree and other *Rhododendrons* grow with surprising luxuriance; as do also *Camellias*, *Myrtles*, *Chinese Azaleas*, and *Heaths*. Indeed, plants which need the protection of glass in other parts of England succeed perfectly out of doors in this favoured climate, and acquire wonderful luxuriance. A lovely *Malvaceous* plant (*Abutilon vitifolium*) grows here to the size of a tree, which, for months together, is loaded with beautiful mauve-coloured flowers, each as large as a crown piece, making a glorious display. The foliage is handsome and vine-like. Mount Edgumbe is also celebrated for its *Magnolias*, of which it contains many varieties—large and grand examples of that fine genus. Conifers, too, such as *Sequoias* (*Wellingtonia*), *Araucarias*, *Pinuses*, *Abies*, *Junipers*, *Cypresses*, *Cryptomerias*, and others, may also be found here as large and fine as in any other county in England. Especially are there beautiful groves of *Pinasters*, which here acquire large sizes. JAS. BARNES.

THE SIX OF SPADES.

CHAPTER XIII.

The President's Lecture—(concluded).

You have seen a well-bred hunter turned out for his summer's run, when the soft showers of April have made the grasses green, and ere the suns of May, opening the Buttercups, have converted every pasture into a Field of the Cloth of Gold. For half-a-dozen seconds, when the groom has quietly slipped over his nose the old "exercising bridle" which he knows so well, he stands gazing in amazement and perplexity, astonished as the rustic who, having formed his idea of cities from the occasional contemplation of a small market town in the distance, sees for the first time from some commanding height great London spread out before him. Hardly, at first, can he (I am referring now to the nobler animal of the two, the horse)—hardly at first can he realise his freedom; it seems to him too good to be true; but suddenly he apprehends the happiness of his state, and with a wild whinny of delight he is away at speed, kicking as he goes, and giving ample demonstration to eye and ear that he thoroughly appreciates his new liberty. By and bye he may condescend to a majestic trot, coming towards you with head erect, lithe, supple, elastic, "scarcely touching the ground, he's so proud and elate," and exhibiting a dignity and grace and power, which you can see in no other animal, and only in him when thus unusually excited. After a while, perhaps, he may treat eye and nostril to a sight and scent of the young, tender herbage; but he is much too happy to eat. Were he less so, he would hesitate where to begin, like the schoolboy, whom you treat at the confectioner's, and bid, in Lear's words, "take all." But now he has youth's gladness without its appetite, and he is racing off again, head down and heels in the air, as though about to rehearse

a series of somersaults for the edification of some favoured hippodrome.

A like joyous consternation, a like embarrassment of happiness are mine, my friends, when, released from the introductory part of my lecture, from my allegorical snaffle, I find myself free to expatiate upon a field—of roses, turned out as it were into the "*rosea rura Velini*," into those rose fields near Ghazepoor, which the great Bishop Heber tells us extended over many hundred acres, or into that "beautiful plain covered with innumerable roses," of which we read in the more recent "*Wanderings of an Artist*." So let me have a metaphorical gallop to relieve my exuberance of delight; or rather, since the rosarium is not good galloping ground, let me, like some nightingale just arrived in a rose nursery, and who can "scarce get out his notes for joy," take a preliminary fly over the premises, with obligato and irregular music, ere I settle down to sing in a more measured time and in a more usual key.

Hurrah, then, for the royal Rose! for a Queen who, like our own Victoria, reigns the wide world over in loving hearts. Hurrah for old England's emblem, emblem true of a happy land, whose sons flush quickly with a righteous anger to resent injustice and to defend the right, and whose daughters blush

with a roseate beauty, with the "shame, which is a glory and a grace." Hurrah for the precious perfumed flower, which, for seven months of our fickle and inclement year, gives its welcome beauty to high and low, admired and loved by us all, from the patrician, who sees it in the golden epergne of the banquet, to the ploughboy, who sticks it in his coat o' Sundays, and seems to his younger brother, learning his Collect, the embodiment of earthly bliss, as to a junior at Eton his gorgeous fraternity in the Life Guards. Hurrah for the flower, which in all history, sacred and

secular, maintains priority of praise; which the Greeks named to *anthos*—the flower, and of which all their poets, heroic, pastoral, sentimental, comic—Homer, Theocritus, Aristophanes, and "burning Sappho," sang; which the Romans strewed before their victorious chiefs, chose first to ornament their homes and feasts, and even offered to their gods; which all nations, emancipated from barbarism, have ever fondly cherished; which displays its charms, as our English girls their loveliness, with an infinite variety of form, grace, and complexion, now *petite* as some pocket Venus (*anglicé*, "a little duck") and now beautiful abundantly—

"A daughter of the gods, divinely fair,
And most divinely tall,"

(colloquially, "a glorious girl, sir"); which, only requiring in ordinary gardens the smallest share of attention to insure an ample bloom, may be induced by a patient and careful love to reveal its glories under adverse skies—which finally, my Mattocks, is the Queen of flowers, *Rosa Mundi*, perfect, peerless! "*True*," says the French proverb, "*une rose vaut mieux que cent roses*"—the sow would rather have its nose in the swill-tub than smelling the sweetest posy; and he is a hog who does not love the Rose.

There! The hunter has had his gallop round the "*rosea*



Mount Edgumbe.

rura," the nightingale alights breathless in his bower of roses; and we will moderate our pace now, if you please, and pitch our note an octave lower.

But we follow, though more slowly, the same route; the refrain of our song may not be changed, *Rose est Bonheur*, the Rose is happiness!

To review them more calmly and to demonstrate more practically what I have said, I will speak first of the Rose's popularity. In March 1860 I received an application from a society of working men at Nottingham, inviting me to assist at their "Rose Show," which they proposed to hold on Easter Monday. As I had not at that time a Rose-bud in my possession, and never entertained the idea of an artisan with a conservatory, I came to the conclusion that some facetious friend was enlivening himself at my expense, and I wrote back curtly, inquiring what particular roses were so kind as to bloom at Nottingham three months before they condescended to appear in other less favoured localities. The reply, that the flowers intended for exhibition were grown under glass in pots, made me thoroughly ashamed of my incredulity; and on Easter Monday, 9th April, I set forth in a snow-storm, not daring to reveal my mission to anyone—for who was likely to believe me?

and travelled forty miles in all by rail and road for the show. Never was journey more delightfully recompensed. Driving through sleet and sludge to the "General Cathcart," the weather painfully recalling that hero on the hills of the Crimea, I found, to my sudden but complete happiness, a long table covered with roses! Yes, there were our summer sweethearts, fresh and fair, smiling at the hail which pattered against the windows, as though reproving them for their precocious forwardness. Ah, did we not enjoy our stolen kisses, the bright glowing tints, the shining foliage, the delicious perfume! Had we not a genial, joyous time of it, praising and comparing our charmers, and, rose-growers all of us, saying our say without reserve or restraint! Then, after an hour's thorough enjoyment, I went, with the most successful trainer of the day, a bricklayer, and a very pleasant companion I found him, from the race-course to the stables—from the show to the greenhouses, some of them so small that I, being of extra size, and wearing a winter overcoat, was compelled to remain outside, and all of them belonging to working men, who, living in the town, often come long distances, before and after a hard day's labour, to attend to firing and watering, and to wait with an affection, which defies all difficulties, upon their lovely mistress, the Rose. I went home with my heart full of pleasant thoughts, and with my hands full of such winsome flowers as made every passenger in the train livid with envy.

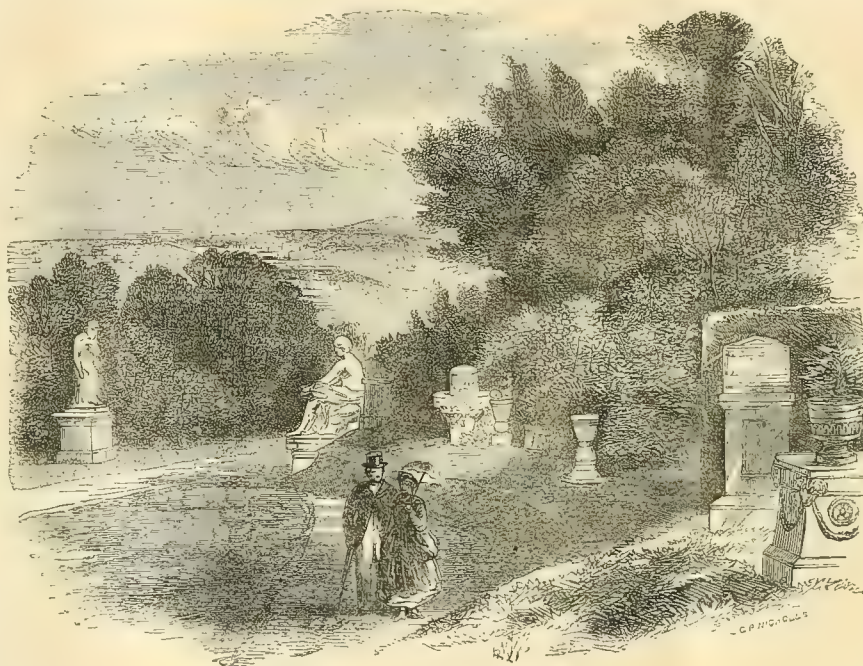
Passing over a thousand intermediate examples, and skipping to the top of the social staircase, let us again suppose ourselves, three months later in the season, at the third national Rose Show in the Crystal Palace. Do you see a lady in mourning, elbowed by the unscrupulous, anxious crowd, but making her way good-humouredly as best she can, evidently charmed with the spectacle, and taking notes with all the

enthusiasm of an amateur? It is the Duchess of Sutherland, it is the Mistress of the Robes, waiting upon the only Queen in all the world more beautifully robed than her own. She bends in fond allegiance, but not more loyally, not more tenderly, not more heartily than those earnest men, who work for their bread at Nottingham.

For duration, in the next place, what flower dare upraise her head to dispute the supremacy of the rose? "Gather ye roses, while ye may," says old Herrick, and with us rose-growers is it not almost "always May?" From that month to December, at all events, from the first blooms of the charming Banksia and of Gloire de Dijon on our warm south walls, until the last Giant of Battles must yield to Jack (the Giant-killer) Frost, we subjects of Queen Rosa may wear in our button-holes "of loyalty this token true." Whatsoever the weather in the intermediate months, however "deformed by sullen rains," or by continuous drought, a rose tree, in good health to begin with, will have its bloom sooner or later; and, because different seasons suit different sorts, some trees in the Rosarium will ever assume for our delectation their most perfect phase of beauty.

Consider, too, not only their diversity of colour—and if

you wish for special examples of this compare Maréchal Niel with Pierre Notting, or the Baroness Rothschild with Xavier Olibo—but also their diversity of form. You may grow the Rose in a thumb pot, with a flower "in shape no bigger than an agate-stone on the fore-finger of an alderman," or you may cover the front of your house with it. You may, in fact, grow the Roses you most like in the form you most like—standards or half-standards, pillars, pyramids, or dwarfs. And I may say here, that I prefer to grow my own roses, generally



Mount Edgecumbe.—View in the Gardens.

speaking, on briars about two feet above the ground, for thus they require no unsightly props, no rain can spoil their blooms by beating them against the wet earth as with dwarfs—their complete beauty is brought at once before the eye, and, being within easy manipulation of the gardener, a symmetrical proportion is more readily attained, and of course more lastingly prolonged. Tall standards are very useful for the back row in borders, or as the centre of beds, but are rarely beautiful in an isolated state. Their most zealous admirers must allow, I think, that the more the briar is concealed the more attractive is the tree—that the more we see of the banner and the less we see of its pole the better; and no opponent of the Standard, though he liked it as little as the Scotch our Standard at Northallerton, could require a more full confession.

Then, as to cost, you may establish a rose garden with the money which is asked for a rare Pinus or Orchid, and may reproduce your favourite varieties on the hedgerow briar or the Manetti stock, by the easy, interesting, and sure processes of budding or grafting, at a very small outlay, and to almost any extent. But be cautious, my Spades, unless you have a taste for rubbish, not to order your rose trees, nor your anything else, from those cheap jacks of the floral market, who profess to be so much more liberal than their neighbours

Buy good razors, Oh, my friends, as ye love to enjoy your breakfasts with a temper smooth as your chin; and buy good rose trees, Oh, ye amateurs, as ye hope to look gladly on your feast of roses, when "the time of roses" shall come. The prices charged by the best growers are quite low enough (and you will believe one who has bought and buys largely) to insure a good article to the purchaser and a fair remuneration to the seller.

For ornamental purposes, as a cut flower, what have we so effective as the Rose—whether in the bouquet of some ball-room belle, herself—

"A Rosebud set with little wilful thorns,
And sweet as English air can make her,"

in the elegant vases of the drawing-room, or, as I most rejoice to see them, in the cups of silver, won by their ancestors, upon the dinner-table and with the dessert? When Horace invites the friends of Plotius Numida to celebrate with appropriate honours the return of that distinguished officer from Spain, he bids them to have abundance of Roses at their feast ("ne desint epulis rosæ"); and when he essays to cheer up Sam, in the person of Q. Dellius, he recommends him to lose no time in giving an order for Roses ("flores amœnos ferre jube rosæ"). Without endorsing his other recipes for driving dull care away, I may sympathise with him, I hope, in his love of the Rose; and I like to fancy him, calling upon his friends to pass the Falernian, and, having previously proposed to them his favourite toast, "pulchræ puellæ, novies honoratæ" ("the Ladies, with three times three"), requesting them to drink without heeltaps (the Latinity for heeltaps is lost) "Vivat Regina Florum" ("Long Bloom the Rose!").

I leave you, dear brothers, in their sweet society. Tend them with all love and care; and then, as surely as from the rose trees of sunnier France comes the glory of our English gardens, you shall rejoice to repeat from a thankful heart,—
"ROSE EST BONHEUR!" S. R. H.

(To be continued.)

THE GARDEN IN THE HOUSE.

BULLETINS OF A FLORAL CELEBRITY.

BEING A REPORT OF THE DAILY STATE OF MARÉCHAL NIEL, FROM AMPUTATION TO THE CLOSE OF THE SIXTH DAY AFTERWARDS.

EVERY lover of roses must feel an interest in the length of time which a cut bloom will endure in its beauty after amputation from the parent plant. Some kinds seem to possess much more vital power than others, and will preserve their freshness longer. Others, again, are so evanescent in their character, that, like the American convolvulus—the Morning Glory—they lose the freshness of their beauty before the first mid-day sun has glowed upon them after their expansion.

Maréchal Niel at the first glance, like *Devoniensis*, and others of its class, might be deemed a flower destined to a very brief existence. The long flake-like petals seem to hang as by a breath—

"So slight, so faint, the slightest gale
Might whirl the leaves on high,"

like the petals of the flower on Zuleika's tomb of which Byron sings; but the apparent slowness of the hold of those gracefully drooping petals on the rim of their calyx is one of seeming only, for they are on the contrary very stoutly set in round the strong margin of their cup of life, and revel in their beauty and gradual expansion during many days.

Thursday, April 18, 1872.—The specimen under description was gathered on this day in a conservatory near Southwell, Notts, from a plant which covered the entire roof, and which was thickly furnished all over with the noble blooms of this truly glorious rose. After amputation, it was carefully deposited in a paper bag, and supported on all sides with cotton wadding, in which state it was put into a safe place in a port-manteau, with the idea that it would reach London by that evening's express.

Saturday, April 20, 1872.—It was, however, mid-day on Saturday before the closely-packed prisoner was taken from his cell, looking none the better for his close quarters. The stalk was then nipped shorter, and placed in tepid water; but the ill-used flower drooped disconsolately over the rim of the glass. The noble foliage (leaves nearly four inches long) persistently flagged, as though making up its mind that such rough usage ought to be resented, and that a refusal to recover should be steadily persevered in. Towards evening, however, there was more freshness in the foliage, and the beautiful flower itself slightly revived, assuming

more firmness, and exhibiting a slight disposition to disclose the beauties of the inner petals to view and display the lovely tones of their deep orange-yellow, rich and glowing as the hue of ardent flame; but still the bloom hung languidly down, and refused to be entirely comforted.

Sunday, April 21, 1872.—The freshness of the night, and perhaps dreams of dew, though there was none, to fall, produced a surprising revival; and this morning, the Maréchal, after having his stalk cropped again, and the great weighty flower supported by an invisible wire-guard, so as not to be dragged down by its own weight, came out literally *en grande toilette*, in "Sunday best," a truly gorgeous flower; and was greatly admired and bepraised as a wonder of floral beauty by all who came to pay their respects. It may be truly said that as the Maréchal lolled in conscious magnificence over the side of the small glass vase, that the most extravagant amount of praise could not have been deemed flattery; and yet the flower was still but a bud—only as yet a half expanded flower.

Monday, April 22, 1872.—After having again passed a cool and refreshing night the Maréchal arose, like a giant refreshed with sleep; and displayed more conspicuously than hitherto the crumpled, quilled, and plaited petals of the deep golden depths of his central focus of beauty. The stately Maréchal was now more than half expanded, and wore the splendour of his magnificence with downright audacity; as well he might.

Tuesday, April 23, 1872.—Continuously increasing vigour was again apparent. The expansion had become nearly complete, and the spectacle of a semi-sphere of golden beauty was revealed, which was the crowning glory of the breakfast table; all that remained to be desired was that the "Autocrat," of that choicest and joyousness of meals were present to describe the spectacle in words of which, at that hour, he alone has the supreme command.

Wednesday, April 24, 1872.—The ultimate glory of full development was completed; rather, over completed, as certain omens of a coming change were revealed, just as the autumn trees disclose by the very splendour of their hues "the beginning of the end." But the grand flower was perhaps more beautiful than ever at that critical stage of its triumphant career of beauty.

Thursday, April 25, 1872.—The field marshal of the roses was still the glory of the breakfast-table, though some of the petals were somewhat too widely spread for symmetry—but—but—the heavy footfall of a late arrival at the breakfast-table brought on, somewhat suddenly, the impending change—the marshal gave up the imperial spirit of his floral reign, and his sheaf of glorious petals fell in a heavy shower upon the snowy cloth, making it veritably a field of the cloth of gold.

Friday, April 26, 1872.—The fallen petals having been scrupulously collected and dried in the penetrating rays of the April sun, were affectionately deposited in that porcelain mausoleum of embalmed flower petals, vulgarly called the *pot pourri*; to which a new perfume was thus added, less luscious than that of the Provence rose, and more like that which Alexander Damas calls the "*parfum arabe de la mer*," shedding around a delicious freshness and ever-unfolding delight of fragrance.

NOEL HUMPHREYS.

STEPHANOTIS FOR CUTTING.

For purity, sweetness, consistence, and durability, orange-blossom is nothing in competition with *Stephanotis*. Seldom of the purest white (unless it be the double-flowering variety), and always liable to be scattered into fragments by the advancement of the ovary, orange blossoms have little but association to commend them as cut flowers. But the *Stephanotis*—who can describe the spotless purity and wax-like consistence of its clustering tubes? And the flowers are as durable as sweet, and seem made to fit into any niche or place where purity or fragrance is wanted. Bunches of *Stephanotis*, set in their own leaves, running round tresses of black hair, would add a fresh charm to the Queen of Beauty herself. As for flowers for button-holes, three tubes of *Stephanotis*, backed against a glossy leaf, are perfection on a black coat. A wedding bouquet is required; it could be formed of *Stephanotis* alone, interspersed with green leaves; but it would be better still were a white *Camellia* forthcoming for a centre, and then bunches of *Stephanotis* intermingled with spikes of *Lily of the Valley*, single flowers of pure white *Azaleas*, finishing with a few *Calanthes*. The bunches of *Stephanotis* as they grow are mostly too large for bouquets. Three or four tubes, with a sprig of green, are sufficient. They must be mounted on wire, and the base of each bunch of flowers should have a tiny cushion of damp moss to rest upon. So furnished, there is hardly any limit to the durability of these flowers. I have known them to keep fresh and sweet for three weeks or more after they were cut and made up.

The way to get a good supply of bloom is to plant several plants out, and let them ramble freely over the walls, ends, or roofs of plant-stoves. Although the plant blooms freely in pots, it is difficult to get sufficient flowers from the limited areas of pot plants. There is, too, another reason for planting out the *Stephanotis* and growing it loosely and almost untrained when practicable, and that is we are enabled in that way to cut branches of it of sufficient length for twining round the stems or handles, or hanging over the sides, of large vases and baskets. Those who have once used it thus will say that in no other way can its full merit for cutting be exhibited.

Useful as it is in bouquets—charmingly beautiful as I have seen flat arrangements of its flowers intermingled with *Myosotis dissitiflora* and fringed with the same so widely as only to show the tips of its glossy green leaves, yet to see the drooping branches laden with their burden of purity and sweetness, and the leaves glistening with artificial dewdrops on their glossy surface!—nothing can well equal it, unless it be the roof of the stove, where it will grow with a luxuriance and flower with a freedom that it seldom attains when grown in pots. Not but that the plant is admirably adapted for pot culture; and this mode of growing it possesses several advantages over any other. For instance, pot plants may be forced out of season, and the plants will bear conservatory treatment when in bloom, thus prolonging its season at both ends. Everyone who has a stove should grow *Stephanotis*, although, to have quantities of blossom, ample space and free growth are requisite. The plant will flower in a very small compass, and will bear a good deal of hard treatment. One of the most free-flowering plants I have ever known occupied the back wall of an early vinery. After the grapes were ripened, the autumn treatment of the house was not modified in any way for the *Stephanotis*. The house received the open-air treatment common to other early vineries—that is, it was exposed as much as usual without being actually unroofed, and this plant never missed flowering. Still I have never seen the plant do well in a conservatory. It was one of the aims of the late Mr. Donald Beaton to convert the *Stephanotis* into a conservatory climber. For this purpose he applied bottom heat to its roots in the fine conservatory at Shrubland for years, and succeeded in flowering it pretty well. But its proper place is the stove. Although it flowers on the current year's wood, yet it should be ripened well in the autumn, and kept tolerably dry during the winter. It then breaks with vigour, and flowers profusely. Though I have given a strong opinion in favour of using large branches of *Stephanotis* where available for decorative purposes, there are few flowers better suited for dinner-table decoration in accordance with the latest fashions than the *Stephanotis*, gathered simply in bunches, arranged in flat glass dishes or slips, and interspersed with tiny bits of scarlet flowers or berries—such as those of *Rivina humilis*, or with blue ones, and fringed with brightly shining green. Few flowers could look better lining, flanking, or encircling centre pieces, while none could be sweeter on the dinner-table than the *Stephanotis*. F. D.

EUCHARIS AMAZONICA AND GRANDIFLORA.

UNLIKE many white flowers, the blossoms of these two useful plants are not easily tarnished; when cut they may be made to do duty as centres to bouquets two or three times, and their perfume is most pleasing. A few stems of the *Eucharis* springing from their own leaves is rich furnishing for a bridal breakfast-table. The effect may be heightened by using *Caladium* leaves in lieu of or mixed with those of the *Eucharis*. The flowers also look superb in larger arrangements combined with some of the higher-coloured *Amaryllides*. The *Belladonna Lily* is perfect in conjunction with the *Eucharis*. Some of the *Narcissi* also blend or contrast well with its large pure white flowers. In flatter arrangements, single flowers of the *Eucharis* are very effective. We partially fill flat dishes of glass with water, and float *Begonia* or *Caladium* leaves of different colours over their surface; on or among these the *Eucharis* blooms are dotted at regular or irregular intervals, and the effect is truly beautiful.

But the *Eucharis* is emphatically a flower for bouquets. Three blooms for the outside would raise any bouquet far above mediocrity. Combined with *Camellias*, either as centres or intermittent fringes, *Eucharis* flowers are magnificent. Leaves of the lovely *Caladium argyrites* form the best fringe for bouquets in which *Eucharis* flowers predominate. They fit in, harmonise with their character and form, and, if possible, lend fresh charms to their sweetness and beauty. It seems probable that the *Eucharis* will soon be considered as indispensable for bouquet work as *Lily of the Valley*, *Violets*, or *Stephanotis*, and that thousands of it will be grown for this purpose. Few plants can be easier cultivated than it is, and it has the merit of blooming many times in one year, if not perpetually. D.

GRASSES FOR TABLE DECORATION.

WE shall soon be able to avail ourselves of the bloom-spikes and leaves of grasses for the ornamentation of vases, and doubtless I am not singular in entertaining pleasurable anticipations of the time when these graceful adjuncts to a bouquet are again at our command. When *Camellias* are over, *Roses* are nearly ready to take their place in our flower-vases; when the long summer reign of these is coming to a close, *Dahlias* and *Asters* are at our call for similar uses, and these

again are succeeded by *Chrysanthemums*, which carry us on until *Camellias* are ready for us again. But flower-spikes of grasses, which are coming in during May, are at their best all through June, and are getting scarce towards the end of July; what is there, therefore, that can fill their place at other seasons of the year? Literally nothing; let us, therefore, make the most of them while they last.

Grasses certainly have been more used during the last few years than previously for vases, *i.e.*, if the competitions for table decorations at our flower shows may be taken as indicating the style of the period. At the same time I feel sure that they might be much more used than they have yet been. In the engraving which accompanies this, it will be seen that grasses predominate over all the other types of



Vase decorated with Grasses.

flowers and foliage; and the general effect can hardly be surpassed for grace and elegance.

The fashion of the day to value plants more for their rarity than for their intrinsic beauty, will, no doubt, account for the want of attention that has hitherto been paid to many wild plants of common occurrence suitable for decorative purposes. There are many foreign grasses of an exceedingly graceful character which might be grown in pots, and thus made available for conservatory uses as well as for bouquets and vases; and if some of our enterprising nurserymen would only advertise them at half-a-guinea a plant there might be some hopes of obtaining for grasses generally, and for our wild grasses in particular, a greater appreciation of their merits than is at present bestowed upon them. W. T.

Violets in Moss.—Allow me to add another plant to the list of things mentioned by your correspondent "W. T." (p. 410) for the arrangement of *Violets*, namely, the moss *Hypnum splendens*. No wiring is needed, and the operator may place flowers or leaves just where he pleases; I could fill a large saucer in a quarter of an hour. I pull the moss into pieces, rejecting the lower part, which is brown; I then lay it lightly in the saucer, raising the middle, to give it a convex form, and put in my flowers and leaves as described by "W. T." If the moss is allowed to hang a little over the edge of the saucer, it gives a very elegant finish; but it has this objection, it conducts a quantity of water out of the saucer on to the table. This may be got over, by placing the saucer on a neat plate (say, of glass), with a few bits of moss in the space between.—T. SMITH, *Teignmouth*.

COVENT GARDEN MARKET.—May 10th.

Flowers.—Among flowers in pots, are different kinds of Polygalas; Eriostemons; Petunias, both single and double; Pelargoniums, double-flowered, fine-leaved, and others; also small Hydrangeas, with immense heads of bloom, in some instances blue, owing to their having been grown in peat or iron soils. In addition to these there are also Rhodanthas, Lobelias, Heliotropes, and different kinds of Cacti in flower; Heaths, Gardenias, Calceolarias, Fuchsias, Gloxinias, &c. Cut flowers consist of Roses in great variety, sprays of Orchids, Eucharis, Stephanotis, single and double Deutzias, Schizostylis, Ranunculuses, Anemones, Bouvardias, Narcissi, Mignonettes, Pinks, Paeonies, and various fine-foliaged plants.

PRICES OF FRUIT.

	s.	d.	s.	d.
Apples ½ sieve	3	0	6	0
(Sale falling off, gooseberries taking their place.)				
Cherries per box	6	0	10	0
Chestnuts bushel	8	0	15	0
Filberts lb.	0	6	1	0
Cobs lb.	0	6	1	0
Grapes, hothouse ... lb.	8	0	15	0
Lemons 100	7	0	10	0
Oranges 100	4	0	10	0
Pine Apples lb.	8	0	12	0
Strawberries oz.	0	9	1	3
Walnuts bushel	10	0	25	0
ditto per 100	1	0	2	0

PRICES OF VEGETABLES.

Artichokes per doz.	4	0	6	0
Asparagus per 100	4	0	8	0
Beans, Kidney per 100	1	6	2	6
Beet, Red doz.	1	0	3	0
Broccoli bundle	0	9	1	6
Cabbage doz.	1	0	1	6
Carrots bunch	0	6	0	0
Cauliflower (hand-glass) doz.	8	0	12	0
Celery bundle	1	6	2	0
Chilies per 100	1	6	2	0
Coleworts doz. bunches	2	0	4	0
Cucumbers each	0	6	1	6
Endive doz.	2	0	0	0
Fennel bunch	0	3	0	0
French Beans per 100	1	0	3	0
Garlic lb.	0	8	0	0
Herbs bunch	0	3	0	0
Horseradish bundle	3	0	4	0
Leeks bunch	0	2	0	6
Lettuce (Paris cos) each.	0	4	0	8
Mushrooms pottle	2	0	3	0
Mustard & Cress, punnet	0	2	0	0
Onions bundle	2	0	4	0
pickling quart	0	6	0	0
Parsley, doz. bunches	3	0	4	0
Parsnips doz.	0	9	1	0
Peas, Continental, quart	3	0	5	0
Potatoes bushel	4	0	6	0
Kidney do.	4	0	6	0
Radishes doz. bunches	0	6	1	6
Rhubarb bundle	0	6	1	0
Salsafy do.	1	0	1	6
Savoy doz.	0	9	1	0
Scorzoneria bundle	0	9	1	3
Seakale basket	1	0	2	0
Shallots lb.	0	4	0	6
Spinach bushel	3	0	4	6
Tomatoes small punnet	3	0	0	0
Turnips bunch	0	3	0	9

SOCIETIES, EXHIBITIONS, &c.

ROYAL BOTANIC SOCIETY, REGENT'S PARK.
(MAY 8TH.)

UNGENIAL weather had apparently its effect upon this, the last of the spring exhibitions this year, for it was scarcely so fully supported as might have been expected. There were, however, excellent collections of Roses in pots, bearing abundance of blooms of the finest quality. Besides those in pots, several stands of cut Roses were also present, large in size, and distinct in colour. Amongst Teas, Marechal Niel stood pre-eminent, accompanied by President, a pink flower of wonderful size. Associated with these were also Souvenir d'un Ami, Climbing Devonians, the well known Gloire de Dijon, and Mme. William, with light yellow, very double flowers. Among Hybrid Perpetuals we noticed Charles Lefebvre, large, rich, velvety, crimson, Duke of Edinburgh, Victor Verdier, Therese Levet, Centifolia rosea, and others. Azaleas, the glory of May shows, were well flowered and extremely beautiful, especially half a dozen large plants trained pyramidally; another half-dozen smaller plants were also densely flowered, and trained so as to completely hide their pots. Other specimens were poorly represented, except a little plant of *A. punctata* rosea, with brilliant blooms; this was more like a large closely packed bunch of cut flowers than a plant growing in a pot. There were several specimens of *Boronia*, *Eriostemons*, *Clorodendrons*, and *Chorozemas*. *Chorozema varium illicifolium*, although not so large as some of the others, presented a graceful thriving appearance; Heaths, *Dracanas*, variegated *Yuccas*, and similar plants were also furnished. Also *Agave Roeziana*, a fine sharp-spined species, and *A. Regelii macradantha*, with large thick leaves, and strong formidable-looking, crooked spines; *A. Peacockii*, a smaller kind than the former, with crooked spines; *A. elegantissima*, a beautiful pale green glaucous sort, the margins of the leaves of which are densely covered with a line of short spines, inclined towards the heart of the plant, the leaves terminating in acute, sharp points; *A. Besserianna amena*, a smaller kind, with strong spines; *A. Gibbsii*, with short, broad, thick leaves, attenuated by a long, sharp spine, a few being along the margin; and *A. Besserianna glauca*. *Primula japonica* (Paul & Son) was shown, with four flower spikes on one plant, the foliage of which was most luxuriant, each leaf being about six inches across, and the plant about two feet in diameter. It produces seed plentifully. Among herbaceous plants was a grand collection with variegated foliage, including a splendid group of *Funkias*, and other interesting subjects.

First-class certificates were awarded to *Agave Peacockii*, to *A. elegantissima*, to *A. Regelii*, to *A. Regelii macradantha*, to *A. Gibbsii*, to *A. Besserianna glauca*, and to *A. B. amena*, all from Mr. J. Croucher, Sudbury House, Hammersmith; to *Adiantum amabile*, to *Croton lacteum*, to *Epidendrum pseud-Epidendrum*, to *E. syringothrysus*, and to *Acer polymorphum dissectum* from Messrs. Veitch, Chelsea; to *Macrozamia McKenziei*, to *Zamia cycadifolia*, to *Agave Regeliana*, to *Rhopala elegantissima*, and to *Stock Purple Queen*, from Mr. B. S. Williams, Upper Holloway; to *Hedera conglomerata*, to *Pimelea Hendersonii alba*,

and to *Pelargonium elegantissimum*, to *Iris iberica*, var. *Perryana*, to *Funkia japonica aurea*, to *F. Fortunei*, from Messrs. T. S. Ware, Tottenham; to *Pelargonium*, Lord Bacon, and to *P. Guinevere*, from Mr. Wm. Paul, Waltham Cross; to *Polystichum angulare proliferum* Henleyi, to *P. angulare variegatum*, to *Hedera conglomerata*, and to *Pelargonium* Emperor, from Messrs. Ivery & Son, Dorking; to *Azalea Alphonse Lavallee*, from Messrs. H. Lane & Son, Berkhamstead; to *Cordylina lentiginosa*, from Messrs. Carter & Co., High Holborn; to *Pelargonium* Prince Charlie, from Mr. Porter, Sion Lodge, Isleworth.

Prizes were awarded for Herbaceous Stove Plants, first to Mr. G. Wheeler, Regent's Park; for Roses in pots, first to Messrs. Paul & Son, Cheshunt; for Calceolarias first to Messrs. Dobson & Son, Isleworth; for Azaleas (nurserymen) first to Messrs. Lane & Son; for Azaleas (amateurs) first to Mr. Hill, gardener to H. Taylor, Esq., Avenue Road; second to Mr. Wheeler; for Alpine and Bulbous Plants first to Mr. T. S. Ware.

Miscellaneous prizes included one to a group of Maples, and a silver medal to a group of Roses, from Messrs. Veitch; a bronze medal to a group of Roses from Messrs. Paul & Son; a similar award to a collection of cut Roses, and a silver medal to a collection of Pelargoniums from Mr. Wm. Paul; a silver medal to a group of plants from Messrs. E. G. Henderson & Son; a silver medal to a collection of plants from Mr. B. S. Williams; a bronze medal to a collection of hardy variegated foliage plants; extra prizes to a stand of Pansies, a stand of Pyrethrums, and Bedding Pansies from Mr. T. S. Ware; a silver medal to twenty flowering plants, and a bronze medal to a collection of foliage plants from Mr. Wheeler; a similar award to a collection of plants from Mr. James; extra prizes to a collection of Calceolarias, and also to a stand of cut blooms from Messrs. Dobson & Son; and special certificates to a collection of *Tropæolum Lobbiai*; and a collection of cut blooms of hardy spring flowers from Mr. Porter.

DINNER-TABLE DECORATIONS BY GASLIGHT AT
THE BIRMINGHAM HORTICULTURAL SHOW.

I WISH to direct attention to this class of "exhibits" in the schedule of prizes in which it stands as follows:—

"Class 145, dinner-table decorations by gaslight. Dinner-table completely laid out for fourteen persons, and arranged so as to show the best means of utilising fruit and flowers in its adornment. The "exhibits" will be judged and exhibited by gaslights. Open. Prizes, £20, £15, £10, £7."

I find some misapprehension exists as to the time when these dinner-table displays will be exhibited, the words "by gaslight" having led some to suppose that they are to be seen in the evening only. This is erroneous. They will be exhibited in the daytime in a tent specially constructed so as to exclude daylight, and which will be lit with gas, the object being to show what plants and flowers are best adapted for decoration by artificial light, the light by means of which such decorations are usually seen in this country. The regulations for this class will be found on pp. 7, 8 of the schedule, copies of which I shall be happy to send on application. Much interest has been excited respecting this class, and I have no doubt that it will prove one of the most interesting in the exhibition. Entries close for it on Wednesday, the 28th instant.

EDWARD W. BADGER, Hon. Sec. (Local).

"Midland Counties Herald" Office, Birmingham.

Asphalte Paving.—The Metropolitan says that this paving appears to be becoming popular in the City, in spite of all the criticisms to which it has been subjected since its first introduction. As far as can be judged at present there is little to choose between the four kinds of asphalte which have been tested, or are to be tested, by the Corporation. The inhabitants of Bishopsgate Street Without have petitioned for the repavement of their roadway with asphalte, and the inhabitants of Walbrook have laid a similar memorial before the Commissioners of Sewers. Mr. Hora gave notice on Tuesday last at the Commission of Sewers that he would move at the next meeting that Houndsditch, which is now in a dangerous state, should also be paved with asphalte. The Streets Committee has further reported in favour of paving the carriage ways of Lothbury, Bishopsgate Street Within, Leadenhall Street, and Gracechurch Street with asphalte. In a short time, therefore, we may expect to see all the principal thoroughfares in the City paved in this way.

ANSWERS TO CORRESPONDENTS.*

G. P. (It is intended that THE GARDEN shall be bound up in half-yearly volumes, each of which will be furnished with a full and comprehensive index.)—M. C. (Rough tarpaulin, mailed on light frames about eighteen inches wide, is the cheapest temporary covering for the dangerous months.)—P. I. N. (The Manetti stocks budded last summer should have been headed down early in March; it is late now, but still they had better be done at once.)—A. B. KELSO (Thanks.)—R. M. (Burnt material, either clay or sand, acts only mechanically on soils with which it is incorporated.)—P. (The double-flowered variety of *Saxifraga granulata*.)

* All questions likely to interest our readers generally are answered in the several various departments.

TRIAL OF BOILERS AT BIRMINGHAM.

FIRST and foremost in this proposed trial comes the fact that no iron boiler, whether wrought or cast, displays its real working capabilities until the same has been in operation for *hours*, and I should not exaggerate if I said *days*, after fixing; therefore if the proposed trial is to continue but for *one* or *two* hours, how are the real merits of each boiler to be correctly recorded?

Second.—The quantity of fuel consumed during the first day or two, to produce certain results, is not a correct index of the future daily consumption required to maintain the same. How, then, can a verdict be pronounced upon the very important point of "economy of fuel"?

Third.—With reference to "night stoking." By what process of reasoning can this be adjudicated upon, if each boiler is to be in operation for one or two hours only?

Fourth.—"Economy of labour" is an attribute claimed by more than one maker of boilers for his pet production, and I ask whether a period of less than twenty-four hours' work will yield any practical proof of the daily labour each respective boiler absorbs?

Fifth.—Boilers "foul"—some more quickly than others. It is only a question of degree; but this is just the thing which vitally affects their maintenance of working power, consumption of fuel, and labour in attendance. It is not the trial of an hour or two's duration that will test this.

Lastly.—In so short a time it is impossible for a boiler to demonstrate the command it possesses over its work, and the niceties to which it can be regulated, by producing first a slow circulation, and raising to a great rapidity in cases of emergency. In short, I venture to submit that a trial to be of any value must necessarily be extended over a period far exceeding that assigned to the forthcoming meeting at Birmingham; and if it be worth undertaking at all, it is surely worth doing well.

The trial should be conducted, in my opinion, as follows:—Neither the temperature of the water in, say one thousand feet of pipe, nor that of a conservatory or room, would be of any avail for this purpose, on account of the influences from the external temperature to which these would be subjected. I propose, therefore, to provide an iron tank holding not less than fifteen hundred gallons, fitted with top manhole and plate, all well secured. To fit the same upon a platform elevated ten feet from the ground, so as to avoid the necessity of sinking a stoke-hole. This tank to be enveloped in a wood casing consisting of inch deal, leaving a cavity of three inches on all sides to receive a packing of sawdust, so as to effectually exclude all influence of external temperature; pierce the tank where most convenient at top, and insert a kind of bottom-heat thermometer about three to four feet long, having its bulb two feet in the water with the index exposed, which should be read at stated intervals, and all its variations recorded by properly appointed authorities. Within the tank, and worked from the top, should be placed a kind of plunger to be worked to and fro at stated periods for the purpose of thoroughly mixing the water and producing an uniform temperature throughout the tank. An air pipe to be fixed at top, and a small tap at the side, about four inches down, the former to allow of expansion, and the latter to show the quantity of water in the tank. Bolt on the flow and return nozzles, and extend the same through wood casing, leaving all other connections to be made by each competitor, the tanks would thus be ready to receive the water and commence operations. The distance between boiler and tank to be not less than one hundred and thirty feet, and if one hundred and fifty feet so much the better. Taking it at the former measurement, the top of each boiler should be fixed at a level not exceeding twenty inches below the bottom of the tank, which would give a rise of about one and a half inches in ten feet to the flow pipe.

The fall of the return pipe need not be necessarily identical with that of the flow, so as to render them parallel throughout. Opinions differ upon the advantage of such an arrangement; and, therefore, I would leave it optional with the competitors to adopt whatever plan they thought best. Every competitor should cause his own boiler to be fixed under his personal superintendence, or that of his representative, for which he shall be responsible; also, one or the other of them should be allowed to work the boiler during the entire trial. No results to be recorded by any interested party, except for their own private use and information, but not for circulation. After having clearly defined, by rules and regulations, the relative position and level which each boiler shall occupy in relation to the tank, the size, number, and form of the circulating or connecting pipes between boiler and tank should be left to the decision of the competitor, each competitor being at liberty to remove those used for any former trial, and substitute for them any special arrangement of his own, so as to meet the requirements of his boiler.

For obvious reasons, however, it would be necessary that each

competitor should at the time of making his entry lodge with the authorities a proper plan and specification, setting forth in the clearest terms his proposed plan of fixing the said flow and return pipes; also the number and size of each, together with the level of return pipe; and from this statement and plan, no deviation under any circumstances should be permitted at the time of preparing for the trial.

Such is an outline of my suggestions, which of course require to be supplied with details, a work not difficult to do, if the Society will but declare itself in favour of a properly organized boiler trial.

S.

VEGETATION IN SARDINIA.

FEW countries charm the eye more by richness of foliage, abundance of blossom, and profusion of flowers, than Sardinia does. From the almost virgin forest on the higher mountains down to the fertile and often unhealthy valley where fruit and flowers are produced with tropical luxuriance, the varieties are endless—oak, cork and olive, almond, peach, orange and lemon, fruit trees of all kinds, groves of silver aspen, fig-trees growing up everywhere, in the vineyards and by the roadside, and then the hedges covered with an extraordinary wealth of wild flowers. For miles together the waste land, of which there is much on either side of the railway, is covered with a luxuriant growth of the pale pink asphodel, just as are large tracts of ground between Rome and Civita Vecchia. In the valleys one comes upon orange plantations, generally under the shelter of rising ground, for shelter and water are indispensable to the orange, and the side of the tree exposed to an inclement wind is often bare of fruit when the other branches are plentifully loaded. The arbutus, the oleander, the myrtle, the Judas tree, grow wild in abundance, the fruit of the first-named supplying the dessert-table, while the berries of the myrtle fatten and give flavour to the birds. In the spring, however, it is remarkable how few birds are seen in the country, at least in the districts I lately traversed while in the mining regions none whatever were visible. Up to the very mouths of the mines and all over the mountains, on every ledge of rock where a few grains of earth afford roothold, spring myriads of a dark pink cyclamen, one of the delicate treasures of English green-houses; and up to the very tops of the hedges in the valleys the beautiful blue *pervenche* (Periwinkle), twice as large as any I have seen even in North Africa, where it abounds, trails itself in extraordinary profusion, mingled with a small crimson flowering vetch. The wild lavender, the orange marigold, an immense variety of orchids, the azure bloom of the borage family, cover the banks, and I must not forget the white heath, a very beautiful sort with black stamens, which grows as big as a good-sized cherry tree, and excited the admiration of the Scottish members of our party. The garden stock grows wild in some parts of the island, particularly the blue Alexandrian stock; the cactus is everywhere, with its dangerous prickles and its mawkish fruit sprouting out of the edge of its leaves, amid which sit small frogs of the most brilliant green, contrasting with the darker and duller hue of the fleshy plant.

Curious Site for a Thrush's Nest.—There are now to be seen in Heywood Gardens, Westbury, Wilts (the property of Mr. H. G. G. Ludlow), two thrushes' nests close to each other, containing four eggs, and each in a Scotch kale.—*C. Squires, in "Field."*

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"This is an art

Which does mend nature : change it rather : but
THE ART ITSELF IS NATURE."—*Shakespeare.*

HOME LANDSCAPES.

GARDEN BEAUTY IN MAY.

(HYDE PARK AND KENSINGTON GARDENS.)

 LONDON smoke, as the great sea of houses spreads further and wider, is beginning to tell with sadly destructive effect upon the early spring foliage of our streets and squares. Till quite recently, for a few short weeks in early May, the great city was enlivened with the many soft and bright hues of fresh young leaves of numerous kinds; but now, even in the open, airy regions of the spacious terraces and crescents of Bayswater, as the plague of building spreads around, swallowing up grassy meadows and green lanes without the least remorse, the freshness of the spring foliage has become an affair of days, instead of weeks.

Fortunately, the noble area occupied by Hyde Park and Kensington Gardens seems at present to defy the smoke fiend, and, from whichever side approached, the first glimpse of the noble old trees, with their massive trunks and arms clothed with their new mantle of green, and the luxuriant foliage of the younger plantations, are, just now, a sight to gladden the eyes and cheer the heart. Entering by the gate in the Bayswater Road, the picturesque leafy forms of the weeping hornbeams, and the aspect of the young horse chestnuts, with their broad and massive foliage, and their great spikes of flower just bursting into bloom, form charmingly luxuriant groups; and following the line of the shrubbery that continues as far as the Marble Arch, other combinations occur that are quite as attractive, with weeping birch and variegated sycamore, and other trees, all equally redolent of the green youth of the year. The laburnums, with their golden rain of streaming blossoms, are partially over; except where, nestling deep among the larger trees, they are shaded from the direct sun rays; and in such situations they are still in all their beauty. The Persian lilacs, also, are past their best, and there are too few of them in this shrubbery; but they are not missed just now, in the midst of the hundred forms of freshly expanding foliage, which are thickening and spreading every day. The white Portugal broom plays its part very gracefully in this plantation; but why is our fine native broom absent, with its rich golden blooms?—the "plante-a-genet," which was the crest of our Anglo-Norman kings. It is a national plant, and ought to be conspicuous.

The general plan of this belt of fine young trees and shrubs is extremely well conceived; part being densely filled up between the trees with shrubs of a lower growth, while alternate portions are entirely clear of any underwood whatever, and the trunks of the handsome young trees rise direct from the turf, producing a Savannah-like effect of the most pleasing kind. This effect, too, is seen at its best, in consequence of the turf being protected by a slight iron fence, which prevents the destructive feet of shoals of nursemaids and multitudes of children from treading out the life and freshness of the young grass.

With respect to the flowering herbaceous plants in front of the dense shrubberies, they are neither so well selected nor so numerous as they might be, the patches are scanty, and the variety insignificantly small. Nevertheless, the golden tufts of yellow Alyssum, and sparkling white Iberis, and some

big clumps of purple Iris, with, here and there, touches of deep orange from a few early marigolds, varied by some patches of red Valerian, give us glimpses of floral colouring that are exceedingly pleasant to see.

So far my May ramble in the park was satisfactory; for the freshness of spring, wherever its flowers and foliage are furnished forth with taste, however scantily, disarms horticultural criticism. But along the strip parallel with Park Lane—from the Marble Arch to Apsley House, the portion of Hyde Park devoted to flower-gardening on the bedding system—there was no display at all, either scanty or otherwise. This in mid-May—the month of flowers—seems utterly inexplicable; and yet it is most true. There are the long lines of beds—lately so gay with tulips, hyacinths, and crocuses—absolutely barren, with the dead and mouldy remains of the plants lying rotting on the ground. It may, perhaps, be urged that the beds are waiting for the time of planting-out the geraniums, and verbenas, and calceolarias. Very good; we shall be glad to see those never-failing favourites in due time; but why this hiatus in the middle of May, while there are such abundant means of filling these beds attractively between the tulip and geranium seasons? What more gorgeous effect, for instance, need be produced than a bed of giant purple stocks, alternating with beds of white ones—the edgings to be of the common saxifrage (the favourite London Pride), now in full bloom, or white Iberis, or of yellow Alyssum? And, then, what brilliant effects might be produced to vary these colours by means of double wallflowers, the rich brown kind to be furnished with an edging of pale blue pansies, and the golden yellow with a rich purple variety! I can fancy no finer effects than these combinations might be made to produce in order to fill the gap which is here allowed to become so disagreeably conspicuous between the early spring show and the planting out of the half hardy things for the summer and autumn display.

Going across from the Achilles statue towards the southern end of the Serpentine, the silvery gleaming of the water, seen between the trunks of the fine old elms, and the pale olive foliage of some young poplars, was very charming, backed as it is by the woods of Kensington Gardens, softened into the distance by a sunny veil of thin May mist. The enclosures in this part of the park, in which the turf is kept mown, are a very pleasing feature, beds of the tropical-looking Yucca and masses of Rhododendrons, some of them in full bloom, doing duty with marvellously good effect.

The rockwork and the valley with a winding brook-like streak of water, are features which are just now seen to great advantage, the grass of the valley wearing its freshest green. It is kept nicely mown, and the simulated stream is bordered with occasional masses of rock, entirely clothed with ivy, which make a very pretty picture. The rockwork, strictly so called, is certainly open to criticism. The "rocks" composed chiefly of over-burnt refuse bricks, are decidedly offensive where the vulgar material is left conspicuously bare; and there are a few disfiguring spruce firs, which, having been stuck in places where it was impossible for them to grow, are already quite dead, and ought to be removed. Dwarf furze is flowering upon this so-called rockwork in wide patches; the pretty London Pride enlivens it with its sparkling spikes of pink and white flowers; and Vincas, blue and white, with many other spring flowers, make it very gay and full of colour.

Round the south end of the Serpentine, where a few years ago there was only a bare brick wall and an ugly stone coping which formed the termination of the water, there has been much improvement. A sloping bank of green has been contrived, which is beautifully kept, and so soft and velvety-looking is the turf that the stately swans were tempted from the water on the morning of our ramble, and lay basking on the green slope with most picturesque effect; making a fine contrast of colour to the great clumps of dark-leaved Rhododendron, partially in flower, with which portions of the green bank are studded.

In Kensington Gardens, the bridge walk, where it becomes a long flower walk, is just now the most pleasing feature. The hawthorns—white and red, double and single—are in all their beauty, and fill the air with fragrance; and to add to the charm, thrushes and blackbirds are singing loud and

cheerily, as well as several kinds of migratory birds, that only visit us for the spring and summer months. There is nothing finer in Europe than this long, partially shaded walk, with its front borders of gay flowers, the shrubs behind, chequering the warm-toned gravel with their soft grey shadows, that move and dance and change their shapes with every breath of wind. At two or three points, breaking forward from the line of shrubs, are weeping hornbeams, of picturesque growth, which form irregular arches athwart the path; and beneath these green arches the passing to and fro of the gaily-dressed crowd makes just the kind of picture that Watteau would have delighted to paint.

The flower borders on each side of this delightful walk are profusely furnished with the ordinary flowers of the season; great masses of Iberis, dazzlingly white; clumps of pansies, purple, yellow, and lilac; and fine single pæonies there are, but not enough of them; and why only the crimson variety? and why no double ones—those glorious carmine spheroids that loll over the box edgings of old-fashioned gardens with such imperial splendour? Yet, notwithstanding the absence of these aristocrats of flower borders, there are many grand old favourites enjoying themselves this fine May day along the sides of the Kensington "flower walk." There are also a few new ones, especially several varieties of a very attractive new anemone, which shows that the authorities who rule over the arranging of these pleasant walks of our great city parks are not sleeping. In short, although it is said that the funds are so very grudgingly supplied, Hyde Park and Kensington Gardens afford a very fair sample of "garden beauty in May," and they will do still better in June.

May 13, 1872.

NOEL HUMPHREYS.

NOTES OF THE WEEK.

— ONE of the most curious phenomena connected with the late eruption of Vesuvius has been its effect on the trees. The heat of the lava was so great as actually to boil their sap, and to cause them to emit noises of the strangest character. A moment later and they were destroyed.

— A NEW fountain has been opened in the broad space in the central transept of the Crystal Palace. It throws up an extremely high jet, and the water falls in a graceful shower, which, when the sun shines on it, has a charming effect. This fountain is surrounded by flowers and foliage plants, and is a welcome acquisition.

— At a late meeting of the Linnean Society, Mr Miers exhibited a textile material, says *Nature*, which he had received from the Brazilian Government, and which it was thought might, to a certain extent, become a substitute for cotton. It is a product of the liber of a climbing plant of unknown relationship, and can be procured in any quantity, furnishing a fibre of very strong and silky texture.

— HYDE PARK is said by Mr. Jacob Larwood to have been first opened as a pleasure ground to the public by Charles I., some time before 1637, and even up to the close of the wars with Napoleon, it retained its rural appearance. "Cows and deer," we are told, "were grazing under the aged trees; the paths were few, and none told of that perpetual tread of human feet which now destroys all idea of country charms and associations."

— At a late meeting of the Royal Botanic Society, the secretary reported the receipt of several seeds of the South American india-rubber tree (*Siphonia elastica*) from Para, Brazil, in fine condition. This tree, although supplying the market with the most valuable samples of india-rubber, is scarcely known in Europe, and it is doubtful, it is said, whether a specimen is alive in any garden in England at the present moment.

— THE *Maidstone Journal* says the fruit crop this year appears to be almost a total failure in most districts round Maidstone. The earlier sorts of cherries were cut up by the severe frosts, but of the later ones there is a probability of an average crop. Gooseberries and currants have been great sufferers from the weather. With the exception of a few favoured spots the crop of plums will also be short. Apples have blossomed very badly this year, and are likewise suffering from an attack of maggot. There is every appearance at present of the filberts being attacked by the caterpillar, as they were last year, but, as in some districts the trees are looking strong and healthy, they may eventually escape. Considerable damage was done by the severe frost on Saturday night last.

— THE climate of Shetland has generally been supposed to be little better than that of Iceland, whereas the mean winter temperature is higher than that of Edinburgh. It is a remarkable fact that the winter climate of the west coast of Britain, everywhere higher than that of the east coast, scarcely varies from the south of Wales to Shetland. The winters of Shetland are so mild that snow never lies long, and the lakes and ponds are rarely frozen so hard as to bear a man's weight.

— WOODEN pavement is now stated to be superseding the asphalt paving in Paris. This is what is called the patent Ligno-mineral paving of Trenaunay's system, and was reported upon by the French engineer, Alphand (Baron Haussmann's right-hand man), as having satisfactorily undergone very severe tests. It has also been used on the bridge at Rome; and we understand that the agents in this country have made arrangements with the City Commissioners and their engineer, for paving a portion of Gracechurch Street, adjoining the new asphalt roadway, with blocks of Ligno-mineral, at 12s. 6d. per square yard.

— CAPTAIN HALL, the Arctic Explorer, says the *New York Times* has obtained evidence that a genial atmosphere prevails at times in the extreme undiscovered north. For instance, it is asserted that plants were found in the ice which are indigenous to southern climates, and that a floating stick of wood was met with in the middle of January, which proved, on examination, to be a limb of a huge birch tree. But stranger than all is the statement that Captain Hall was able to sit on deck all through the night of the 14th of February reading, writing, and making lunar and astral observations. After this it is not surprising to be told that throughout the whole month of January little ice was seen, and that each night the sky on all sides glittered with meteors of the most gorgeous description.

— THE island of Majorca abounds in fruits. These consist of olives, grapes, almonds, oranges, figs, lemons, raisins, nuts, capers, and the fruit of the cactus, or "prickly pear." The principal harvest, however, is gathered from the almond tree, the cultivation of which is a source of great profit. No part of the tree is wasted; with the use of the inner kernel of the fruit we are all acquainted, but even the hard outer covering forms capital fuel for small stoves. Then, the outside of the fruit is largely used in the manufacture of almond soap; and when the tree itself is cut down, the stem is manufactured into household furniture. As regards appearance—who could fail to be impressed with the beauty of a field of almond trees in full flower? Seen from a hill, the trees look as if covered with minute flakes of snow, while by moonlight the same effect is rendered still more striking.

— It is proposed to build a grand marine aquarium at Manchester, the funds for the carrying out of which, are to be raised by a company. The building is to contain all the recent improvements shown to be necessary at the Crystal Palace and Brighton aquaria, and will be rectangular in shape, 120 feet long and 70 feet wide. This space will be divided into two side galleries, each 120 feet long and 15 feet wide, separated from the central saloon by a slight screen. Running along one side of each of these galleries, will be a series of tanks, about eighty in number, forty in each gallery, varying in capacity from 300 to 3,000 gallons. The grand saloon will be also 120 feet long by 40 feet wide. All the windows will be so arranged as to admit only the exact amount of light required, as it is found that an access of light acts upon the higher marine plants and animals in a manner directly contrary to its action upon terrestrial life. It blanches them in a similar manner as ordinary plants are blanched by being earthed up. The most brilliant coloured marine plants are those which live in comparative darkness.

— THE weather was very cold in London on Saturday last, and there was a slight fall of snow and hail. From almost all parts of England the prevalence of cold and stormy weather is reported. At Bristol, on Saturday, the storm of snow, hail, and rain lasted for nearly an hour. While the storm passed over from the darkness was so intense that the tradesmen found it necessary to light the gas in their shops. The flakes were of an extraordinary size, and snow fell incessantly for nearly an hour. There were several other slight falls of snow during the day. Snow also fell in Kent on Saturday, and on Sunday morning there was a severe frost, which has done considerable damage to the potato plants and some kinds of fruit. At Shields on Saturday night the weather was very stormy; the wind was from the north-east, blowing a gale, and there was a rough sea. There were several showers of hail during the day and the air was extremely cold. The weather of Friday and Saturday was very boisterous and cold in North and East Yorkshire, and on Saturday morning snow and hail fell, the hills being quite white. Early potatoes have been destroyed. Many of the market gardens near Paris have suffered considerably, and the same is the case with the vines in the south of France.

THE GARDENS OF ENGLAND.

COMBE ABBEY, COVENTRY.

THESE articles must not be regarded as in any sense descriptions of the places with which they are connected. They are simply notes of observation referring to the most interesting or instructive features of each garden visited, and, as such, may perhaps prove useful to such lovers of gardening as may be attracted to this part of the country by the forthcoming show of the Royal Horticultural Society, to be held at Birmingham. As, however, in the course of our progress through the country many places will be visited of which no sufficient idea could be given by these short notes, it is proposed to describe and illustrate at length all the really instructive and remarkable gardens. This will be done as time will permit for the proper selection and execution of engravings, which will speak to the eye more eloquently than words.

LANDSCAPE AND WATER.

The park at Combe, dotted with its old trees, is a fine one; but, like many others, its beauty and extent are sadly marred by wooden fences and other dividing lines, which could be well dispensed with. Therefore, in point of landscape beauty, it is nothing to what it might readily be made. Its noblest feature is the fine piece of water, which is one of the best artificial pieces I have seen. It is more like an elbow of some broad river reach than what, in parks, is commonly called a lake; but, as regards outline, the mode in which the grass banks approach it, or in any other way, there is not a false line about it. In this respect it contrasts well with the numerous half-stagnant duck ponds which, in the midland counties, are commonly placed under the windows. But—unhappily, there is a very important “but”—some years ago a “moat,” or what is simply a stone-walled canal, was taken from this perfectly natural-looking piece of water straight to the house. It passes close under the walls flanking one side of the Abbey, the drive to the forecourt passing over it. There are many foolish things done by those artists who, instead of meeting modern wants by the best expression of modern skill and knowledge, ignobly imitate the creations of a long-buried past. But, surely, this disfiguring of a noble lake, and this digging of an ugly canal under the walls of a stately house, is the feeblest notion that has ever been carried out in our own day! Let us cherish the past by all means; it is right to preserve every morsel of it that remains to us; but let us not, in startling disregard of the fitness of things, prove ourselves contemptible to all clear-seeing men, and to coming ages, by fudging up a brand-new and distorted likeness of such a thing as a moat—a necessity, if not a beauty, in its own long-buried time. This unhappy canal, with its accompanying walls, completely cuts up and distorts the best sides of the Abbey, renders the highly important need, called by landscape gardeners “breadth,” impossible, spoils the end of the lake nearest to the mansion, distracts with its adjuncts the eye from surveying the old or new portions of the building, and renders necessary certain ugly terraces of earth. These were thrown out of the canal so as to intercept the view of the lake from the Abbey. The landscape features of the garden suffer some what from the large oblong kitchen garden being placed right in the middle of the pleasure grounds; but many improvements are in progress, which, by extending the planted grounds in other directions, will modify this drawback.

TREES.

Here, as in many places in the country, the grand old native oaks are the tree kings yet. They dot the park like giants of a past age, and look on and see generations of men pass away like leaves, much as rocks or old castles do. Fine groups of Scotch fir, which must ever remain one of the princes of the ornamental trees that attain perfection in our climate, share with the oak the glory of the park. The Cedar of Lebanon has done little or nothing for it. The Deodar Cedar seems to thrive better. Of this there is an avenue about two miles long, very few or none of the trees showing signs of the debility they so often manifest. In this long avenue, which is outside the garden proper, it is interesting to see how the Deodar thrives, often overtopped by common forest trees and half choked by briars, or injured by deer. It seems a pity that such a very remarkable avenue of this noble tree—which, by the way, thrives much better in Warwickshire than one would expect from its usual condition near London—should not be enclosed and taken proper care of. None of our most famed arboreta have a finer feature than this would prove if taken care of. The long drive, bordered by these Deodars, seems a capital site for an arboretum. A selection of evergreen and deciduous trees known to thrive well in the midland counties would soon place it in the front rank of arboreta.

The tree mammoth of the Sierras (*Wellingtonia*) thrives apace here, not one of many specimens being diseased or slow-growing.

The giant of the Canadian woods, *Pinus Strobus*, in its own home and in favourable situations one of the noblest trees, does fairly here, there being a good many picturesque old specimens planted some years ago. They usually break into several leaders, and do not form one grand stem, as at home. This is probably owing to the smaller degree of vigour attained under our feeble sun. The tree, however, thrives so well here as to warrant its being extensively planted for ornament. The *Araucaria* also does well, though not quite so well as the *Wellingtonia*; but those fine trees of the northern parts of the Pacific coast, *Lawson's Cypress* and the *Nootka Sound Cypress* (*Cupressus Nutkensis*), seem as much at home as they are on their native hills. There are many hundreds of *Cupressus Lawsoniana* raised from seed, every specimen a fountain of graceful form and perennial verdure.

This kind has been much grown from seeds here, and, like most of the conifers experimented with, always grows much better if undisturbed. Mr. Miller finds they dislike moving more than is commonly supposed. The American scarlet oaks are very fine, and now (May 8th) almost as attractive as clouds of peculiar lemon yellow, as in the “fall” when in the deep flush of their autumnal glory. It is to be regretted that such trees are not sometimes grouped in our parks. Here, in Warwickshire—where our common native deciduous trees form such noble specimens—I saw a *Wych elm* the other day nearly thirty feet round the stem; many fine deciduous trees—hardy exotic trees, that come from countries often colder than our own, would thrive nobly. And if the American oaks thrive as I have seen them do in some of the hungriest lands of central France, as, for example, on M. Vilmorin's old estate, at Des Barres, in Loiret, they may well be expected to become noble trees in the parks where our British oaks attain such stately dimensions and spread out widely and so inflexibly in the teeth of the winds. Here, as in nearly all parts of the country, the Spanish *Picea* thrives well, and proves itself one of the conifers fearless of our climate. The *Virginian Cedar* is seen here, and in other places in the neighbourhood, in tall well-developed specimens, with that close erect cypress-like habit which one sees so often marking the mountains and hillsides of the western parts of New York and many parts of the Eastern States of America, as emphatically as the Eastern Cypress does the cemeteries on the Bosphorus. The value of this very hardy and beautiful tree as a close-growing, tapering one does not seem generally known, otherwise we may presume it would be extensively planted where the Eastern Cypress (*C. sempervirens*) perishes from cold.

A PLEASING FEATURE IN THE PLANT HOUSES.

This is shown in the utilisation of spaces usually unoccupied in gardens—those under the benches to the right and left of the footways through the houses. Here is a large cool house with a collection of greenhouse plants; but over the pathway leans the numerous fronds of a fine collection of British and hardy exotic ferns, planted on each side of it. In a pinery, there are as healthy seams of the Maiden-hair Fern springing from beside the footways as ever graced the rocks by an Italian roadside. Here is a plant stove, in which from the ground beneath the pipes and beside the footway springs a mass of beautiful plant life, with a grace and abandon impossible in pots. The richly-spotted leaves of the *Caladiums*, leaning forth from masses of Maiden-hair and of coral-berried *Rivina*, look more effective than ever they are seen in pots; while here and there the large-leaved palm-like *Panicum sulcatum* gives quite a tropical cast to the little groves that so well adorn the footways. In a warm fernery, tropical species are planted out in like manner, and the result is of the most charming kind. Mr. Miller intends going a step further, and arranging his shelves above these little plantations so that a graceful drapery of plant life may be established thereon. Simple as this kind of improvement is, there is none more desirable. We have too much of the glass shed visible in our hothouses; they are too angular, and contain too many needless disfigurements. It must henceforward be the pride of the gardener to rob these structures of their nakedness, as Mr. Miller has done here in such a successful manner. By planting thus, three things are effected. First: Space usually considered useless is occupied. Secondly: Valuable collections of plants are grown with infinitely less trouble to the cultivator than when they are grown in pots; and, Thirdly: The aspect of the houses is immensely improved. Surely, if so much can be done in a formal lean-to house, we need not despair of doing more in our conservatories and houses specially designed for ornament. There is no way in which we may effect more improvement in our houses than this; and it is not merely the effect which is so desirable, but the immense saving of harassing labour to the gardener which the planting-out system at once secures. Besides, if the temperature is suitable, the planted-out subjects usually do much better than in pots with ordinary culture. In the warm fernery here, the long, feathery, coral-laden and weeping shoots of *Russelia juncea* and the rich crimson blossoms

of the racemose Passion-flower (*Passiflora princeps*) lend quite a novel charm to the grace of the ferns. We are too apt to isolate ferns from every brilliant flower that intensifies their grace. The fernery, outdoor or in, should not be a mere collection of fronds; as in their own haunts they are accompanied by plants the glory of which is in their blossom, so should they be in gardens. Among our choicest hardy plants, there are many, like the white Wood Lily (*Trillium grandiflorum*) and the Mocassin-flower (*Cypripedium spectabile*), which thrive in the very conditions suitable for hardy ferns; and the same may be said of flowering stove plants and ferns.

PALM GRASS (*PANICUM SULCATUM*).

This is the handy English name I propose for a noble palm-like grass now easily obtained in our gardens, but which I have never seen employed to such good effect as in the gardens here. In addition to growing it in pots, Mr. Miller plants it out in the houses in various positions, the result being an effect as good as is afforded by any palm. And it will prove of greater use in our gardens than any palm, because it can be raised from seed as easily and grown as quickly as *Tropæolum* or Indian Corn. The following is Mr. Miller's simple mode of treating it, kindly furnished by himself:—

"Wherever the plant is introduced it grows luxuriantly and seeds freely; the seed comes up everywhere, and if it does so in places where it is not wanted, it is easily removed. When grown in pots for decorative purposes, the effect is as fine as anything produced by the most expensive palms we have. If by exposure or frequent use plants are injured, the loss is not much, as they are easily and quickly raised. A pan of seed sown in a little heat will produce in two or three months nice plants for purposes of decoration. The plant when fully grown throws up leaves from two to four feet long, and a graceful seed stem often to six feet. As to soil, it is not particular, growing equally free and handsome either in sandy loam or peat, or any free soil that may be at hand at potting time. The seed ripens continuously through the summer and autumn, and may be sown at any time."

FRUIT.

The gardens at Combe are among the most remarkable in the Midlands for their extent and good management, and particularly in all that relates to fruit growing and fruit forcing. I have rarely, if ever, seen a garden in which the vine and the peach show more skilful culture or yield better results. There is nothing that is new to say of the system applied to either. As to the peach, it is simply the good old plan of training over the roof that is chiefly employed; the back walls being also covered in each case with fine healthy fertile trees, luxuriating in two or three feet of sound loam on well drained borders, both within and without the house. This good old system, however, and a like one applied to the vine and other fruits, sufficed to carry off the prizes for collections of fruit at the chief fruit shows in the Botanic Gardens, Regent's Park, for three years in succession. Peaches are also grown to perfection in a peach-case sixteen feet high and eight feet wide. This affords as fine an example of perfect peach culture as could be seen, both the erect trellises in front and on the back wall being regularly covered with healthy abundant-bearing trees. All peach-cases are, however, to some extent mistakes. The peach-case seems at first sight a plan for cheaply covering and protecting a wall; it is really one for building a peach-house much less useful to the cultivator than the old lean-to. For there is only room in it to grow the fruit and gather it, whereas the ordinary lean-to, half-span, or span gives as much space beneath the trees as if no fruit were grown overhead, and for half the year we enjoy good light for plant growing in this space. I believe there is only one peculiarity in Mr. Miller's peach culture, he fumigates, before he sees any aphids, just as the infant peach buds are beginning to burst. The orthodox rule is, "fumigate on the first appearance" of that devourer of our hopes. The peach trees at Combe are mostly trained on the Seymour plan, *i.e.*, making all the young and bearing wood spring from the upper sides of the branches. The system of training, however, adopted with the peach is of but little moment. The plan that will cover the walls quickest will one day be adopted by all intelligent growers.

As to the grape—its culture here is of the most superior character, and on the old spur system. Here, again, we have nothing new to say. Mr. Miller does not densely cover his borders with litter, &c., as is often done; nor does he otherwise protect them, considering that, if the borders are in proper condition, the rains do not hurt the vine. That singular and noble-looking plant, the Monstera, reputed to be a valuable tropical fruit, is here abundantly fruited. Planted out pretty near the glass in the pit of a pine stove, and in the full sun, it grows freely, and fruits in half-shady and shady positions in stoves; but the treatment given here is likely to bring out better any virtue or merit this slightly over-praised fruit may possess. The melon here—grown as is now usual in neat low houses—is kept a little cooler than is the rule (60° at night, rising 15° to 18° by day), the result

being a much firmer growth and greater freedom from insects than is common. *Passiflora edulis* is preferred to any of the edible Passion-flowers—as well it may be, for all the other kinds are almost flavourless. Stevens's Cornish boiler has recently replaced a tubular boiler for the heating of all the houses here, and with satisfactory results.

In the open garden the condition of the fruit trees is also admirable. The very extensive kitchen garden is enclosed by walls perfectly covered with well-formed trees, and the walks are margined by numerous large and well formed pyramidal ones. A good many of the trees are also trained in what may be termed dumb-waiter fashion—gradually lessening tiers of evenly disposed branches. These are the best of their kind we have seen in the country. Peach culture in the open air is very much written down nowadays, and is frequently supposed to be impossible. There is a wall of trees here trained on the Seymour plan, every foot of the surface properly covered by healthy bearing wood, which ought to convince anybody of the perfect practicability of growing the peach in the best condition in the open air, in any of the midland or southern counties of England. It is a real loss to progress in fruit culture that any such idea should have ever gone forth. It is no wonder the amateur despairs of its culture when he sees the melancholy result of leaving walls without a wide temporary coping to throw off sleet and prevent killing frost during the dangerous season. But the fact is that with properly-managed and protected walls, as carefully guarded from insect pests as our best peach houses are, as fine peaches as were ever eaten may be grown over the greater part of England and Ireland.

We shall again return to and illustrate the more instructive features of this fine garden.

HOW RICE PAPER IS MADE.

BY E. C. LEFROY.

THE Rice-Paper plant (*Aralia papyrifera*) grows naturally in China and Japan, where the inhabitants carefully cultivate it upon the hills and high-lying ground. In the autumn of each year, before the leaves fall, the Japanese cut off the young shoots, and cut them into slips, which are tied up in bundles, and boiled in large copper kettles or cauldrons closely shut down. The boiling is continued until the bark has peeled off the wood, when the former is carefully dried and stored away for future use.

When it is required for paper-making it is thoroughly soaked in water for three or four hours, after which the brown skin is scraped off. At the same time the bark which covered the younger shoots is separated from the older and tougher sorts, from which an inferior kind of paper is made. Bark which has been kept for some years is only fit to make the commonest packing paper, and is manufactured with less care. When the bark is well cleaned, and arranged in order according to its quality, it is again boiled until the matter separates into a filamentous substance. This boiling is succeeded by another operation called washing, which is of great importance in the manufacture of the paper. If it is not continued long enough the paper will be of a coarse quality; and if, on the other hand, the substance does not receive enough boiling, the paper will be very white, but too soft and greasy to write upon. The pulp is placed in a basket which will admit the water on all sides, and this is plunged into a river and stirred about with violence for some time. Then the substance is placed upon a smooth table and beaten with wooden rollers. After the beating, an infusion of rice is poured on it, and the mixture is suffered to stand until dry, when the substance is raised leaf by leaf in the form of paper. These leaves are placed between boards, and the remaining moisture gradually pressed out. According to another account the stem is cut into lengths of ten or twelve inches, and the pith forced out and placed in hollow bamboos, where it swells out to its natural bulk, and dries into a compact mass. This pith is cleverly cut by a workman, who holds a sharp knife against the side of the cylinder, which is then turned round, so that the pith is cut into a broad strip about four feet long. This is cut up into small squares, and sold in packets for different purposes. It is supposed that the paper made from the pith is the rice paper which is imported into this country. It cannot be made until the tree has attained a considerable bulk, and is too old to produce many shoots, such as are used in the first process.

The tree from which this paper is made is particularly abundant in the island of Formosa. It is at first a small shrub, but after flowering it throws out several branches, and grows to a height of about twenty-five feet. It is generally cut down before it attains its full maturity, because the pith and bark degenerate in the older parts. Several large palmate leaves crown the stem. It has been supposed by many botanists that there are two or three different species of plants from which the Chinese make their paper and there are, apparently, several ways of manufacturing it.

THE FLOWER GARDEN.

ARALIA CANESCENS.

In the size and beauty of its leaves this is far before many "foliage-plants" carefully cultivated in our hothouses at a perpetual expense. The specimen of this species here figured was one of a batch of young plants growing in the Fulham Nurseries. The engraving falls far short of rendering the beauty of the plant. It is easy to imagine what a graceful effect may be realised by such an object, either isolated on the turf near the edge of a shrubbery or grouped with subjects of similar character. Success with this plant may be secured by, first, selecting a sheltered and warm position, so that its noble leaves may be well developed, and not lacerated by storms; secondly, by giving it a deep, free, and thoroughly-drained soil; and, thirdly, by confining it as a rule to a simple stem, so that the vigour of the individual may not be wasted in several branches. The effect of a plant kept to a single stem, as shown in our illustration, is always much superior to



Aralia canescens (japonica)—Hort.

that of a branched one. Young plants present this aspect naturally; but old ones may be cut down, when they will shoot vigorously. As regards position, it is admirably suited for isolation or grouping with other subjects of like character. It is commonly known in gardens as *Aralia japonica*.

HARDY PLANTS IN FLOWER ROUND LONDON.

I WAS very glad to see your list of these last week. But your "reason" for giving it seems to me very inadequate. It will enable us to "keep our outdoor gardens gay," is your modest estimate of it. Permit me to tell you what such a list will do, if you do it well: it will let many of us garden-lovers who have not time—who could find time to go through the London nurseries, botanical and private gardens, every week?—know what is in cultivation in the country. In last week's list, for example, I find several dozen plants that I did not think were in cultivation. This, I need not say, was very interesting to me; besides, you gave me some idea as to where to look for novelties of this kind. I presume the name added to some kinds indicates the name of the person in whose gardens rare or new kinds are. I think it would be better if you gave the garden or nursery, as the name alone is not of much use to persons who do not know these growers; and,

besides, it looks too much like the authority for the species which is usually affixed in botanical books.

Your list of hardy plants in flower round London will also, I think, open the eyes of some of those who think they have gardens around them, while perhaps in the month of May there are not six kinds of flowers to be seen, and these, it may be, occurring by chance. I have seen many gardens of late in which there was not a single spring flower—nothing but great hungry expanses of brown earth waiting to be filled with bedding plants when the season permits. *Five hundred kinds of hardy plants in flower in one week* may, I say, open their eyes.

Then, again, as a simple record of fact, how valuable will such a list prove to lovers of plants or students of meteorology! It will, I think, be highly useful to ourselves, and perhaps more so to those who come after us. To these a faithful record of the blooming period of many flowering plants in some well-known district like London, of which the climate had been well studied, would certainly prove useful, probably in more ways than we now know of.

To gardeners or amateurs who have to embellish a place for a particular season, the lists, if continued, will be of incalculable value. Many gardens are only visited by their owners at a certain season; but where have we a trustworthy guide now if we seek to know the hardy vegetation that may be expected to bloom in any given month? I have myself sought for information on this subject, both in the French and English languages; and though it is a point to which French authors have given more attention than we have, there is no help to be found in them that is worthy of the name. But persevere in your GARDEN lists; make them as full as our collections will admit of, and, after a time, all those who want to know the materials wherewith to embellish a garden at any given season will only have to turn to your pages and find the plants that bloom at that particular period.

Other advantages might be named, but enough has been said to prove the importance of the lists, if well done. On that a good deal depends. The lists must not be merely a record as to what plants flower in any one place, however large, or of any one London district. No synonyms should be given, as one object of the lists should be to let us know what really distinct plants we have in cultivation. I think your *Iberis coriacea* in last week's list is the same as *I. correaefolia*, just below it. J. N.

[Our lists are made by two special reporters, who will make weekly visits to all good collections of hardy trees, shrubs, and herbaceous plants within a radius of ten miles of London. Sometimes distinct and valuable plants are known only by their garden names, and these we must give in the absence of others.]

NEW YELLOW VIOLETS.

AMONG the earliest of our winter-blooming plants may be classed the various forms of *Viola lutea* that have been so freely produced of late. They gild with bright colours our generally dull spring gardens, giving masses, lines, or circles of rich golden and pale yellow hues, only to be appreciated by those who have seen them so employed. A very few years ago the old *Viola lutea* came much into request, perhaps scarcely in its old form, but in somewhat improved garden varieties. As soon as *V. lutea* came into demand, seed of it was in request also, and from seed there were obtained many large-flowering types, popularly termed *V. lutea grandiflora*. These larger-flowering varieties appeared concurrently in several quarters, and without being, to all appearance, the products of any special attempts at cross-breeding or fertilization. In point of colour all followed the parental type, but some became deeper, others paler, and a few of such a pale primrose as to be almost white. With increased size came also the florist's desideratum—a decided advance in form, and with this were also combined the flatness and stoutness found in the pansy. Seed from these produced in its turn even larger types; and now flowers having the size and almost the form of the florist's pansies are by no means uncommon, and with but very little departure from the compact, free-branching, and free-blooming habit of the *Violas*. A marked precocity and an uncommon durability characterize these flowers. Being at the same time precocious and abundant, they are gradually and surely taking the place of the

yellow pansy in our spring flower gardens. Unlike the pansy, they do not succumb under the hostile influence of the hot, sweltering summer sun, but continue in beauty the summer through. I have now in my garden a circular band of one of the most useful of the grandiflora type, known as Yellow Dwarf, because of its peculiar carpet-like habit. It occupied all last summer, and still continues to occupy, a very exposed position, with scarcely a particle of shade being thrown across it the whole day long. During the continuance of the summer drought, pansies, carefully watered and tended, were completely frizzled up; but the *Viola* held its own bravely, and continued to bloom until the beginning of December. It was then lifted, the soil of the bed renewed, and replanted. By the second week in February it was a perfect circlet of glittering yellow blossoms that, it is not too much to state, almost hid the foliage beneath. Equally valuable are a few of the pale sulphur-coloured varieties, and notably Sulphur Queen, which is quite as precocious and, at the same time, as free and durable. Q.

ASPLENIUM SEPTENTRIONALE AND ALLOSORUS CRISPUS.

YOUR correspondent (see p. 478) states that he cannot get these ferns to thrive. I have tried a few plants of both, but they don't succeed so well as I should like. One thing against them is their being generally lifted from their native habitat during summer, when in full growth; as an instance of this I enclose fronds of *Asplenium septentrionale* from a plant which I lifted Feb. 14th; the small fronds are those that were on it at the time, the larger ones those that have grown since, while those that are coming are going to be larger still. When lifted during summer it never did so well. It should be planted in sandy peat, mixed with bits of sandstone or decayed trap, and must have thorough drainage, with a south or south-west exposure. If grown in pots, I find it to succeed best in small-sized ones plunged inside larger ones. As nature is the best guide to follow, I may mention that this Fern grows in "cracks" on the south face of trap rocks, even where there is no appearance of any kind of soil, so that the wiry roots must penetrate a long way to withstand the droughts of summer.

The natural home of *Allosorus crispus* is among the *débris* of porphyritic rocks, at an elevation of from one thousand to two thousand feet above the sea. I have observed that the strongest growing plants have generally a large stone over the crown. A north-west exposure appears to suit this Fern best. It dislikes lime, and grows best, I find, among fibrous turf with a large admixture of stones. When planting, keep the crowns of both this and *Asplenium septentrionale* well up, so that water may not lodge about them. Has your correspondent tried barley awns or sawdust as a slug "fence"? Kelso.

A. B.

FLOWER GARDEN DECORATION.

THIS is now everywhere receiving a considerable amount of attention; and a free interchange of ideas on the subject may not be without interest. Mr. Baines opened the campaign with a condemnation of the present bedding system, and in No. 24 your correspondent "W. W." makes a brilliant charge on our masses of bright colour, that must clear everything before it. I think, however, that he is laying the lash on too heavy when he says the modern gardener is a "cross between extravagance and vulgarity"; for whatever may be our failings, most of us are becoming awake to our position, and, therefore, I trust there is hope for us. We are anxiously looking for light to enable us to get out of the quagmire into which we have been led, quite as much by our would-be guides as by our own proclivities. We must go back to nature for our studies, it is said, and with this I entirely agree. And as a reaction has set in, do not let us run into the opposite extreme, and turn all our grand gardens into wildernesses. The late Sir G. C. Lewis, in writing about the gardens of the ancients, said "they were not gardens at all, but only shrubberies, with bits of statuary stuck about them." Let us try to avoid falling into this error. Some of the arguments that have been used in favour of the natural style of gardening would suggest the inference that the natural style is a continual mixture; but this is not consistent with the real facts, for nature when left to herself frequently plants in grand bold masses, far outdoing the puny efforts of man. But nature tones down her bright masses of colour by masses of foliage, ever varying in form and tint; and, by the light and shadow caused by undulations of surface, softens and renders pleasing what would otherwise be wearisome.

Whatever may be the future of ornamental gardening, I trust the reduction of the present bedding system within reasonable

limits will ultimately be arrived at; and, as regards the present, I would urge your readers to study carefully the remarks of Mr. Westland on the "Flower Garden for May," at page 532, as I think it is in the direction he suggests that an immediate improvement may be looked for. So far as I have seen, the prevailing fault of garden decoration is the preponderance of bright colours.

Ramsey Abbey.

E. HOBDAV.

THE ALPINE GARDEN.

(Continued from page 542.)

PATHWAYS.

No formal walk—that is to say, no walk with regularly-trimmed edges of any kind—should ever be allowed to pass through, or even come near, the rock-garden. This need not prevent the presence of properly-made walks through or near it, as, by allowing the edges of the walk to be a little irregular and stony, and by permitting dwarf Sedums, Saxifrages, *Linaria alpina*, the lawn Pearl-wort, &c., to crawl into the walk at will, a perfectly unobjectionable effect will be produced. In every case where gravel walks pass through ferneries or rockeries, and are fringed by stonework, a variety of little plants should be placed at the sides, and allowed to crawl into the walk in their own wild way. There is no surface whatever of this kind that may not be thus embellished with interesting subjects. Violets and ferns, *Myosotis dissitiflora*, &c., will answer for the moister and shadier parts, and the Stonecrops, Saxifrages, Arenarias, and many others, will thrive in more arid parts and in the full sun. The whole of the surface of the alpine garden should be covered with plants, except the projecting points or crags; and even these should be covered, as far as possible, without completely concealing them. In moist districts, such alpine as *Erinus alpinus* and *Arenaria balearica* will grow wherever there is a resting-place for a seed on the face of the rocks; and even tall and vertical faces of rock may be embellished with a variety of plants; so that there is no excuse whatever why any level, earthy surfaces should be bare.

WATER.

It is not well to endeavour to associate a small lakelet or pond with the rock-garden, as is frequently done. I do not remember to have met in alpine countries with any crowds of brilliant alpine flowers in the vicinity of small pools of grimy water; indeed, they usually crowd on fields high above the lake. If a picturesquely-arranged piece of water can be seen from the rock-garden, well and good; but water should not, as a rule, be closely associated with it. Hence, in places of limited extent it should not be thought of at all. If a pure rushing streamlet, with one or more cascades, can be introduced near the rock-garden with good effect, so much the better; but these things are better treated as incidental features.

No formal bridge should ever be tolerated near a rock-garden; it is so easy to form more natural-looking bridges by placing rocks or stones in the streams or arms of water which it is wished to cross. If well done, the footing will not be in the least insecure, and the water will flow between the stones, and graceful water plants crowd up near and between them. It need hardly be added that the rustic arches so common should also be avoided.

Where a large rock-garden is being made, and where expense is no object, water should, if possible, be "laid on," as, without command of a strong pressure and a liberal hose, it is very difficult to water an extensive and elevated rock-garden thoroughly, and very troublesome and expensive even to do it badly with watering-pots, &c. Several taps or outlets will be required in large rock-gardens.

SNAILS, ETC.

Snails are frequently so destructive, that it has been considered desirable to construct a small rock-fringed streamlet round portions of the rock-garden containing the subjects most likely to suffer from them. This is not generally to be recommended, because of the difficulty of doing it well; nor is it generally necessary, inasmuch as the things commonly grown can be protected by ordinary means. It would, however, be practicable to run a neighbouring streamlet round a large rock-garden, concealing it here and there in shrubberies, &c., and letting it now and then meander through the grass

surrounding the site of the rock-garden. If the slugs, &c., within the streamlet were carefully removed, no recruits from beyond it could destroy our favourites. Where a stream does not run near the rockwork, the channel may be filled by means of a pipe laid on from the main pipe which supplies the garden proper. The outlet of this pipe may be very easily placed in a suitable part of the rockwork, in such a manner as to form a miniature cascade at no great distance from the channel which is kept filled by its waters. It is hardly necessary to add that the bottom and sides of the channel should be made perfectly water-tight with cement or well-puddled clay, &c.

SOIL.

The great majority of alpine plants thrive best in deep soil; in it they can root deeply, and once they are so rooted they will not suffer from drought, from which they would quickly perish if planted in the usual way; three feet deep is not too much for most species, and it is in nearly all cases a good plan to have plenty of broken sandstone or grit mixed with the soil. Any good free loam, with plenty of sand, broken grit, &c., will be found to suit the great majority of alpine and dwarf herbaceous plants, from Pinks to Gromwells. But peat is required by some, as, for example, various small and brilliant rock plants like the *Menziesias*, *Trillium*, *Cypripedium*, *Spigelia marylandica*, and a number of other mountain and bog plants. Hence, though the general mass may be of the soil above described, it will be desirable to have a few masses of peat here and there. This is better than forming all the ground of good loam and then digging holes in it for the reception of small masses of peat. The soil of one or two portions might also be chalky or calcareous, for the sake of plants that are known to thrive best on such formations, as the pretty *Polygala calcarea*, the Bee Orchis, *Rhododendron Chamæcistus*, &c. Any other varieties of soil specially required by individual kinds can be given as they are planted.

(To be continued.)

LINES ON "THE ROSE SECRET."

IN striking roses in a marmalade jar,
Max Klose's seems the simplest mode by far,
And the rose cottage, Chelford's grand display,
Will show his success at some future day.
Still there remains a secret to unfold
In striking roses quickly we are told;
But we now hope by the "jar" plan proposed,
The pent-up mystery is at last dis-Klosed. —W. T.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Clanthus Dampieri.—This is now beautifully in bloom on an open wall about twelve miles south-east from London, the plant having stood the winter, with no other protection than that of an old light, and occasionally a mat during frost. A return hot-water pipe passes inside the foundation of the wall.—J. U. N.

The Poet's Narcissus.—Why not naturalise this lovely species in our wood-walks and in the wider parts of our pleasure grounds? It is as easily grown as the common daffodil, and inferior to no denizen of the stove in beauty. The roots are not dear; they may be planted any time after dying down till late in autumn, or indeed at any time, for daffodils may be moved without much injury when in full leaf.

Wall Plants.—The beauty which the wallflower now displays on many old ruins, should encourage many to try to develop much more floral beauty in such positions. That this is not only practicable, but easy, is fully shown in "Alpine Flowers." There is no doubt that with plants of the wallflower order alone, we could easily convert dreary old ruins, or parts of them, into lovely little gardens. The Arabis and all such plants would thrive on walls, though they would not attain such size as on the level ground. Even the Irises, which, at first sight, one would never think of putting on walls, thrive thereon when there is a little soil for them to root in, as many may have seen on the Continent on old thatched roofs. There is no difficulty in establishing these lovely flowers.—H. V.

Spring Bedding.—The most effective beds which I have this season are two raised round ones, each nine feet in diameter. No. 1, has a centre plant and two rows of a white polyanthus, thickly studded with white single hyacinths; next, two rows of double red daisies, with red hyacinths; then two rows of *Aubrietia grandiflora* purpurea and *Gentiana acaulis*, mixed, with blue hyacinths, the whole edged with *Sempervivum californicum*. No. 2, has a centre consisting of *Myosotis dissitiflora* and white hyacinths; next, two rows or rings of dark polyanthus and blue hyacinths; then two of *Aubrietia* and *Gentiana* and red hyacinths, the whole edged with *Echeveria secunda* glauca, planted out of pots in February. I have also a good third bed, which is likewise raised, and about twenty-seven feet in diameter. This has a vase in the centre containing *Yucca gloriosa* and variegated Arabis, from which radiate six rays or segments lined out with old plants of *Pyrethrum*; two of the divisions or segments contain yellow wallflower, "Belvoir Castle," and red tulips, single; two others consist of dark wallflowers and white tulips; two more contain mixed wallflowers and yellow tulips, the large intervening spaces being filled with *Myosotis dissitiflora* (seedlings), the whole edged with a good broad margin of *Cerastium tomentosum*.—W. C.

THE SIX OF SPADES.

CHAPTER XIV.

Mr. Oldacre's Story—The Lady Alice.

MR. PRESIDENT AND FRIENDS, said Mr. Oldacre, you must "pity the sorrows of a poor old man, whose trembling limbs," and here he glanced complacently at his well-filled gaiters, "have borne him to your" excellent gin-and-water, and must not look for anything remarkable in pippins from a decaying and exhausted apple tree. As for lecturing you upon the culture of a garden, or haranguing you scientifically at all, I should no more think of it than of seeking horticultural information for myself in the books of those who wrote a century ago on the subject; and I have no shame in the conviction, that some to whom I now speak, beginning at a point where I have all but stopped, and having opportunities and resources, developed since my manhood waned, know more about gardening than I do. It is sufficient for me to have been in my day with the foremost, and to have fought my way to many victories. But were I to "shoulder my crutch and show how fields were won" to you of this generation, or to manipulate my "Brown Bess" as an old musketeer—to you who have such an improved artillery as leads one to expect that England will soon be able to pepper her enemies, however distant, from batteries fixed upon her shores—to you who are blessed with a thousand facilities unknown to your ancestors, of smashing and ripping up your fellow-creatures—how would you forbear to smile? No; as old Mr. Whippy, the huntsman—or rather the ex-huntsman, for he has been, as you know, a pensioner for years of my noble master's—trots after the hounds on his pony through the gaps and the gates, which he once despised, so must I now be content to look on from afar, travelling easily by quiet lanes and by-ways, and leaving the bravery and the honours of the chase to you.

So I will tell you, if you please, a simple story—a mere incident, in fact—which occurred many years ago in the family I serve, but which made at the time a great excitement among us, and may still I hope prove interesting to you,

Through the solemn avenue of cedars which leads to our mausoleum, I have followed three dukes to the grave. The second of these at one period of his life was most austere and haughty. I may speak of his faults, although he is dead, because he lived to hate them, and to cast them from him; and I have no hesitation in enlarging upon them, as the circumstances of my story prompt. Well, then, he was just the proudest, coldest, most disagreeable duke that ever stalked ("stalk, to walk with high and superb steps," says Dr. Johnson) over the earth. It was a positive insult to the English language to call so much ungraciousness "your grace." We gardeners used to declare that the thermometers fell twenty degrees whenever he walked through the houses; and that the water froze in the tanks and cisterns. We were prepared to affirm that when he put on his coronet the strawberry leaves turned into ice-plants. Indeed, we all of us found a relief and comfort in this harmless kind of ridicule, just as schoolboys most delight to mimic the master who rules the most unkindly over them. It was a natural and pleasant rebound from the constraint and awful abasement to which his presence reduced us; and as for the propriety of our conduct, why, if men in high places are not high-minded, as they ought to be, they only become the more conspicuously assailable, and the homage which is offered to them is as unreal and worthless as the sham silver and the sham gold which the Chinese offer to their gods. So the duke played at being an idol, and we performed the worshiping. He thought himself something more than human, I am sure, and received our most lowly obeisance as though he were upon a golden throne. His demeanour was calculated to give us the idea that we had no claim, strictly speaking, to existence in any form, but that he tolerated us. He sent for us, kept us waiting for hours, and then either dismissed us without an interview, or gave us his orders as though he gave out oakum to convicts. In my subordinate capacity I was only honoured with two brief conversations, during which he was pleased to address me, for he never remembered names, as "Mr. Cutts" and "Rowbottom," appellations which belonged respectively

to the stud-groom and to an under-keeper, but which were as unlike Oldacre as, I dare say, he wished them to be.

We servants were not the only ones who shivered in his icy presence, and winked and capered with exuberant joy as soon as we were fairly out of it. Living at that time in one of the lodges, I frequently witnessed the arrival and departure of certain county families, who were annually distinguished by an invitation to the castle. To open the gate for these favoured guests, and to look upon their expression of complete despair, was like being hall-porter at a dentist's. They might have been blue-bottles, who had just set foot within the meshes of a spider's net, or rabbits, helplessly mesmerised by a weasel, and drawing nearer to their doom. One footman, I remember, was wont to weep in the rumble, and to assume for my edification such an aspect of pretended woe, pointing the while with his thumb to the unconscious tenantry of the chariot below, that at last I dared not go out to meet him, and he was compelled to dismount, and clear the way for himself.

But there was an entire change of performance, I can tell you, when these visitors came forth on their journey homeward; as distinct an alteration and improvement of countenance as may be observed in the features of that gentleman who appears from time to time in the pictorial advertisements, as now enduring the agonies of toothache, and now "Ha! ha! cured in an instant!" The tragedy, with its tyrant and dungeon-chains, was over; and, as the lamps blazed out once more, the orchestra, which had been executing Dead March and dirge underneath the darkened stage, emerged to play "Garryowen." They who had come to us so silently and sadly, laughed and sang as they drove down the park. They could not have been in a happier frame of mind if they had been poachers coming out of gaol in the shooting season. Hurrah! they were going home! home to have beer at dinner, and to turn to the fire at dessert! Home, to astonish the Browns, to fill the mouths of the Walkers with the waters of envy, and to awe the Bumbies with fancy statements about their "delightful visit at the castle." Well, I could bear truthful witness that the latter part of the proceeding had been delightful enough. As Robert Hall said to the pert young preacher, who asked what he thought of his sermon, "There was one very admirable passage—the passage from the pulpit to the vestry," so it might be affirmed with confidence that these guests had been especially happy in the last act and deed of—departure.

Now this iron duke, you will be surprised to hear, had actually condescended to marry. Of course, if Cupid had not been blindfold, he would no more have thought of taking aim at him than a schoolboy of shooting his favourite arrow against the wall of a five-court, and how that promiscuous young archer made his dart to stick in the ducal granite must remain for ever among the "things not generally known." Never since Eve had the world seen such a proof of love's omnipotence, as when he sent our grim lord a-courting. No weaker influence ever could have taught that cold pale face to smile, to smile and to beam with a happy brightness, as the snow sparkles in the sun. But how he ever remembered her name, or brought himself to proffer those little tenderesses, which are usual upon these occasions—those touches of nature which make the whole world kin—is to me a complete perplexity, an unreality as astonishing as though I were to see the ghost of Hamlet's father with his arm round the waist of Jessica.

Poor Jessica! she came to us as joyous as a thrush in summer, and she sang awhile blithely and sweetly in the tomb of Hamlet's father. But when he resumed, as he shortly did, his old sepulchral ways, a chill struck the heart of our singing-bird, and all her mirthful music was changed into a plaint and wail. She had come from a home of love and cheerfulness, and she drooped in his arctic atmosphere, as an Orchid would droop in an ice-house.

"For a trouble weighed upon her,
And perplexed her night and morn,
With the burden of an honour,
Unto which she was not born."

Six years after her marriage-day, they bore her slowly through the dark avenue of cedars, and the chaplain came in his white surplice to welcome her with words of hope and peace.

Three children were born to them. The marquis, who soon showed himself to be a true "chip of the old (ice) block," and

a ghostling of amazing promise; Lord Evelyn and the Lady Alice, who, happily for us all, resembled their mother. Never were two brothers so unlike each other. I doubt whether the elder ever broke out of a walk or into a laugh in his life, whereas the younger would be scampering all over the place, with his little sister breathless behind, and his merry voice making our hearts glad. Now they were in the conservatory, changing the tallies, and sticking the fallen flowers of the Camellia upon the Euphorbia's thorns; now turning out a lot of sparrows, which they had caught in traps, and adorned with appendages of brilliant worsted, red, green, and yellow, in the immediate neighbourhood of the aviary, and so essaying to impose upon us the idea of a general escape and dispersion of all our feathered curiosities; and now "drawing" the shrubberies, with Lord Evelyn at one end as master of foxhounds (the foxhounds by an Irish retriever), and Lady Alice at the other as an under-whip, waiting, watchful and silent, for the fox to break, which he generally did in the guise of a black-bird; and then announcing his exit with the promptest and shrillest of "tally-hos." Our marquis the while was indoors at his books, having, it was reported, a precocious relish for algebra, and an insight into the science of political economy not often to be found (thank Heaven) in young gentlemen of fourteen.

Years passed, There was some misunderstanding between the marquis and the Cambridge examiners on the subject of his being Senior Wrangler, and the duke, after hearing his son's statement, was pleased to pronounce that the Dons were "offal." Lord Evelyn went into the Guards, and I shall never forget him on his first return from London, after an absence of six months from the castle. I was at tea in the lodge when his mail-phaeton drove up, and was hardly out of the porch, when his hearty "How are you, Oldacre?" drew my eyes to the handsomest, merriest, kindest face that ever wore a moustache. And sitting by him was a brother officer, just the man you would have expected that my lord would choose for his friend, looking as though he would go at anything from an ox-fence to a redan, and yet would do no wilful hurt, as though his heart, like Tom Bowling's, was brave and yet soft, and he was, in the full beauty of its meaning, a gentle man. I went back to my wife, who had Frank Chiswick's wife, a baby, on her knee, and I said to her, "Susan, my lord's come, and has brought home a husband for Lady Alice." "I'll believe it," she answered, "when I see his wings! for the duke must have something more than mortal to suit his fancy in son-in-laws."

And now, gentlemen, let the old horse catch his wind, if you please, dip his nose in the refreshing waters of the trough, and then trot on to the end of his journey. S. R. H.

(To be continued.)

TEA CULTURE IN THE UNITED STATES.

In last week's issue (p. 538) you quote from *Hearth and Home* to the effect that "supposing" anyone one could get ten pickings of tea in a season, of 458 pounds per acre each, he would get a crop of 4,580 pounds. Undoubtedly, "supposing" it could be done, such a result would be in the highest degree satisfactory, but there is nothing whatever to warrant any such "supposition." The pickings gradually diminish in bulk as the season advances; the first flush of spring, if properly matured, being always the heaviest. An average yield of 450 pounds of made tea per acre per annum over any estate whatever, Indian, Javanese, Chinese, or Georgian, would be a very excellent and paying one. An average of less than this, rather than more, has been the experience of Indian and other planters, and should the Americans attempt the cultivation of tea (and there is no reason why they should not), it is to be profoundly hoped that they will not be led away by mere "suppositions" of which you have quoted a sample.

JAMES MACPHERSON, *Erith, Kent.*

NEW PATENTS, &c.

Lawn-mowers, parts applicable to other mechanical appliances for rotary motion in one direction only. September 12, 1871.—J. T. Griffin, Upper Thames Street, London. Lawn-mowers with a skeleton cast frame, on the spiral ribs of which steel cutters are fixed, the driving gear actuated by spheres between a disc and a grooved lug wheel; the handle adjustable by clips on a bar, and the fixed blade adjustable with the leading wheels. The sphere and lug mechanism is applicable to other appliances, particularly ratchet braces and cranes, for intermittent or continuous motion in one direction only.

THE INDOOR GARDEN.

THE LATTICE-LEAF PLANT.

THIS interesting Madagascar aquatic belongs to a genus containing some eight distinct species, six of which belong to India, and two, viz., *Ouvirandra fenestralis* and *O. Berneriana*, to Madagascar.

In its native country the leaves of *O. fenestralis* measure from ten inches to fifteen inches in length, and from two inches to three inches in breadth. In a young state they are of a pale yellowish green, which, as they advance in growth, changes to a deep olive green, and ultimately, before they decay, they assume a dark-brown hue. Of the structure of the leaves little need be said, as a glance at our illustration will at once explain that. When fully grown they resemble a piece of lace or lattice work, but when very young the openings to which they owe their peculiarity are filled up with cellular tissue, which as the leaves increase in growth disappears.

Of this singular water plant there is a good specimen at present in a tropical house in the Royal Gardens at Kew. This has no fewer than 173 leaves on it, the largest of which are 15½ inches in length and 3¼ inches in breadth. This plant is growing in a tin pan, seven inches deep and fourteen inches in diameter, in a compost of fresh, turfy, yellow loam, and a good admixture of silver sand. In the bottom of the pan a layer of crocks is laid, over which

some of the roughest pieces of the loam are placed, and the remainder filled up with the compost from which the finest part had been separated. In potting, the soil is pressed rather firmly around the plant, and the whole is watered with tepid water through a fine rose, an operation which not only firmly settles the soil, but thoroughly cleanses the leaves. The last time this plant was potted

was in August 1870, but perhaps the beginning of April is a better time for performing this operation. On a side shelf in the warmest part of one of the stoves is a wooden tub fourteen inches deep and two feet six inches in diameter; in the bottom of this are placed an inch or two of cleanly washed pebbles, and the remainder is filled up with soft water.

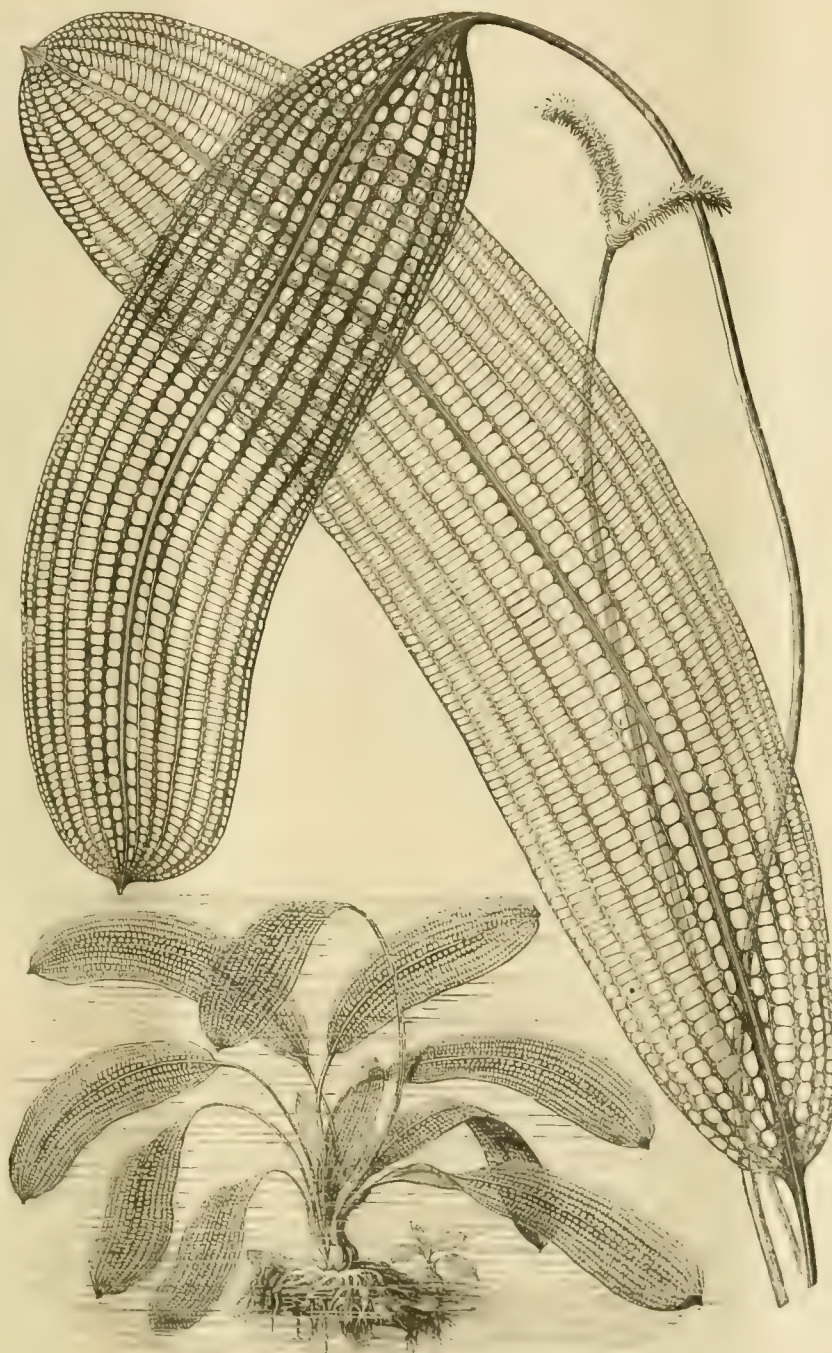
In this the pan containing the plant is placed, the top of which when the tub is full of water is about six inches under the surface.

Some may think this too near the surface, but experience has proved that the plant succeeds very well at that depth. In shallow water the leaves float immediately below the surface, although in our illustration they would appear to be much deeper.

The temperature of the house in which it grows ranges during the winter months from 55° at night to 65° during the day, with sun heat, and this is increased as the days advance in length. An ordinary-sized pot of soft water is placed beside the heating pipes every evening, and the following morning its contents are emptied over the plant through a fine rose into the tub, which is kept level so as to admit of an equal overflow of the water on all sides. By this means the plant is not only benefited by the daily application of fresh water, but also by the speedy removal of any sediment likely to accumulate about the leaves. Confervæ sometimes prove troublesome to the lattice plant, and some kinds of

water are more favourable for their production than others. Should their presence about the plants become apparent, they should be at once removed; the aquarium should be well washed with clean water; fresh gravel or pebbles ought to be introduced, and the plants should be watered rather forcibly overhead, and returned as soon as possible to their former quarters.

The flower spikes rise directly from the root to a few inches



The Lattice-Leaf Plant (*Ouvirandra fenestralis*)

above the water, and are separated at the apex into two, and sometimes more, divisions, which produce flowers of a whitish colour. Seeds from these flowers frequently ripen, and if sown immediately will produce young plants. From seed saved and sown at Kew in 1870, as many as fifty nice young plants have been raised. Young plants, too, come up thickly from self-sown seed on the surface of the soil around the parent and sometimes amongst the pebbles in the bottom. This I have seen often happen at Dalvey, in the north of Scotland, where the *Ouvirandra* is very successfully cultivated. The plants there are grown in an earthen pan in the warmest corner of an orchid house, and are treated exactly similar to the one at Kew. Young plants, however, require a higher temperature during the winter months than established ones.

Besides seeds, the *Ouvirandra* may be propagated by means of division of the roots which are very tenacious of life. Mr. Ellis, in his "Madagascar Revisited" (to which we are indebted for our illustration), tells us that it grows there "in places which are dry at certain seasons of the year, that the leaves then die down, but that the root buried in the mud retains its vitality, and when the water returns fresh leaves burst forth. Whenever the earth around even the smallest portion of it remains moist, that portion puts forth leaves when again covered with water."

The other species from Madagascar, *O. Bernieriana*, requires deeper water than *O. fenestralis*. Its leaves, are not so open, and are from fifteen to twenty inches in length. It is, in short, altogether a coarser-growing plant than *O. fenestralis*.

MY INDOOR BRITISH FERNERY.

THREE years ago I had a lean-to house built, forty-three feet long, and twelve feet wide, one end of which (about fifteen feet) is shaded by the dwelling-house. On account of the want of sun I found that the plants did not thrive so well in the shaded end of the house as they did in the other.

Two years ago, being desirous of making a collection of British Ferns, I paid a visit to Devonshire, where I was fortunate enough to get some beautiful kinds, some account of which I have already given in your paper (see p. 376). When I came home I thought it was a pity to have such a number of nice Ferns and no place to plant them where they would be seen to advantage, I mean on rockwork, as I think Ferns do not look so well grown in any other way. So I made up my mind that I would partition off a portion of my lean-to house for my British Ferns, which I did.

The partition and door are of glass. Around the door I formed an arch of virgin cork, in which pockets were made and filled with Ferns, *Echeverias*, and *Ivy*. When you enter the door the highest part of the house is to your right hand, and the path next the wall. I intend to cover the wall this season with virgin cork, with pockets similar to that of the archway. As you enter on your left a raised bank runs along that side of the house, and across the end is a sloping bank, composed of flints and burrs. The centre of the upper part of this bank sweeps in in the form of a horseshoe, in the centre of which curve is an oval basin, four feet long, two feet wide, and two feet six inches deep; round the edge are Mosses, Grasses, and Ferns drooping down into the water. In the centre of the basin is a kind of rustic vase, in which is growing *Selaginella denticulata*, out of which rises an ornamental spray of water, which forms a pretty little fountain. I have here and there *Sedums* and *Echeverias* growing on the rockwork, which have a pretty effect amongst the Ferns. I intend to plant this season two good large plants of *Tacsonia Van Volxemii*, and train them on wires all over the roof, which will look very well I have no doubt.

This part of the house is not heated; but when the partition door is open (which it is all winter), the temperature is never lower than 50° or 55° in the day, and 45° at night, which keeps the Ferns green all the year round; but when the young fronds are coming up, I cut off the old ones, as they are liable to push the young fronds out of shape. The bank on which the rockwork is built is made of loam, leaf-mould, coarse sand, and a little peat. Now that the roots of my Ferns have got well into this mixture, they are throwing up young fronds very strongly. In winter I give the Ferns, &c., water now and then when the weather is mild; but, of course, they do not require very much, as it is not their growing season. In the spring I syringe them once a day, and now (May) I shall syringe them morning and evening. On fine days I leave the entrance door open from about nine in the morning till four in the afternoon, when I syringe and shut up for the night;

but in summer you can hardly give too much air and water overhead and at the roots of your plants. The path of my house is made of cement. I like it best for houses that are not supposed to be very ornamental, as after your house is syringed, if you run a few cans of water over it and brush it out, it always looks clean and fresh. When the Ferns and other rock plants are in full perfection in summer, and the little fountain playing, with gold fish darting about in the water, my Fernery looks very pretty. Anyone who may have some house in which other kinds of plants will not grow well, or who may have some old neglected ones in the corner of their garden, may make a very pretty and effective British Fernery of it if they will only use a little taste and lay out a very small sum. Mine quite repays me for my trouble, time, and expense.

A. H., Upper Norwood.

A REVISION OF THE GENUS DRACÆNA.

BY DR. REGEL.

(Continued from page 547.)

DRACÆNA CONCINNA (HORT. BEROL.).

STEM almost tree-like, simple, sometimes as much as two inches in diameter, clothed with leaves at the top; leaves sessile, recurved-patent, leathery, linear-lanceolate, from 1½ to 3 inches broad, and from 2 to 2½ feet long, with a stout midrib scarcely rising above the level of the upper surface but prominently convex beneath, folded longitudinally in a remarkable manner, striated with fine nerves and veins, and having a well-defined red margin; flowers unknown. Probably a native of tropical Africa.

Synonyms—*Dracæna marginata* (Rgl.), *Dracæna marginata*, var. *concinna* (C. Koch.), *Cordylina Betschleriana* (Göpp.), *Dracæna Betschleriana* (C. Koch.).

DRACÆNA MARGINATA (LAM.).

Stem shrubby, branched, ½ to ¾ of an inch in diameter, clothed with leaves entirely or down to the middle; leaves sessile, somewhat membranous, ¼ to ¾ of an inch broad, and 1 to 1½ foot long, narrowly linear-lanceolate, gradually and for a great distance attenuated-acuminate, with a midrib which is visible enough on the upper surface and prominent underneath, traversed by a few longitudinal folds which are often scarcely visible, striated with fine nerves and veins, and with a well-defined red margin; flowers unknown. Madagascar.

Synonyms—*Dracæna tessellata* (Willd.), *Dracæna mauritiana* (Hort. Berol.).

DRACÆNA ENSIFOLIA (WALL.).

Stem tree-like, often branched, clothed with leaves entirely or down to the middle; leaves sessile, narrowly linear-lanceolate, not variegated, slightly undulated, with a midrib which is inconspicuous on the upper surface but prominent beneath, ¾ to 1½ inch broad, and from ¾ to 1½ foot long, concealing the internodes of the stem with their clasping bases; panicle terminal, simple, more or less recurved, with horizontally patent or recurved branches, on which the very fragrant white flowers are loosely dispersed in threes or fours, and accompanied with scarious obtuse bracts much shorter than the pedicels; tube shorter than the divisions of the corolla, which are about an inch long; style longer than the stamens. East Indies.

Synonyms—*Dracæna fruticosa* (C. Koch.), *Dracæna quitensis* and *arborea* (Hort.), *Aletris cochinchinensis* (Hort.), *Cordylina ensifolia* (Fl. de Serres), *Dracæna excelsa* (Ten.).

DRACÆNA BICOLOR (HOOK.).

A half-shrubby plant with a short simple stem leafy at the top. Leaves oval, slightly undulated, narrowed at the base into a short channelled stalk, abruptly and shortly acuminate at the point, with a thick midrib about 2½ inches broad and 5 inches long. Raceme terminal with capitate branches, subglobose, surrounded with bracts, and having the flowers closely set together. Flowers nearly sessile, each surrounded with lanceolate purple bracts as long as the tube of the corolla. Corolla white; tube cylindrical; divisions patent, oblong-linear, shorter than the tube and with a narrow red margin. Tropical Africa, near Fernando Po (Mann).

DRACÆNA JAVANICA (KUNTH).

Stem erect, shrubby, simple or branching; scales at the lower joints scarious, clasping, ultimately deciduous. Leaves oblong-

elliptical, slightly undulated, narrowed at the base into a channeled stalk about half-an-inch long, attenuated at the end into a recurved point or shortly acuminate, with a midrib scarcely rising above the surface, and traversed by very fine longitudinal veins from $1\frac{1}{2}$ to 2 inches broad, and from 4 to 5 inches long. Panicle terminal, sessile, simple, with a few bracts at the base; branches patent or nearly horizontal, loosely racemose. Flowers from one to three together, on short stalks and with bracts about two lines long, shorter than the pedicels; corolla about an inch long; tube cylindrical; divisions oblong-linear, patent, about as long as the tube.

Synonyms—*Dracæna elliptica* (Hook.), *Sansevieria javanica* (Blume), *Cordylina Sieboldi* (Mig. fl. jav.), *Dracæna surculosa* (Hort. Berol.). Java and Sumatra.

A variety *Dracæna javanica maculata* has the leaves marked with white spots. Synonyms—*Dracæna elliptica*, var. *maculata* (Hook.), *D. maculata* (Roxb. fl. ind. and Kuth. enum.), *Cordylina maculata* (Fl. d. Serres, and Mig. fl. Jav.).

DRACÆNA TERNIFOLIA (ROXBURG.).

Scales at the lower joints of the stems herbaceous, patent. Leaves somewhat broadly elongated-lanceolate, lengthened acuminate, 2 to 3 inches broad, and from 8 to 12 inches long (including the stalk, which is from 1 to 3 inches long). Panicle with a stalk from 2 to 3 inches long; branches ascending. Flowers in threes, or, less frequently, in pairs, stalked. Bracts scarious, unequal, the inner ones short, the outer one about as long as, or longer than, the panicle. In other respects like the preceding species. I have seen dried specimens which had been gathered by Griffith, and which are described by Hooker in No. 5,880, *Bot. Mag.* Eastern Bengal.

Synonym—*Cordylina ternifolia* (Fl. d. Serres).

(To be continued.)

The following lines written by Douglas Jerrold in Miss Blanche Paxton's album refer to her being supported on one of the leaves of the Royal Water Lily (*Victoria regia*):—

On unbent leaf, in fairy guise,
Reflected on the water;
Beloved, admired by hearts and eyes,
Stands Annie, Paxton's daughter.

Accept a wish, my little maid,
Begotten by the minute;
That scene so fair may never fade,
You still the fairy in it.

That all your life, nor care nor grief
May lead the winged hours
With weight to bend a lily's leaf,
And all around be flowers.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Pitcher Plants.—In shifting these care must be taken not to injure their roots. The pots into which they are to be put must be liberally and carefully crocked, and the soil should consist of two parts sphagnum and one part fibrous peat. Pot pretty firmly, and then give a good watering to settle all down. Afterwards shade, and keep the plants close in a warm moist-atmosphere. They enjoy a brisk temperature and an abundant supply of humidity during their season of growth. In winter less warmth and less moisture will suffice; but even then the temperature of the house in which they are kept should never fall much below 60°.

Aubrietia in Pots.—About twelve months ago I got some cuttings of two very fine, and, to me, new Aubrietias; they were easily struck, and during the summer I planted them in the open ground. Wishing to see them to the best advantage, I potted up a strong plant of each into twenty-four sized pots shortly before Christmas, and left them for two months in a cold frame. About the middle of February I put them in a cool house, and by the end of the month they were in good bloom. From that time to this they have continued to flower without intermission, and the plants are now from twelve inches to fifteen inches through, and I expect them to continue blooming until the middle of May.—A. D.

New Japan Primrose.—I find that this Primrose (*Primula japonica*) will flower early in a cool greenhouse. I had three plants of it last autumn which were all kept moderately dry at the root during October and November. The leaves soon decayed, and the plants remained in an apparently lifeless state for six weeks. Soon after Christmas they were removed to the warmest part of a cool greenhouse, and well watered; the pots standing in pans, and constantly supplied with tepid water. They soon showed signs of new life, grew vigorously, and rewarded me with beautiful flowers. The first tier of blossoms is now beginning to decay, and I look forward for a good supply of early seed. This Primrose will doubtless become a great favourite for cut flowers.—W. PRESTON.

WHY is a man who can't learn by experience like a laurel? Because he is an evergreen.

GARDEN DESTROYERS.

BARK-BORING INSECTS.

(Continued from p. 548).

THERE are one or two other points which are applicable to many of the bark-boring species as well as to the *Scolytus*, and which we may therefore dispose of in advance as generalities. One of these is the possibility of preventing their attacks, or curing the trees which have been attacked. Various plans have been propounded for this, but, so far as we know, they are all modifications of one idea, viz., to scrape off the bark where the tree is attacked, destroy the grubs and eggs in it, and to tar or paint over the exposed surface with some mixture injurious to the grubs but not to the tree. The most eminent professor of this method was M. Robert, who carried it out in a systematic way, and under whose directions, or according to whose recommendations, many trees, both in France and in this country, were treated a good many years ago. In the International Exhibition of 1862 he exhibited various specimens, showing his mode of operation, and others showing the result of it, so far as that could be shown in hand specimens. These consisted of portions of trees from which the bark had been removed, and which had healed up and were free from recent traces of galleries of bark-borers.

A more recent testimony to the efficacy of the plan was given the other day in one of our gardening periodicals (*Gardeners' Chronicle*, 1872, p. 78), in which the result of the treatment upon some trees in Regent's Park, after a lapse of nearly thirty years, was recorded. It was from the pen of Mr. Sowerby, the secretary of the Royal Botanic Gardens, and as it is a very fair specimen of the grounds on which success is often claimed for the method, we think it may be useful to quote it, and endeavour to estimate its relevancy and value. He says:—

"When the Botanic Society in 1839 entered on the ground in Regent's Park it was found to be encircled by a belt of elm trees, many of which were infested, and were being rapidly destroyed, by the larvæ of the goat moth (*Cossus ligniperda*), and that more fatal pest, *Scolytus destructor*, a little beetle not larger than the common 'Death Watch.' This belt of elm trees was not included in the lease of the ground to the Society, but retained under the management of the Crown officers; however, in 1842, permission was granted to the Society to experiment upon the trees, with a view to prevent their total destruction; and so successful was the plan then adopted, that during the past twenty-three years only occasionally has an individual of either of the depredators made its appearance. One small tree, which by accident appears to have escaped attention and care, is quite dead, and fully illustrates the rapid and fatal work of the beetle. Although all the other trees in the belt are in robust health and vigour (for London), many of them exhibit full evidence of the scars and scrapings of our early operators."

At first sight this seems strong evidence in favour of the practice, but there are one or two inferences which may be drawn from it, which we think reduce its value. The allusion to the old scars and no new ones shows that the treatment has not been repeated. If it was it which got rid of them twenty-three years ago, it has not been it which has kept them away ever since. The beetle is abundant all round London, and if the trees had been in a fit state for its purposes we may be sure that the insect would soon have found its way back to them. It is the vigour of the trees which has kept them away, and that vigour cannot have in any way been due to the scarifying twenty-three years ago. It is not pretended that that can add to the vigour of the tree. All that it professes to do is to take away an element which is destroying the vigour, and so allows the natural growth to be resumed. But we have already explained that it is only where that natural vigour is defective that the insect comes. It would therefore have continued defective here had not something else been done to restore it; and we imagine we are by no means assuming as a fact what is only a probability, when we take it for granted that the able managers of the Botanic Gardens, when exerting themselves twenty-three years ago to save the trees around the garden, would never limit their exertions to these scarifications

to get rid of the insect enemy. It would be an obvious libel upon their skill and judgment to suppose that they did not thin the trees, refresh the soil, and take every other known means to restore them to vigour; and if they did so we have them placed in the required condition for resisting and defeating the attacks of the Scolytus without the clearing process at all.

If this is the practical conclusion to which this experiment leads us, the theoretical examination of the principles involved in the treatment does not hold out a much better prospect of advantage from its employment. The weak part of the tree, indeed the only part of the tree that can be injured by the attacks of insects, is the living, growing part. The solid timber is not living; it is dead organic matter preserved from decay by the impervious enclosure of the living envelope, and may be eaten away by insects without any other damage to the life of the tree than the enfeebling of the support by which it is maintained erect; so the bark is dead organic matter, which insects may consume, and sweep away without any other harm to the life of the tree than the exposure of the living envelope to the inclemency of the weather and external injury. The only living part of the tree is the cambium, lying between the bark and the wood, in which the formation of sap and the deposit of wood on the one hand, and bark on the other, is carried on, and which wraps up the whole tree from the minutest fibril of the roots to the extremity of the buds and leaves. This is the only thing that can be hurt by the attacks of insects, and it is only by consuming it that the Scolytus and other bark-boring insects bring about the deterioration and death of trees. Of course we do not mean to say that insects do not occasion damage by boring in the wood of trees, but the damage in that case is damage to the timber, not to the tree—to a product of the tree, not to the tree itself as a living entity. The position of the matter then is this—the Scolytus bores not only in the bark, an operation which is harmless or comparatively so, but in the cambium. M. Robert's process only touches the bark. If he were to remove the cambium, he would do the very mischief that the Scolytus is doing, only in a much more wholesale and destructive manner; and his effort is to remove all the bark where the insect is at work, and to expose, without breaking into the cambium, so that the grubs at work in it may be laid bare and open to the application of tar or any other mixture that may be preferred as fatal to animal life and harmless to vegetable life. We do not say that this cannot be done, but we do venture to say that it is an operation of great delicacy, and that there are ten chances to one that it will not be successfully done. Either too little of the bark will be removed, when the majority of the grubs will be left; or too much will be taken, when the cambium will be injured; and we need not remind our readers that if you girdle the tree—that is, break the continuity of the cambium all round—the tree dies. It is fair to add, however, that the plan has this advantage, that it is chiefly on the main stems and large limbs that the Scolytus settles itself; so that when these parts have been examined and treated, it will rarely be found necessary to go to the smaller branches, which would be an impossible labour.

All delicate and troublesome operations, however, are slow and costly, and this is no exception to the general rule. The expense attending this operation would be an absolute barrier to its general application, however sure its success might be. In any case, it can only be had recourse to for individual trees, which the owner has special reasons for preserving at any cost. Even for these, however, the plan is open to this great and, as it seems to us, fatal objection. The present crop of Scolyti removed, the general health of the tree is not thereby one whit amended; on the contrary, probably injured by the exposure and injury of the cambium in the process. Next year the tree continues in the same state of debility which invited the swarms of Scolytus last year; a fresh immigration takes place; again the trees are examined, and more of the bark removed; and still in the following year the same thing goes on, and we see no end to it until we have all the trees about standing shivering without their bark; and how long they would survive that we cannot tell, for no one, we suppose, has ever carried out the method to the bitter end.

The true remedy for the Scolytus is to improve the health of the tree. It may be that draining is needed, or that too much has been done, or that the soil is exhausted or bound about the roots. Every case must be examined on its own footing, and different modes of treatment will be necessary for different causes of mischief; but one remedy, which, for our own part, we would under no circumstances have recourse to, is M. Robert's method of scarifying the bark of the tree.

A. M.

NOTES AND QUESTIONS ON GARDEN DESTROYERS.

Grubs v. Ranunculuses.—Search wherever the grubs destroying your Ranunculuses appear or are suspected. Portions of carrot of last year's growth placed an inch below the surface between the rows at intervals, with a short stick indicating the spot where they are placed, will prove an attraction to grubs and wire-worms; they must be taken up now and then, and the enemy captured and destroyed.

Early Appearance of Moths and Butterflies.—These have been out unusually early this year; but I thought it especially early to note on April 29th, perched on a yellow wallflower, a fine specimen of the "Emperor," showing off its rich coloured wings to the best advantage. Particularly noteworthy, too, was a busy humming-bird moth gaily flitting from flower to flower. Even much farther south I have seldom observed this moth until summer had been considerably advanced.—D.

Aphides.—We must prevent these getting a foothold on the trees, and be up and at them at once. There are many who lose all for want of promptitude. They see a few aphides, and look upon them as hardly worth attacking; they will wait till they may fight them in battalions. Such waiting means ruin. By killing the first few we may destroy a thousand or million in the germ. When they reach millions the mischief is wrought. The shower of tobacco water then may slay its thousands, but it leaves but the wreck of leaves and shoots behind it. Syringe the trees with tobacco water diluted with two or four parts water to one of tobacco, according to its strength.

Ants.—Being fond of roses, I have devoted a great part of my garden to choice sorts; but, to my dismay, ants have taken up their abode near the roots of some of my best standards and dwarfs; and not having forgotten the article in your paper, "Aphides and their Friends," I am all the more anxious to get rid of the intruders as soon as possible. Can you help me?—[Try sprinklings of petroleum or guano, which have been proved to be very distasteful to ants; sometimes they will build a city under an inverted flower-pot, in which case, city and all may be taken away on a shovel; or you may catch them in quantities on pieces of coarse sponge dipped in treacle water, visiting them often, and throwing the sponge into scalding water.]

Food of Small Birds.—My crop of cherries is almost destroyed by birds. I have a greengage tree with almost every bud picked out, and there is much havoc done to several other plums. I have been shooting small birds in my garden since last May, and opening them. In no case have I found anything but vegetable matter in their crops, except in the case of two spinks. Each had a caterpillar in its crop, but one of them also a dozen seeds to this caterpillar. I think this ought to be conclusive as to the evil that small birds are doing me. Almost all who take to gardening find out the injury small birds do. Two years' gardening convinced me that I could not have small birds and crops both in the same garden. Two years ago a neighbouring clergyman came to his living; he was then much in favour of small birds; now he wants to find a suitable means of destroying them.—M., in "Field."

THE NEW CEMETERY AT PHILADELPHIA.

The most creditable city improvements yet carried out by the Americans are their noble cemeteries. These are as great an advance upon ours as it is possible to conceive. They are in some cases as large as national parks, and as full of flowers and trees as a choice garden. Even small country villages have followed the example of the cities, and instead of the old-fashioned "God's Acre," where those who had been friends and neighbours in life were not separated in death, we see imitations of Greenwood, Laurel Hill, or Mount Auburn, with their drives, walks, and avenues; their select lots, railed in with stone and iron; their costly monuments, adorned with sculpture, and with other devices to rob the thought of death of somewhat of its gloom. In many respects the change is a beneficial one, especially in the matter of healthfulness.

Nevertheless, when, about thirty-five years ago, the idea of such cemeteries was broached, it encountered great opposition. This soon gave way, however; and now, as we have said, every large city, and almost every growing village, in America has its cemetery. Many of the leading cities, indeed, have more than one. There are half a dozen or more within driving distance of New York; and now Philadelphia has lately consecrated that of West Laurel Hill, in addition to the old Laurel Hill Cemetery, which is one of the finest cemeteries in the world, and occupies a beautiful and commanding site.

When at Philadelphia we examined these two cemeteries, accompanied by their founder, Mr. J. Jay Smith, of Philadelphia, who edited the last edition of Michaux's "North American Sylva," and were greatly surprised at their vast extent, and the



WEST LAUREL HILL CEMETERY, PHILADELPHIA.

beauty of the position they occupy on the high wooded slopes and hills on both sides of the river.

The new cemetery is situated at such a distance from the city as to preclude the danger of the ground being required for building purposes. It is likewise bounded on the east by the valley and river of the Schuylkill, and on its northern and southern sides by ravines so deep and precipitous as to insure that no engineering skill will ever pierce them with roads or streets. It consists of a delightfully undulating plateau, situated on a bluff projecting into the Schuylkill, thus constituting it a promontory bounded on three sides by the deep valleys already mentioned.

Our illustration, for which we are indebted to *Harper's Weekly*, is a view from one of the least elevated parts of Laurel Hill, looking towards the city of Philadelphia. We do not remember the size of this cemetery, but half a dozen Kensal Greens would not be missed out of it. Having visited the two Laurel Hills, we were somewhat surprised a few hours later to pass another very large and ornamental cemetery, namely, Mount Vernon, when on our way to see Mr. Buist, the well-known nurseryman of Philadelphia. Not the least interesting or admirable feature of these fine cemeteries, is the room allotted to each family and to each grave. Each family possesses a lot—quite a little garden, in which the graves are dotted about, and which is usually neatly kept and well planted.

THE FRUIT GARDEN.

NEW FRUITS.

POIRE DES PEINTRES.—A seedling of Louise Bonne de Printemps, grafts of which, worked in 1859, did not fruit until 1869. Tree tall, vigorous, and very productive. Fruit oval-pyriform, of medium or large size; at first of a grass-green colour, marked with numerous small red dots in lines at regular distances from each other; changing to a deep yellow, tinged with brilliant carmine on the side exposed to the sun. Flesh rather fine-grained, white, melting, juicy, sugary, and perfumed. Ripens about the end of August and in September, and should be gathered some time before it is fully ripe and while the skin is green, otherwise it loses both in appearance and quality.

PYRUS SIMONII.—A new pear tree, named after M. Eugene Simon, who sent it ten years ago from China to the Museum in the Jardin des Plantes, with several others which have not yet fruited. Tree vigorous; leaves very deeply toothed (a character peculiar to all the Chinese pear trees yet introduced). Fruits nearly spherical, about two inches in diameter, on very short stalks, of a pale green, becoming yellowish when ripe, and marked all over with grey spots. Flesh yellowish white, brittle, sometimes melting, extremely juicy, acid, sugary, vinous, and with a peculiar aromatic flavour, somewhat like that of the quince or the Reinette Apple. The juice of this fruit is so abundant, and keeps its flavour so well, that it will probably make excellent perry. Ripens in September and does not keep long.

NORTH AND SOUTH.

OR THE BEST ASPECTS FOR FRUIT WALLS.

It has long been my opinion—and, as further experience has made me more acquainted with the quantity and continued supply required by most families in the present day, I am confirmed in that opinion—that, for the general purposes of early and late supply, the walls ought to face almost exclusively *north* and *south*. On one or the other of these may be brought to perfection every hardy fruit cultivated in this country, and, what is of more consequence, the season of most of them may be greatly extended. Indeed, in cases where families are not accustomed to retire to their country seats until the breaking up of Parliament or the approach of the shooting season, it is quite indispensable to have a good stretch of north walls, in order to be able to retard the ripening of some of the kinds; and aspect will affect this to a greater extent than many would suppose. I have observed that the difference in the time of ripening the same kinds on south and north aspects is often as much as three weeks; and the length of time which fruit will hang on, and keep fresh and plump, is much greater on the north wall. To enter into more practical detail, let us take cherries as an example, and I have no hesitation in stating that most kinds of cherries may be brought to great perfection on a north wall. They will crop there with more certainty, because the expansion of the bloom is

retarded, and they will ripen as well, with a perfectly good flavour; and therefore, bearing in mind the utility of a late supply, I would only plant a very few sorts on a south aspect, and all the rest on the north. I should thus have a certainty of prolonging the general season of these fruits greatly beyond the usual period. Again, the advantage of a north aspect for red and white currants is well known; but it may not be so generally known that the old Warrington gooseberry may be had in perfection from a north wall long after those in the open quarters are all gone.

Who that knows the wants of a large establishment can have too much south wall or south borders for early crops? or north wall and north borders for summer crops? And let me add that the other two aspects are of little comparative advantage with regard to the summer consumption, because they fill up no gap in the season which will not be filled to greater advantage by the northern and southern aspects. The best fruits for east and west walls, therefore, will be pears, which, being principally autumn and winter fruits, do not affect the general consumption. These considerations would seem to point to the great advantage to be derived from laying out our kitchen gardens in parallelograms rather than squares; so that, if a given space is to be enclosed, it will be better to have it in two or three long compartments, running from east to west, so as to give nearly all north and south walls. The spaces between these walls could be more easily worked, and to much greater profit, than large open squares. The flavour of some fruits from a north wall is in most seasons equal to that from other aspects; but, as many are disposed to doubt this, I will just state why I have come to that conclusion. The temperature of a north aspect is, on the year's average, far more equable than any other, and less liable to the extremes of heat and cold; this, then, is one reason why fruit trees may be supposed to crop and flourish well in the absence of the direct rays of the sun. And as for the flavour, provided the trees are not over-cropped, it is quite as good without sun as with it; nay, it is somewhat preferable, for I have often seen apricots and greengage plums on south aspects quite ripe on the side exposed to the sun, and green and hard on the opposite side; whereas, at the same time, I have found many fruits covered with leaves, and on which the sun's rays had never shone direct, perfectly and equally ripe, with a rather paler colour it is true, but with flavour quite equal to the best bits of the scorched ones. Does not even this show that direct sunlight is not absolutely necessary to ripening and flavour? In the case of cherries, from the May Duke to the most exquisitely flavoured Bigarreau, the flavour is perfectly equal to that obtained in any other aspect, if they are allowed to hang long enough on the trees.—*John Cox, Redleaf, in "Moore and Ayre's Magazine of Botany."*

PEACH TREES AND CHALK.

I HAVE never failed, during eight years in succession, to have excellent crops of Peaches on open walls, with no other protection than that of fine hexagon netting, and I feel sure that if any of your correspondents will follow the course of treatment which I pursue, they will be equally successful, without incurring the expense of glass protections. Even this season the leaves of my trees are large, clean, and healthy; fruit is plentiful, and the young wood all that could be desired. The netting, too, has lasted these eight years, and is good even now; little expense has, therefore, been incurred in that direction.

The treatment to which I subject my trees is as follows:—As soon as the fruit is gathered, I give them a thorough washing, and thin the leaves so as to admit sun and air to the wood, with the view of getting it well ripened. About the middle of December I unnailed all the young fruiting wood, and leave it loose until spring. As regards soil, I ought to state that I find Peach trees to be very fond of chalk; the best time to apply it is in November, when I carefully remove all soil for a distance of about six feet from the base of the trees, and lift all the roots with which I come in contact. In moving the trees I find five-tined forks to be best. When they are up, I get some fresh loam, and mix it with chalk, applying about four bushels of chalk to each tree, the roots of which are carefully spread out and covered with the mixture. Some very old trees here have been subjected to this treatment, and they are now in beautiful condition; their wood and fruit being all that I could desire.

In spring, when the blossoms begin to open—or rather to show colour—I commence pruning and nailing; operations which are not left till they are all in flower and covered with the hexagon netting. There are, I need scarcely say, various ways of pruning; but that which I have always worked on is what is called "Seymour's system," which consists in cutting out all old wood that has borne fruit, and nailing in the young base shoots. I never remove the

netting after it is put on till the leaves have so far advanced in growth as to protect the fruit. I disbud and thoroughly wash my trees with soft soap and sulphur, or use Gishurst Compound, in order to kill the aphid or red spider; the wall and crevices, as well as the trees being subjected to a thorough cleaning.

So successful, indeed, has my netting protection been, as well as my whole treatment, that I venture to recommend it to all who are desirous of having good crops of outdoor Peaches. I should add that I have the netting nailed tight, top and bottom.

High Grove, Watford.

G. BRUSH.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Strawberry Culture under Glass.—I have seen this season the best crops of this delicious fruit at Mr. John Westcott's market gardens, Topsham, Devon, that I ever before met with in my long experience. Mr. Westcott having made for years the Strawberry his special study, has succeeded in producing in the greatest abundance and perfection this fruit from February till it comes on in the open ground. In low, long, narrow span-roofed pits, he has thousands of plants in every stage of fruiting, the berries hanging as thickly as hops, of immense size, perfect in colour, fine in flavour, and as solid as plums, fit to travel any distance when carefully packed. The varieties which he cultivates are the Goldfinder, Myatt's splendid Old British Queen, Princess of Wales, and a sort called the Refresher; the plants are not large, but strong and stubby, with short stemmed foliage, some of them throwing up such masses of bloom-stalks as to resemble clusters of Elder flowers rather than Strawberry blossoms; every flower sets, and all the fruit in succession swells well. In short, Strawberry culture here is indeed a masterpiece.—JAMES BARNES.

Sun-spots and the Vine Crop.—As the connection of sun-spots with terrestrial phenomena is now largely occupying the attention of scientific men, the following facts may be of some interest. The years in which the vine crop in Germany was unusually good seem (in this century, at least) to have returned at regular intervals. The close coincidence of these years with the years of minimum sun-spots is shown by the following table:—

Minimum of Sun-spots.	Wine-years.	Minimum of Sun-spots.	Wine-years.
1784'8	...	1833'8	...
1798'5	...	1844'0	...
1810'5	...	1856'2	...
1823'2	...	1867'2	...
			1834
			1846
			1857
			1858
			1868

I may add that the gentleman who first remarked the regular recurrence of wine-years at intervals of about eleven years was not aware of the periodicity of the sun-spots, and could not therefore have been in any way prejudiced. The years given in the above table are the only ones known in Germany as good wine-years. These facts agree with the results of Messrs. Piazz Smyth and Stone, who found that the mean temperature on the surface of the earth was subjected to a period of eleven years.—Arthur Schuster, *Owen's College, Manchester*, in "Nature."

Pear Blight.—A correspondent of the *Albany Cultivator* suggests that those who wish to record observations on the cause of pear blight should state:—

- | | |
|---|--|
| I. Character of soil, whether clay, loam, or sandy. | V. Cultivation, manures, &c. |
| II. Drained or undrained. | VI. Season, whether wet or dry, hot or cool. |
| III. Subsoil, whether clay, gravel or slate. | VII. Time of appearance of blight. |
| IV. Planting, deep or shallow. | VIII. Varieties suffering most. |
| | IX. Health of trees first attacked. |

In recording the varieties of pears that succeed well or ill in each district or county in this country, it would also be well to notice these points, and also to mention the stock on which the trees are worked.

THE ARBORETUM.

THE BEARDED TREES OF TEXAS.

(TILLANDSIA USNEOIDES.)

ONE of the most striking features belonging to the forests of Texas that meets the traveller's eye, should he chance to arrive in that country in mid-winter, when the forests are disrobed of their summer beauty, is the long beard-like appearance which *Tillandsia usneoides* gives to the belts of trees and islands of timber, as the isolated clumps of forest are there termed; or those of the clearings, where some giant Oak or ponderous Magnolia, that have escaped the axe and fire of the settler, stand out boldly alone in the cotton and corn plantations, or by some freak of nature have been left standing solitary, or wildly dotted about the vast prairies. From the branches of these hang heavy masses of this *Tillandsia*, the grey hue and thread-like divisions of which give it the appearance of an old man's massive beard.

This *Tillandsia* not only attaches itself to the thick portions of the trees, but also to the most tender twigs, and clings with a tenacity that resists summer suns and winter blasts; beautiful to behold at both seasons, but more so in winter than at any other time of the year; for then it rocks backwards and forwards in obedience to the roar of the chill northers, as they sweep over the vast prairies, giving the

trees a wild, weird, and life-like appearance; or if undulating in the soft south breeze that often intervenes between the chill northers of the Texan winter, this beard-like *Tillandsia* gives to the noble monarchs of the forest the appearance of giant heads in calm repose. No one, indeed, could approach them in their winter form without a certain feeling of awe.

But in addition to giving a gaunt look to the Texan forests, and other arborescent vegetation of that country, this *Tillandsia* has yet other uses; it gives ample employment to settlers in their spare hours from the cotton and corn labour. They collect this *Tillandsia*, and throw it into heaps for a short time, to allow the outer cuticle to decompose; then it is dried in the sun, beaten, and cleaned of the outer skin, and the result is a fibrous material almost equal to horsehair for stuffing mattresses, or for other upholstery work. Large quantities of the prepared fibre are annually sent to the furniture makers of the Northern States; nevertheless, the collecting and exporting of this material has not yet assumed the magnitude and importance of cotton, although well-informed Texan authorities think that if the gathering and curing of it were carried out extensively and scientifically, it would be a more profitable business than even cotton-growing itself. This moss-like *Tillandsia* is eagerly sought after by the prairie cattle and horses, and is severely browsed down by them wherever it grows within their reach.

I am of opinion that this *Tillandsia* would grow in the open air in Devonshire, and in other milder parts of England, particularly if it were imported from Texas, where I have often seen ice a quarter of an inch in thickness. If brought from the West Indies, of which it is also a native, it might not succeed so well.

PETER WALLACE.

CONIFEROUS TREES IN CONNEMARA.

WHEN passing through a portion of the county of Galway during the early part of the past month (April), an opportunity was afforded for our seeing what progress some of the recently-introduced Conifers were making in that part of Ireland. The first place we visited was Moytura, the country residence of Sir William Wilde. It is at the head of Lough Corrib, near Cong, and close to the lake, and is much exposed to the westerly winds from the Atlantic. The kinds of pines which are usually selected for affording shelter in such situations have been planted in considerable quantities, and among them nearly all that are hardy of the Himalayan and Californian species. Those of the former which seemed to be thriving best were the Deodar, *Pinus Webbiana*, and *Abies Khutrow*, all of which were making good plants, and had the appearance of being well calculated for that part of the country. Of the Californian sorts, *Pinus nobilis* and *P. insignis* were thriving well, particularly the latter. *Thuja borealis* and *Thuja Craigana* are also growing vigorously, and give promise to make fine trees after a few years; as do also the upright and spreading forms of *Cupressus Lambertiana*.

On the opposite side of the river is Cong domain, the residence of Sir Arthur Guinness, where some of the rarer kinds of Conifers have been planted, and are growing freely. There we saw some fine thriving plants of *Pinus insignis*, which grows well on the limestone soil of the county, and shows itself to be admirably suited for the west of Ireland. We had afterwards several opportunities of seeing it exposed to the severest storms which visit this island near the Killeries and at Kilmore Castle, where it was making way well, and scarcely affected by the prevailing westerly winds direct from the sea. Where the Scotch Fir and *Pinus maritima* were planted near it, both suffered more than *P. insignis*, and neither was so healthy. It is evidently a hard struggle to get up wood in that treeless county, though some of the recent proprietors are making strenuous efforts to get the neighbourhood of their residences clothed with trees. At Kilmore Castle, Mitchell Henry, Esq., M.P. for Galway, is sparing no expense to effect this object, and the trees which have been thickly planted are now sheltering each other and taking fine hold of the soil. It is, therefore, to be expected that after a few years this romantic and wild-looking part of the county will be greatly beautified by woods. Although the coarser and hardier kinds of trees are those which have been planted in quantity, most of the rarer sorts also find a place there.

We have already stated that we saw *Pinus insignis* growing vigorously, and we may also mention *Pinus nobilis*. Nearly every species of Conifer which is considered to be hardy, or nearly so, is already to be found in the collection at Kilmore Castle, which,

although yet small, may be looked on with no inconsiderable degree of interest, as the experiment now making there to get up those ornamental trees, will soon prove which kinds are best suited for being planted in that part of Ireland, either for shelter, profit, or ornament.

We may add that the gardens and conservatories at Kylmore Castle are something marvellous in their way in such a county, though they are still in their infancy; and will be well worthy of being specially noticed by some competent tourist after the works now in progress have been finished.

Mr. Armstrong, of Kylmore Lodge, has also been planting trees to a considerable extent, both in the mountain and near his residence on the shore of Kylmore Lake. In some instances they have failed twice, and he still perseveres, and has been making the vacancies good a third time. The growths which comparatively tender plants make in Connemara, show that it is not the cold which is the principal cause of trees being so difficult to establish there, as many plants which are cut down every winter on the east coast pass unscathed on the west. For example, at Kylmore Lodge and Lough Fee Lodge, the latter a fishing retreat of Sir William Wilde's, the *Fuchsia* is the plant used for hedge-making.

At Rynville House, the residence of Captain Blake, which stands on nearly the most westerly point of the Irish mainland, we saw a plant of *Fuchsia Ricartonii* fully sixteen feet high, with a stem about a foot in diameter, which has stood in the open ground there many years, and was flowering on the first day of April this year. *Escallonia macrantha* makes a magnificent plant there, where it flowers nearly the whole winter. The *Pernettyas* also grow very luxuriantly; and other plants which are natives of the Magellan quarter of South America all seem to thrive well in Connemara.

Dublin.

D. & Co.

EFFECTS OF FORESTS ON CLIMATE.

THE following observations made in 1866, 1867, and 1868, by M Mathieu, professor in the School of Forestry at Nancy, and reported by him in a paper read before the Congrès Agricole Libre, held at Nancy in June 1869, are interesting. Experiments were made upon the following points:—

1st. Does the wooded condition of a country exercise an influence upon the amount of rain it receives? The answer to this question was attempted by taking two stations at an equal height above the sea, but separated between fifteen and twenty miles, the one situated in a wooded, and the other in a cultivated country, and observing the rainfall. The result, reduced to inches, was as follows:—

	Rainfall at the Agricultural Station.	Forest Station.	Difference.
8 Months, 1866	23.25 inches	27.24 inches	3.99 inches
8 " 1867	33.93 "	36.41 "	2.48 "
8 " 1868	24.84 "	29.48 "	4.64 "
Totals	82.02 inches	93.13 inches	11.11 inches

From which it appears that the most rain falls on the wooded country.

2nd. Does the covert of the forest, by intercepting the rain falling from the atmosphere, diminish to a considerable extent the amount of rain that reaches the ground? This was answered by placing rain-gauges beneath the trees and in the open ground, close at hand, and comparing results. Here they are:—

	Under the Trees.	In Open Ground.	Difference.
8 Months, 1866	25.90 inches	26.20 inches	.30 inches
8 " 1867	34.17 "	36.41 "	2.24 "
8 " 1868	27.67 "	29.48 "	1.81 "
Totals	87.74 inches	92.09 inches	4.35 inches

This shows that some part of the rain does not reach the ground. Nevertheless, as is shown by the following table, more rain reaches the earth sheltered by the forest than the earth lying in the open country:—

	Soil covered by Trees.	Soil bare of Trees.	Difference.
8 Months, 1866	25.90 inches	23.25 inches	2.65 inches
8 " 1867	34.17 "	33.93 "	.24 "
8 " 1868	27.67 "	24.84 "	2.83 "
Totals	87.74 inches	82.02 inches	5.72 inches

3rd. What effect does the wooded state of a country have upon the conservation of the moisture received by the soil? An answer

to this was sought in a comparison of the evaporation from two equal vessels, one placed in the forest, the other in the open ground. Evaporation went on five times as rapidly, taking the whole year into consideration, in the open air as in the forest, ranging from three to six times, between April and July; eighty-five per cent. of the rain falling in the open field evaporated, whilst only twenty-two of that falling in the forest was lost.

4th. What is the influence of forests upon temperature? The experiments in this direction had been conducted but a short time, but go to show that the mean annual temperature is lower in the woods than in the open country, and that the difference is least in winter and greatest in summer. In 1868 the mean temperature of the forest was lower than that of the open fields, by 4°.35 in the morning, and 9°.33 at night, in July; which difference fell in December to 0°.48 in the morning, and 0°.94 at night. Again, the average variation in temperature was much greater in the open country than under the cover of the forest between day and night. It ranged from 0°.05 to 8°.57 in the open air, but only from 0°.04 to 1°.22 in the forest.

THE PLANES.

BY GEORGE GORDON, A.L.S.

III.—THE CAUCASIAN PLANE (*PLATANUS DIGITATA*—GORDON).

THIS very distinct Plane is a native of the Taurian Caucasus, where, in the mountain valleys, it forms a stately tree fifty feet high, with a straight stem four feet in diameter; while on



Leaf of the Caucasian Plane.—Natural size, 6 inches long, including footstalk, and 6 inches broad.

Mount Caucasus and other high elevations it is never much larger or higher than a large bush or tree-like shrub.

The leaves are comparatively small, seldom exceeding six inches in length and the same in breadth; they are thick in texture, digitate, widest towards the base, slightly tapering at the footstalk, deeply divided into five open wedge-shaped, somewhat rounded lobes, which are more or less wavy and furnished with a pair of small side lobelets on the outer three, and a few large blunt serratures along the margins, terminated by small hard points; otherwise the edges are quite entire. The divisions between the principal lobes are very open, deep, and rounded at the bottom, and the adult leaves, with the exception of being slightly woolly in the axils of the principal veins on the under sides, are quite smooth and bright green; while the young ones are densely coated, particularly on the under side and margins, with a short white tomentum, which gives to them a frosted appearance when very young.

The balls, or seed heads, are very small, seldom exceeding half an inch in diameter; they are thickly furnished with bristly points, downy, and crowded together on the peduncles, generally in threes, but sometimes as many as six are produced on one footstalk. The stem of the tree is long and straight, with the principal branches rather rigid, more or less tortuose, and somewhat distantly placed, the lower ones being spreading, the upper ones ascending, and the shoots slender.

This Plane was first introduced by the late Messrs. Loddiges, of Hackney, about thirty years ago; and the largest trees of



Twig of the Caucasian Plane.

it in the neighbourhood of London, or perhaps in England, are those in the Victoria Park, which are now from twenty-five to thirty feet in height, although by no means in a favourable situation.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

MISSOURI SILVER LEAF, OR BUFFALO BERRY (SHEPHERDIA ARGENTEA).

This forms a striking and very elegant silvery-looking compact shrub of slow growth, but which, under favourable circumstances, will attain a height of from six to eight feet. It is a native of North America, particularly along the banks of the Mississippi and Missouri rivers and their tributary streams; is easily increased by the underground suckers, and grows well in any good garden soil that is not too dry. It was first introduced into this country in 1818.

The leaves are alternate or opposite, ovate or ovate-oblong, rounded at the ends, glabrous on both surfaces, greyish-green above, but quite silvery and dotted all over with rusty brown scales beneath; they are from one and a half to two inches long, and from one to one and a half inch broad, and are produced early

in the season. The shoots and lesser branches are of a deep rusty brown colour, and furnished at the base of each of the lower leaves with flower buds. The flowers, which are produced in April, are small, yellow, axillary, aggregate, and unisexual, or each sex upon a distinct plant. The female flowers are bell-shaped, equal, flat, and smaller than those of the males, and produced on short peduncles in racemes at the end of the branchlets, while the male ones are lateral, aggregate, and in groups that resemble a catkin. The berries, which ripen in September, are scarlet, transparent, acid, and about the size of the red currant, but richer in taste; they are much relished in America, where they form one continued cluster on every branch and twig of the plant, and are called Buffalo Berries and Rabbit Berries, and (by the American Indians) Beef Suet.

The *Shepherdia argentea* is well adapted for small gardens or the front of the shrubbery, but as the sexes are produced on different plants, it requires to have a plant of each sex placed near each other, or, what is better, so close as to form but one bush, or no fruit will be the result.

THE DOUBLE FLOWERING CHINESE CHERRY (CERASUS SERRULATA).

This cherry forms a very ornamental deciduous somewhat erect tree-like shrub from six to eight feet high, with stout branches sparsely furnished with laterals, which in April are thickly clothed with numerous clusters of large double flowers, that remain long in perfection; on account of this and its dwarf tree-like appearance, it is the most desirable of all the double flowered cherries for a small garden. It is a native of the north of China, where it is called "Young-To." It grows freely in any good garden soil, and is increased either by budding or grafting on the common cherry stock. It was first introduced into this country in 1822.

The leaves are obovate-pointed, quite smooth, bristly serrated on the edges, alternate on the young shoots, but more or less crowded together on the other parts, and very like those of the Bigarreau cherry, both in size and shape. The flowers are double, white at first, but afterwards, when fully expanded, tinged with red and produced in clusters on the previous year's growth.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Sciadopitys verticillata.—Can anyone inform me if this is quite hardy, and if not, to what extent? Also, what is the largest known specimen in this country?—DENDROPHILATOS.

The Big Trees of Australia.—I see that it has been frequently stated in your journal that specimens of *Eucalyptus* have been discovered in Australia which exceed in height the *Sequoia gigantea*. In what part of Australia have they been seen, and what is their specific name? where can I find full particulars respecting them?—DENDROPHILATOS.

Enonymus japonicus as a Seaside Shrub.—This glossy and handsome evergreen thrives remarkably well at the seaside forming large bushes. Such a locality, however, is by no means necessary for its perfect health, as it also thrives in dry and cold inland localities. Of all the many evergreens planted about Paris it seems to thrive the best. The variegated varieties seem to thrive almost as well as the normal dark-green form.

Cydonia japonica.—This, as we all know, is a brilliant wall plant. It is to its greater merits as an untrained shrub, isolated on the turf or grouped with any other low ornamental shrubs, that I wish to call attention. I know nothing lovelier on a sunny slope or sheltered glade when the spring sun sets all its branches on fire with glowing blossoms. After being once properly planted, it is better afterwards left alone, uncut, untortured.—W. R.

Remarkable Yew Tree.—The largest yew that I ever saw is in a farmyard of a village (named, I think, Whitburn) near Frome. I cannot, however, give its dimensions, and it may possibly be the same tree as that alluded to by Mr. Berry, of Longleat. If Mr. Berry would furnish an account of Lord Bath's great beech tree, I think it would be interesting. I cannot describe the exact locality, but it occupies an unfenced triangle formed by the junction of three lanes, and is outside the park. As well as I can remember, it has not the enormous spread that many specimens have, but the large, tall stem must contain an amount of timber, I should say, beyond that of any beech in the kingdom. In such an unprotected situation it is a wonder the tree escaped destruction in its infancy.—S. X.

Conifers in Boggy Soils.—I believe it is not generally known that many of the best conifers are quite at home in a well-drained bog, some growing with a luxuriance that cannot be met with in any other soil. I have many times felt surprised that they are not recommended when "Can you advise me what to plant in boggy soil?" is asked. Such land should be thoroughly drained, and then there are few plants or trees that will not thrive well in it. I have planted scores, from three to four tons in weight down to seedlings, and all are growing with freedom; but the *Cedrus Deodara* and *Wellingtonia* do not do so well as many others. *Cupressus macrocarpa*, *Lambertiana*, *Goveniana*, *Lawsoniana*, *Retinospora obtusa*, *pisifera*, *squarrosa*; *Cephalotaxus drupacea* and *Fortunei*; *Thujaopsis borealis* and *delavata*; *Thuja gigantea* and *occidentalis*; *Juniperus thurifera*, *virginiana*, *pendula*, *horizontalis*, *chinensis*, &c., and, lastly, the much-abused *Cryptomeria* seem quite at home in bog; and the last named will grow, do what you will to it.—J. T.

THE PROPAGATOR.

ON PURE HYBRIDIZATION, OR CROSSING DISTINCT SPECIES OF PLANTS.

BY ISAAC ANDERSON-HENRY, ESQ., F.L.S.

(Concluded from p. 507.)

II. CROSSING WITH LONG STAMENS.

I HAVE made fewer experiments with the long stamens, but I have one before me now no less remarkable, perhaps, for its far-reaching result than any I have alluded to as done with the short stamens. It is a cross which I effected on the tall *Rhododendron formosum*, fertilized with a scarlet-flowered Indian Azalea, on the 11th June last. The seed-pod is finely developed, but I have taken care in this instance to avoid pulling it too early. And I may here notice, once for all, that to obtain the seeds of a cross—especially if it be extreme—sufficiently ripe, you must allow a longer time for it than for the ripening of the normal seeds on the same plant.

In all the foregoing crosses I had, perhaps, less an eye to accomplish a purely scientific experiment than to effect a beneficial result; for, after all, it is the *quid sit utile* which those for whom this paper is mainly intended will have most in view; and, in my estimation, science is best promoted when she is made to minister to some useful end.

The following experiment among the species of *Clematis* illustrates my view of sympathy as well as of antipathy, and I would add, of unnatural selection:—Having many years ago (long before the Messrs. Jackman, who have accomplished such wonderful results) been myself working on the members of this genus, I thought of making another experiment on it, with a view to infuse a richer colour into a new and larger-flowering progeny; and, as I have observed already, I managed successfully to cross with pollen, kept for eleven months, the beautiful four-petalled *Clematis Jackmanni* on a thirteen-petalled flower of the fine *C. candida*. But it is of a cross on Messrs. Jackman's smaller, but no less beautiful, *C. rubro-violacea* I am now to speak. Though, like its congener *C. Jackmani*, it sometimes comes with five or even six petals, it is in its general type a four-petalled flower. With a view to improve it in this feature, I crossed it also with pollen of the large-flowered *Clematis candida*, taken from a bloom having seventeen petals, though this *clematis*—a French hybrid, I believe, from *C. lanuginosa*—is in its normal state a six- or eight-petalled flower. Though I crossed two flowers, after careful emasculation, I only gathered three seeds, but these all of unusually large dimensions. After the cross had taken, I left the normal blooms on the crossed plant to their fate; and though visited by insects innumerable, and though the native pollen was abundant, not one native seed, or any except the three produced by the cross, were ever formed on the plant; and the singular thing was that, with its own native pollen, abortive on itself, I successfully crossed the fine double white-flowered Chinese *C. Fortunei*; and a cross more prolific in the seeds it yielded I have not seen in the tribe before. I know not the parentage from whence this *C. rubro-violacea* was derived, though I believe it to be a mongrel with none of the *Fortunei* blood in it; yet mark how kindly the latter took with it—another instance of remarkable sympathy; although I have no record of it, I think I failed to get *C. rubro-violacea* to reciprocate this cross.

In all these instances of sympathy and antipathy, and especially in this section of the natural order *Ranunculaceæ*, there is something apparently so inexplicable that I can only concur with what Darwin has observed in his paper on the existence of two forms in the genus *Linum*, where in summing up the good gained by the inevitable crossing of the dimorphic flowers, and numerous other analogous facts, he says, that these all lead to the conclusion that some "unknown law of nature is here dimly indicated to us." And this law, when discovered, may disclose more mysteries, tending, perhaps, to the wider divergence of species, with constitutions and habits better fitted for the climates and localities in which they may be cast, as well as for subserving the purposes they are intended to fulfil in the economy of nature. In looking at *Ranunculaceæ*, with their innumerable male and female organs (and the same thing occurs in the *Myrtaceæ*, most of the *Rosaceæ*, some of the *Hypericaceæ*, and in many other families and tribes), the idea was long ago suggested to me, that each separate row, from the outer to the inner circle of the stamens, might have some separate function, just as I believe that the long and short stamens have their separate functions; and with the view of testing the matter, I had last summer begun experiments with these outer and inner stamens; but other aims and objects interfering, I gave up the experiment after I had begun it on these *Clematises*.

But to make success certain, it is my custom, as I have already

stated, in crossing any of these polyandrous flowers, to take the entire bloom of one kind, and lightly to brush over, with all its anthers, the stigmas of the flower to be crossed, and leave nature to make her own selection. In referring to the *Rubus* tribe and its species, I am reminded of an intention I expressed in my former paper of perhaps returning to them afterwards. I again experimented upon them last summer. But though I tried various crosses among them, and reciprocated the cross, I had no success in any, except between the *R. biflorus* and the *R. Idæus*, and that only where I made the latter the seed-bearer. And to make sure of either event—success or failure—I had the *R. Idæus* early potted and put under glass, emasculating every bloom I meant to cross; and for more security I stripped off all other flowers—nay, more, I put the emasculated flowers under fine gauze bags, to ward off the invasion of insects. When ripe for crossing I removed the bag, and, on effecting the cross, I replaced it. In this way I succeeded in ripening three berries of the cross *R. Idæus* by *R. biflorus*, of which I sowed the seed between the 5th and 16th July, though as yet none have vegetated. But *R. biflorus* stubbornly rejected a reciprocal cross. Again I tried both of these on *R. rupestris*, and the latter on them; and though *R. rupestris* showed some sympathy with *R. biflorus*, in a slight tendency to form seeds, these came to nothing. In all these attempts I applied, as I have said, all the anthers of the male flower.

I cannot quit this part of the subject without offering some additional suggestions to those of you who wish to act on any hints I have it in my power to give:—

1st. If your desire be to hasten the flowering condition of plants—I recommend you to cross violently—i.e., where the allies are not too near akin, and above all, in the case of mongrels; for nature, ere she gives up, ever makes a violent effort to reproduce.

2nd. If you wish to make your hybrid flower more freely, as well as early, adopt the same advice.

3rd. By following it, you will find that you have attained a further advantage. Your plant will remain longer in bloom, because most mongrels, especially those among herbaceous or soft-wooded plants, to which these suggestions apply, are impotent to produce seed, or nearly so, and in such cases the blooms remain long upon the plant. I have another idea, not sufficiently tested, however, in reference to the first point among hard-wooded as well as soft-wooded plants, that all such as ripen their seeds more quickly than others (some among the *rhododendron* tribe ripen seed in half the time that others take) will reach more quickly their flowering state.

Lastly, as to fruits, on which, however, I have only partially tried my hand, I entertain the belief that we are on the eve of a revolution, and that by judicious and persevering crossing we may not only transfer the delicious aroma of one to another, and communicate hardier and more abundant bearing habits to the hybrid progeny, but further, especially in stone fruits, such as peaches, plums, apricots, &c., we may, in addition to these advantages, increase the size of the fruits and diminish the size of the stones; and among vines, get rid of, or greatly diminish, the number of the seeds. And all this I hold to arise from that law of nature by which she not merely strains her efforts to reproduce (to which, however, she has assigned limit), but extends it when these have failed, to make provision for her creatures' want. These views gather strength from what has been already done; and I may especially allude to what Mr. Standish of Ascot has achieved among grapes, of whose extraordinary results an interesting account is given at p. 135 of the *Journal of the Royal Horticultural Society* for July 1866.

In conclusion, permit me to observe that, while my aim has been, in all the experiments I have brought before you, rather to achieve something useful and practical than to test the theories which Mr. Darwin and others—especially the Continental *savans*—have been so much engrossed with, I cannot refrain from making some remark on the results and the conclusions which some of them have come to while prosecuting a series of crossing operations, namely, that such crosses do and must eventuate in sterility. M. Naudin seems, like Wichura, as already observed, to have limited his experiments chiefly to herbaceous or soft-wooded plants; and among such, especially among *calceolarias*, I too have often found myself brought to the terminus of bitter and hopeless sterility. I remember one instance where I had reached a perfect monster for size in that tribe, but except in that particular it had no other desirable property. Determined, however, to improve it by crossing, I found on trial I could make nothing of it, and on examination I found its stigma was a hollow tube, and that its anthers were hard masses, and contained not one particle of pollen. Man may run into such mistakes, but he cannot thence conclude that unviolated nature does so. Speaking from a general recollection, which does not admit of my specifying instances, I have often found among hybrid seedlings some of a vigour which, in that respect, were in advance of either

parent. May not such often occur in nature? and, as a naturally selected parent becomes the progenitor of a hardier and more vigorous race (which having in it, according to Darwin's views, a tendency to diverge), may it not culminate in the long lapse of time into a distinct species, and even annihilate the weaker one which gave it being? So that, in nature's crossing, may not fertility and vigour take the place of sterility and weakness, into which she so generally dwindles when modified by man's device?

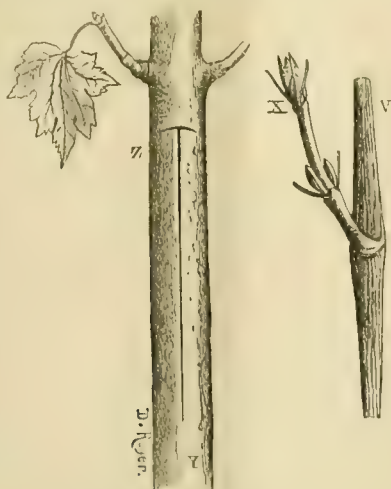
THE ART OF GRAFTING.

(Continued from page 467.)

SIDE-GRAFTING WITH A SIMPLE BRANCH.—This process is valuable for the restoration of defective trees, in supplying branches where they are wanting, and for grafting a new variety on aged subjects. It is equally of use in propagating plants. The woody scion will answer better for insertion under old bark, than the bud of the shield-graft commonly used. The scion in this case is a small branch, or a part of a branch, from four to eight inches long, having the lower part cut with a long splice-cut, the surface of which should be perfectly smooth, and cut thin to the bark at the point B. If it is desired to have a branch forming a wide angle with the stem of the stock, a bent or curved scion is selected; the convex part is cut and placed against the stock, while the top turned outwards will give the required inclination to the limb. With a perfectly straight scion one can contrive to have shoots on the side opposite the cutting, on the face which is united to the stock; this shoot, when developed, will form a branch almost perpendicular to the stem. In propagating certain trees, such as the beech, branched scions, two or three years old, are used, cut as we have described, with a splice cutting, rather thin towards the point.

The scion having been prepared, we make on the stock two incisions forming a T through the bark, not penetrating the alburnum (c). The bark is then raised with the spatula, and the scion slipped under it, so that the top of the splice-cut may be on a level with the transverse incision in the stock. It is then bandaged, and the air excluded from the cuttings by the application of grafting-clay or wax. Instead of a T incision, we might employ a plain bull's-eye opening, into which the scion is slipped, or it would be equally easy to insert the scion under the bark by a sort of veneering.

GRAFTING WITH A BASED BRANCH.—We have recourse to this method for the propagation of some plants, more especially



Grafting with a Based Branch.

the variegated maple. The proper season for this is in August or September, with a dormant bud. A short branch (x) is selected for the scion. Anticipative branches are also serviceable. The little branch is detached with the grafting-knife from the branch on which it grows, but so as to preserve a strip of bark (v) above and below the insertion of the little

branch; the manner in which this is done has been already described. The woody fibres under the strip of bark (v) should not be removed; it would be dangerous to do so, and the surface should be merely smoothed down with the grafting-knife. On the stock (x) a T-shaped incision (z) is made, which goes no deeper than the bark, the lips of this are raised with the spatula and the heel (v) of the scion slipped under them. It is then bandaged with woollen thread or bast matting, like an ordinary shield bud or a short branch graft. It will be unnecessary to apply grafting-wax. In the restoration of fruit trees we have sometimes employed, under the name of scions, branches twenty inches long, with a heel four inches in length. By cutting off their leaves a week beforehand, and while they are still on the parent-tree, they are prepared for the separation. Covering them with grafting-clay as soon as they are grafted will prevent their drying up.—C. Baltet.

(To be continued.)

THE KITCHEN GARDEN.

THE CUCUMBER—ITS CULTIVATION AND USES.

(Continued from page 469.)

DUNG AND LEAVES.

WHEN good beech, oak, or other leaves, can be procured, they may be advantageously mixed with the dung. They will be found to moderate its temperature quickly, and sweeten it in about half the time that would be required to sweeten dung alone. There is also the advantage that leaves, though less violent in their fermenting qualities, are more continuous—that is, they heat less violently, but continue to give the heat for a longer time; consequently, a mixture of dung and leaves is preferable to dung alone. When used together, the mixing must be as complete as possible, and the mass just in the same state as to dryness as if dung alone were used. When hotbeds are made of leaves, it is advisable that they be gathered together in a dry state, be packed in an open shed to ferment a little, or be made into a stack, and be covered over with mats or some other material to keep them dry. In this way a gentle fermentation will soon set in, and then the leaves are in a fit state to make into a bed for plant growing. One advantage of leaves is, they do not attain a rank heat—neither, if used alone, do they give off injurious exhalations; consequently, for the purpose of forming a seed-bed, they are preferable to dung alone, and much less troublesome.

FORMING THE DUNG-BED.

In forming a hot bed it is always desirable to excavate the site, according to the nature of the subsoil, a foot or eighteen inches deep, to place in the bottom a layer of faggots or wood to form a dry bottom for the dung to rest upon. The depth must be guided by the nature of the situation—if dry it may go two feet deep with advantage, but if wet one foot will be sufficient. The length and breadth must always be nine inches to a foot wider than the frame to be placed upon the bed when it is formed. In making the bed begin by shaking up the prepared dung, and place it in layers six inches thick, beating each layer firm with the fork as the work proceeds, and when we say firm we mean as compact as it is possible to make it. Some people tread the bed with the feet as the work proceeds, but that is not a good plan. A man with a fork, and not sparing of his labour, can make a bed as firm as it need be. Proceed in this manner until the bed is of sufficient height and for early forcing, say to begin in January, it should not be when completed less than $4\frac{1}{2}$ feet at the back and $3\frac{1}{2}$ feet in the front. For later work a foot less may be sufficient, but there is no economy in making a slight bed, as the heat quickly goes out of it. These remarks of course apply to beds whether they be formed of dung or leaves alone. The latter, however, are rather difficult to manage, that is, to get them to hold together, and hence it will be found necessary to form the sides with dung, just using as much as may be considered necessary to hold the leaves nicely together. When the bed is formed, place the frame upon it at once, put on the sashes, and shut it close down. In a few days it will begin to heat; but if it does not, cover the frame down with mats to induce fermentation. When it gets hot fork the bed over

daily until the steam evolved gets quite sweet, which will be when the face can be applied to the fresh opened sash without the olfactory nerves becoming disagreeably affected. In a word, the bed requires to become what is technically termed sweet, and free from ammoniacal exhalations. The sense of smell is scarcely to be trusted in such a matter, and therefore, before trusting plants in such an atmosphere, put in a cucumber plant or even a scarlet geranium for a night, and if it remains uninjured, that is if it is neither killed nor turned brown around the edges of the leaves, the bed is in a fit state to receive the plants. It may, however, so happen that the bed though quite sweet is in the centre part too hot to receive the soil without burning it. If such should be the case, then procure for the centre of each light a grass turf two feet square and two inches thick; around this six inches apart make holes in a slanting direction with a broom handle, and from a foot to eighteen inches deep. This will allow the extra heat to escape with freedom, so that the plants may be ridged out with the greatest possible safety.

Though we have formed the bed and prepared it ready to receive the soil and plants, it must be remarked this will not be sufficient to carry them through the season, and hence a stock of dung must always be kept in preparation, so as to apply linings directly the necessary heat in the bed begins to subside. Much, however, may be done to assist the bed by timely protection. Nothing tends so much to drive the heat out of a bed as cold piercing winds, and, therefore, for the purpose of protection thatched frames or hurdles should be in readiness to place on the windward side of the bed. Still, with all this, fresh linings will be required, and these must be placed back, front, or end, as the trial stick inside the frame may show where additional heat is most wanted. In adding a lining it is necessary that the dung be properly prepared, and care must be taken not to carry it above the woodwork of the frame, or injurious gases may get in and injure the plants. To keep them in proper order linings require to be turned, and partly renewed every fortnight, taking away the spent dung and adding fresh, but take care to keep them as sweet as possible. To protect it from cold winds and heavy rain a lining should be covered with straight straw and, that both back and front may be kept in place, by a framework, which will also act as a step to stand upon when regulating the plants. This frame may be made of deal or other scantling three inches square, the uprights being placed four feet, and the cross pieces to form the steps eighteen inches, apart. Two steps will be sufficient. The uprights and steps may be what carpenters call "halved" together. A.

(To be continued.)

IMPROVED CUCUMBER BED.

I AM surprised that "A.," speaking of dung frames for Cucumbers (see p. 469), should recommend solidly built up beds, when hollow bottomed ones are so far superior to them in every way, besides being capable of being put to other uses, so as to keep them at work the whole year round. The plan which we adopt is to build up corner piers of bricks to the required height, say about eighteen inches in front, and twenty-four inches at back, and to lay strong bearers lengthways on these piers and stout planks crossways on the bearers to form a floor, leaving sufficient apertures for the heat to pass through. We then set the frame on and put into it about three inches of leaf mould to keep down the steam; a load of strong fresh dung is now put under the frame and enclosed with a lining of any sort of litter or garden refuse that may be at hand. In this way the heat will be up and the bed fit for planting in less than a week, thus effecting a great saving of time; and the heat may be regulated to a degree.

Frames set up in this way are useful all the year round for forcing asparagus, early potatoes, propagating bedding plants, for cucumbers and melons, and for growing young stock of stove plants in during the summer, &c.

Having a good quantity of houses and pits heated by hot water, we, of course, get our earliest supply of cucumbers from that source. But for amateurs or gardeners with a small amount of glass these simple structures are invaluable. Any one giving them a trial will never go to the trouble of preparing manure for beds, as it is labour worse than lost, and in even the largest gardens it is not one of the gardener's troubles to find sufficient employment for all hands.

Henham, Suffolk.

JAMES GROOM.

HORSERADISH.

THE culture of Horseradish has of late been a good deal discussed in your columns; I have often thought I would relate my experience with regard to it; for as long as Englishmen can get a piece of roast beef for dinner they will always be pleased to have Horseradish along with it. Some fifty or sixty years ago Horseradish was generally to be found in old gardens; but it was not cultivated in the proper sense of the term; it was stuck in some out-of-the-way corner, among weeds and rubbish, and there left for generations. People were afraid to introduce it inside their gardens, on account of its rambling propensities; they thought, too, that if once introduced they would never get rid of it. To this must be attributed the fact of its being disdainfully placed in rough, out-of-the-way, useless kinds of spots, and looked at as an enemy, till roast beef-day came round, when it was sought after. Then the garden boy, whose place it was to serve the kitchen with vegetables, would grub or muddle out a piece of Horseradish, the trimmings and broken roots of which, left in the ground, served as a succession or future crop. Such was the plan on which Horseradish culture was in general conducted in those days—yes, and it is a fashion not yet quite extinct; of this I have had ocular demonstration, in places in which one would expect to find better order.

Market gardeners, it is true, even in those days, cultivated Horseradish to a large extent about Fulham, Battersea, Chelsea, Deptford, Rotherhithe, Bow, Bromley, and other places, on deep, rich, loose, open land, always trenching out the crop that had sometimes only been planted one year, and sometimes two years, when it was large and crisp, and replanting the ground again as the trenching proceeded.

For the latter purpose, such crowns as were crooked and short, and such as were not marketable, were used, putting them into the bottom of the trench, two feet or two feet six inches apart in rows, and one foot asunder in the row. Manure, compost, coal-ashes, or other refuse, was often tumbled in, first on, and then about, the roots and crowns, as they laid in a slanting position at the bottom of the last made ridged trench, for all the trenches were cast into ridges—thus the crowns were just between each ridge, and not deeply buried at first. Early in spring, after the roots had fairly started into growth, all was levelled down lightly, and a crop of radishes was sown on the surface; the latter being off by May, and when the Horseradish appeared in full row it was cleared off, and all kept hoed and clean until it could take care of itself, by covering the ground, and not allowing more intrusion on its part. Turnip radishes were the general surface crop.

What brought Horseradish into greatest notoriety was, however, the following circumstance.

Between fifty and sixty years ago in Gray's Inn Lane was a vast mountain, of years and years' accumulated London cinder-dust, filth, and garbage—yes, a real mountain of it; and amongst its vast and various accumulations were immense plants of Horseradish growing right up through the whole, the produce probably of crowns cast from sculleries to the dustbin. Here it found a favourable site; and as the mountain increased in size and height so did the Horseradish, with its great strength and spear-headed crown, continue to thrust itself through it. Enough at least did so to create astonishment in those days, and to bring the Horseradish into prominent notice; for when this mountain of refuse was removed, the immense length and size of the Horseradish roots were discovered. We had no horticultural journals in those days, but the *Times* and the few papers we had prominently adverted to this wonderful Horseradish, and related how, and where it grew. It was indeed a real phenomenon, the leaves being as large and thick as those of a banana, while its roots were as large and long as scaffold poles. How many hundredweight a root of it weighed it would be difficult to guess—yet one root, as large as a farmyard gatepost, was dug out, and exhibited. The publicity thus given to the matter, and the extraordinary perfection the roots attained in so rich a pasture, proved how simply Horseradish can be grown, and induced everybody to cultivate it in earnest. Nothing would do after this but coal-ashes; and at coal-consuming places all over the country old accumulations of ashes were routed out and turned to account, while fresh ashes were saved for the future production of fine sized, well coloured, and crisp Horseradish. The modes of culture and the general treatment of this useful plant were various. Those who had a hoard of old cinder ashes planted Horseradish on the heap; others filled trenches with them, others mixed them with the soil in trenching; and another class made a deep hole in the ground with a crowbar and let down to the bottom of it a crown of Horseradish, filling up to the brim, as a matter of course, with coal-ashes. Indeed nothing was thought of then but coal-ashes for the future production of crisp, white, fine flavoured Horseradish, of a year or two's growth, instead of the yellow, tough, burning-hot whip-thongs they had always been

accustomed to; the produce, however, was as various as the soils on which it grew and the means by which it was brought forward. In short, success did not always attend this mode of culture; but to it must be attributed the first improvement in Horseradish-growing. One drawback in country-made coal-ashes was the deficiency of bones and other decomposed matters, in which London accumulations were rich. Bones, indeed, were then only looked upon as a nuisance, and great accumulations of them were either burnt or buried, only to be dug up again in after years, when their value had become known. I well remember the first bone collector I ever saw; people thought he was not quite right in his mind to take in hand such a detestable calling. At first he collected them with a basket and sack only; then he started a donkey and cart, afterwards a horse and cart; then he took premises, and, by persevering industry, started an immense bone-collecting business, ultimately amassing a large fortune.

JAMES BARNES.

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

PRIVATE GARDENS.

Indoor Plant Department.—Conservatories are now gay with *Calceolarias* and *Cinerarias*, the blooming of which has been kept back until now. Roses, especially *Maréchal Niel* and *Gloire de Dijon*, are also in most places beautifully in flower; than these few kinds are better adapted for covering pillars or similar supports, particularly if planted out in borders. Many varieties of *Heaths* and several sorts of New Zealand plants are likewise now in perfection, and are kept in the coolest part of the house. Evergreen plants out of flower, and others making growth, are liberally syringed early in the afternoons, thus allowing time for their leaves to get dry before shutting up time. *Clianthuses*, now out of bloom, are daily syringed, and, in cases where required, have their shoots thinned out a little. *Passion-flowers*, *Hibbertias*, *Hardenbergias*, *Habrothamnuses*, and similar plants, now at their best, are allowed to hang down gracefully, a position in which the foliage to some little extent protects the bloom from the fierce rays of the sun. In stoves, *Caladiums*, growing into good specimens, receive the support of a few stakes. Early *Gloxinias*, now going out of bloom, are being succeeded by fresh plants, which, when growing, like plenty of water at the root, but not any overhead, a remark which also applies to *Achimenes*. *Dracenas*, *Crotons*, *Marantas*, &c., are now liberally watered overhead and at the root. Amongst *Orchids* various kinds of *Aërides* are now in bloom; also many *Oncidium*s, *Odontoglossum*s, and *Cattleyas*, all of which are kept in a drier atmosphere than that in which they have been growing.

Pits and Frames.—*Cinerarias* are turned out of their pots, and planted in shady places, where they soon produce a number of suckers. A portion of these suckers is being potted singly into small pots, and placed in cold frames. Seedlings, as they require it, are also potted; as are likewise *Primulas*, three or four small pegs being put in around the crown to keep it upright and in its place. Half-hardy annuals are potted on as they advance in growth. *Balsams*, *Cockscombs*, *Amarantuses*, &c., are benefited by a little bottom heat, at the same time giving them air. *Dahlia* cuttings are still being put in, and young plants in pots are being gradually hardened off. Bedding plants in frames are now being exposed as much as possible to the weather; the sashes being replaced in the event of heavy rains or cold cutting winds. *Pelargoniums* beginning to flower in frames, are neatly staked and taken into the conservatory.

Flower Garden and Shrubbery.—May, both common and pink, *Ghent Azaleas*, *Spiræas*, *Guelder Roses*, and other shrubs, are now beautifully in flower; as are also double *Pæonies*, *Iberises*, *Lithospermums*, &c. *Delphiniums*, *Lupinuses*, *Dianthus*es, *Campanulas*, &c., will also soon be in full beauty. *Phloxes* and *Asters*, throwing up too many shoots, have the weakest ones removed. A few remaining *Hollyhocks* are being planted; by making two or three plantings of these a longer succession of bloom is obtained. Bulbous plants, as soon as their leaves become withered, are taken up, and the offsets separated from the parent bulb, which is planted afresh. *Narcissi*, *Jonquils*, *Tulips*, and *Hyacinths* are being removed to make room for summer bedding plants. Perennials are being increased by means of cuttings of the young shoots inserted in warm borders, covered with hand-lights, and shaded from strong sunshine.

Indoor Fruit Department.—In late vineries there is every appearance of a good crop. The vines are stopped a joint or so above each bunch, and the production of good, healthy foliage is encouraged. Vine borders are being mulched over with stable litter. Figs are

liberally watered at the roots and overhead, except in the case of those ripening, which are kept somewhat drier. Some early *Melons* are now ripening, and care is taken to prevent their experiencing sudden changes of temperature; the atmosphere is also kept a little drier than in the case of growing crops. *Cucumbers* are strictly attended to as regards thinning and stopping, but abundance of healthy foliage is always left. Fruiting plants are supplied with good soakings of weak manure water. Gourds are placed in cold frames, preparatory to their being planted out. Mushroom-houses are kept at as equable a temperature as possible.

Hardy Fruit and Kitchen Garden Department.—Stone fruits seem to have suffered considerably from the severity of the weather last month, but of Apples and Pears, especially late kinds, there will be no scarcity. Bush fruits are mostly set, and give promise of good crops. Thinning both shoots and fruits on walls is being performed. Fruit trees on walls are frequently syringed, and all curled or diseased leaves are picked off them. The surface of *Asparagus* beds is stirred occasionally, adding a sprinkling of salt. In the case of *Artichokes* a little soil is drawn to their roots. *Nasturtiums*, for salading and pickling, are being sown near fences, or treated in the same way as Peas; those sown earlier are being transplanted. Onions for salading are being sown, and also *Lettuces* for successional crops. Some late sorts of *Broccoli* are still being sown, and the earliest sown ones planted out. When it is necessary to hasten the "hearting" of *Cabbages* they are tied up as *Lettuces* usually are. All growing crops have the soil about them frequently stirred, and a little soil drawn to their roots. Trenches are being taken out for *Celery*, and are well enriched with decomposed cow dung and rotten stable manure.

NURSERIES.

Now that the propagation of bedding plants is nearly over, more time and attention are given to other matters. Old roots of *Dahlias* are, however, still subjected to strong heat, and all shoots continue to be taken off as they appear, and are inserted in sand. These will hereafter be potted singly, and as they get a little established they will be planted out in light, rich sandy soil, where they will make fine tubers for next year's work. The finer varieties of *Cineraria maritima*, such as *compacta*, &c., many kinds of *Coleuses*, and other soft-wooded plants, are being rapidly increased. Hard-wooded plants, such as *Heaths*, *Epacris*es, and others, are being struck, the points of young drawn shoots being selected for the purpose, and inserted in bottom heat under bell-glasses in small frames. Various kinds of succulents, such as *Echeverias*, and others, are being propagated by means of leaves, inserted in light sandy soil, or pure sand; long-leaved sorts are kept upright by means of small stakes, which also serve to keep them firmly in their places. The shorter leaves have merely their ends covered, and are permitted to lie almost flat on the surface of the pot. Plants of *Primula japonica* raised from seed in cold frames are being pricked off into pans, and the strongest simply into thumb pots.

MARKET GARDENS.

The cold, wet weather which we have lately experienced, has obstructed the regular course of routine work under this head. Early plantations of *Spinach* are now nearly exhausted, and the ground occupied by them is being dug over, either to be planted with *Lettuce* or some of the *Cabbage* tribe, or else thrown into ridges for *Celery*. Early plantations of *Cabbages* are also now nearly all used up, and the ground is being treated similarly to that on which *Spinach* has been grown. Stumps for seed bearing, previously distinguished from the others by special marks, are now being lifted, in order to clear the ground, and are planted along the foot of walls or fences, or in any open place to spare, where they will be allowed to remain to perfect their seed. The weeding of the *Onion* crop sown broadcast is for the present discontinued until the weather settles a little, for no sooner do the narrow hoes perform their work, than the rains replant the uprooted weeds. Heavy dressings of manure are being carted on to vacant ground, which is being dug and held in readiness for other crops. Some weeks since, we observed that a line of *Potatoes* was planted, by means of a dibber, between rows of early *Cabbages*. The latter are now cut for market, the stumps removed, and the soil between the rows of *Potatoes*, which are now appearing above ground, is deeply loosened by means of long toothed hacks. Where it is practicable to protect *French Beans*, or at least a portion of them, from cold winds and rains, it is done, in order to promote earliness. This is done by placing mats in an upright position, fastened to strong stakes, on their windward side. *Cucumbers* and *Vegetable Marrows* are well protected with litter.

HARDY PLANTS IN FLOWER ROUND LONDON. (FROM MAY 8TH TO 15TH, INCLUSIVE.)

<i>Acer</i> <i>pennsylvanicum</i> var.	<i>Chrysanthemum</i> <i>speciosum</i>	<i>Leucanthemum</i> <i>arcticum</i>
<i>Achillea</i> <i>Anzosa</i> <i>moschata</i> <i>umbellata</i>	<i>Claytonia</i> <i>sibirica</i>	<i>Leucocymum</i> <i>arcticum</i>
<i>Aconitum</i> <i>Napellus</i> <i>E-culus</i> <i>dava</i>	<i>Clematis</i> <i>Standishii</i>	<i>Linaria</i> <i>hepaticefolia</i> <i>pilosa</i>
<i>Æthionema</i> <i>gracile</i> <i>saxatile</i>	<i>Cochlearia</i> <i>alpina</i> <i>macrocarpa</i>	<i>Linum</i> <i>narbonnense</i> <i>perenne</i> <i>tauricum</i>
<i>Alchemilla</i> <i>alpina</i> <i>fissa</i> <i>pubescens</i> <i>vulgaris</i> and vars.	<i>Collinsia</i> <i>grandiflora</i> <i>verna</i>	<i>Lonicera</i> <i>Brownii</i> <i>Caprifolium</i> <i>diversifolia</i> <i>florida</i> <i>nigra</i>
<i>Allium</i> <i>fistulosum</i> <i>sibiricum</i> <i>Stellerianum</i> <i>triquetrum</i>	<i>Cortusa</i> <i>Matthioli</i> <i>Cotoneaster</i> <i>bacillaris</i> <i>vulgaris</i> and vars.	<i>Lupinus</i> <i>hirsutus</i> <i>Melandrium</i> <i>Priestii</i> <i>Menziesii</i> <i>caerulea</i> <i>globosa</i> <i>polifolia</i>
<i>Alyssum</i> <i>incanum</i> <i>Amelanchier</i> <i>florida</i> var.	<i>Cratægus</i> <i>Aronia</i> <i>coccinea</i> <i>Crus-galli</i> <i>heterophylla</i> <i>orientalis</i> <i>ovalifolia</i> <i>punctata</i>	<i>Mespilus</i> <i>grandiflora</i> <i>Meum</i> <i>athamanticum</i> <i>Mœhringia</i> <i>muscosa</i> <i>Moricandia</i> <i>arvensis</i>
<i>Anchusa</i> <i>italica</i>	<i>Cynoglossum</i> <i>officinale</i>	<i>Muscari</i> <i>Heldreichii</i> <i>Myosotis</i> <i>alpestris</i> <i>Myrrhus</i> <i>odorata</i> <i>Narcissus</i> <i>gracilis</i>
<i>Androsace</i> <i>carnea</i> <i>lactea</i> <i>villosa</i>	<i>Cytisus</i> <i>præcox</i>	<i>Nothoscordum</i> <i>striatum</i> <i>Onosma</i> <i>taurica</i>
<i>Anemone</i> <i>alpina</i> <i>sulphurea</i>	<i>Daphne</i> <i>hybrida</i>	<i>Ophrys</i> <i>anthropophora</i>
<i>Anthericum</i> <i>Liliago</i> <i>Lilium</i> <i>Lilium</i> <i>Antirrhinum</i> <i>Asarinum</i>	<i>Deutzia</i> <i>gracilis</i> <i>Dianthus</i> <i>arenarius</i> <i>Dodecatheon</i> <i>Jeffreyi</i> <i>Meadia</i> and vars.	<i>Orchis</i> <i>Morio</i> <i>Ornithogalum</i> <i>comosum</i> <i>Orobanchia</i> <i>aurantia</i> <i>Othonna</i> <i>cheirifolia</i> <i>Oxalis</i> <i>floribunda</i> <i>Oxyria</i> <i>reniforme</i>
<i>Aquilegia</i> <i>canadensis</i> <i>fragrans</i> <i>olympica</i> <i>Skinneri</i> vars.	<i>Doronicum</i> <i>plantagineum</i>	<i>Pæonia</i> <i>albiflora</i> <i>anomala</i> <i>decora</i> <i>mollis</i> <i>peregrina</i>
<i>Arenaria</i> <i>caespitosa</i> <i>graminifolia</i> <i>montana</i> <i>rigida</i> <i>verna</i>	<i>Draba</i> <i>aurea</i> <i>Gmelini</i> <i>Elæagnus</i> <i>parvifolia</i> <i>umbellata</i>	<i>Papaver</i> <i>nudicaule</i> <i>Pavia</i> <i>rubra</i> var. <i>Pentstemon</i> <i>confertus</i> <i>Pernettya</i> <i>speciosa</i> <i>Phlox</i> <i>Nuttallii</i> <i>procumbens</i> <i>prostrata</i> <i>setacea</i>
<i>Armeria</i> <i>fasciculata</i> <i>longiaristata</i> <i>plantaginea</i> <i>pubescens</i>	<i>Erigeron</i> <i>philadelphicum</i>	<i>Phillyrea</i> <i>angustifolia</i> <i>Platanus</i> <i>orientalis</i> <i>Polygala</i> <i>Chamaebuxus</i> <i>Polygonatum</i> <i>vulgare</i> <i>Polygonum</i> <i>alpinum</i> <i>capitatum</i> <i>Potentilla</i> <i>aurea</i> <i>gracilis</i> <i>iberica</i> <i>multifida</i> <i>opaca</i> <i>rupestris</i> <i>stolonifera</i> <i>thuringiaca</i> <i>trifurca</i>
<i>Aster</i> <i>alpinus</i> <i>elongatus</i> <i>pendulus</i> <i>Astragalus</i> <i>monspessulanus</i>	<i>Erodium</i> <i>gruinum</i> <i>Reichardi</i> <i>Fragaria</i> <i>calycina</i> <i>elatior</i> <i>inamena</i> <i>Geranium</i> <i>divaricatum</i> <i>lancastriense</i> <i>sanguineum</i> <i>subcaulescens</i> <i>Vlassovianum</i>	<i>Primula</i> <i>farinosa</i> <i>japonica</i> <i>maritima</i> <i>Ptilomeris</i> <i>aristata</i>
<i>Barbarea</i> <i>vulgaris</i> and vars.	<i>Geum</i> <i>rubifolium</i> <i>splendens</i> <i>syriaticum</i> <i>Gladiolus</i> <i>segetum</i> <i>Gnaphalium</i> <i>Leontopodium</i>	
<i>Bellis</i> <i>sylvestris</i>	<i>Helianthemum</i> <i>fulgidum</i> <i>polifolium</i> <i>vulgare</i> and vars.	
<i>Berberis</i> <i>buxifolia</i> <i>Darwinii</i> <i>empetrifolia</i> <i>ibericus</i> <i>sinensis</i> <i>vulgaris</i>	<i>Hieracium</i> <i>eminens</i> <i>Hesperis</i> <i>matronalis</i> and vars.	
<i>Biscutella</i> <i>lævigata</i>	<i>tristis</i> <i>Hutchinsia</i> <i>alpina</i> <i>Hyacinthus</i> <i>romanus</i> <i>Ionopsisidium</i> <i>acaule</i>	
<i>Braya</i> <i>pinnatifida</i>	<i>Iris</i> <i>stenogyna</i> <i>tingitana</i>	
<i>Buxus</i> <i>baleatica</i> <i>Campanula</i> <i>glomerata</i> <i>Cardamine</i> <i>latifolia</i> <i>Ceanothus</i> <i>azureus</i>	<i>Isatis</i> <i>tinctoria</i> and vars. <i>Jasminum</i> <i>fruticans</i> <i>revolutum</i> <i>Lactuca</i> <i>sonchifolia</i> <i>Laurus</i> <i>nobilis</i> <i>Ledum</i> <i>thymifolium</i> <i>Lepidium</i> <i>repens</i>	
<i>Cerastium</i> <i>arvense</i> <i>pilosum</i> <i>pumilum</i> <i>repens</i> <i>tenuifolium</i>		
<i>Cerasus</i> <i>Mahaleb</i> <i>Cercis</i> <i>canadensis</i> <i>Chelidonium</i> <i>majus</i> <i>laciniatus</i>		

THE GARDEN IN THE HOUSE.

FORMS OF VASES FOR CERTAIN FLOWERS.

IN compliance with the wish of your correspondent "D. T. F." (see p. 523), I will endeavour to lay down a few rules for the guidance of those (and they are unfortunately very numerous) who, as he remarks, have "very much overlooked this point in floral arrangements." Let me assume that the flowers to be grouped are to be seen by persons sitting round the table upon which the vases are placed. Let me further assume, for the moment, that all vases may be divided into three groups, (1) those with the receptacle for the flowers *below* the level of the eyes, (2) those with the receptacle *upon* a level with the eyes, and (3) those with the receptacle *above* the level of the eyes. Now take any flower you like into your hand for examination, and you will observe that you naturally hold it in that position in which you can best see and admire its beauty. If it be a Rose or a Camellia, you hold it below your eyes, that you may look down upon it and into it. If it be a Fuchsia or an Abutilon, you hold it up, you raise it as high as the brim of your hat at least, before you can fully appreciate its lovely form and colours. And so, I believe, that with every flower and every leaf there is some particular elevation and position at which you may derive the maximum of pleasure from looking at it. I need scarcely add, that having found this out, you have only to place it in a vase accordingly.

I do not mean to assert that there is only one elevation and position at which you can enjoy a view of any flower; on the contrary, many kinds which are at their best when much below, or much above, the level of the eyes, are also capable of affording much pleasure when placed about the eye-level; but I hold it as an invariable rule that the greater the departure from the position of maximum enjoyment, the less is the amount of ocular gratification.

W.

HARMONIES AND CONTRASTS IN FLOWER VASES.

PEOPLE are too apt in arranging flowers to think only of what "will go well together," and to forget that pleasing effects may often be obtained by striking contrasts. There may be harmonies in form and harmonies in colour, there may be contrasts in form and contrasts in colour, and there may be harmonies of one and contrasts of the other; and I have never yet been able to make up my mind which of these combinations pleases me best. In a white trumpet-shaped vase before me are a tall piece of Solomon's Seal curving over to the left, a long branch of an *Oncidium* (I forget which) curving similarly to the right, a handsome spike, not quite straight, of *Lupinus polyphyllus* between the two, their bases being screened by a few fronds of ferns, from amongst which peeps out a flame-red bloom of an erect *Gloxinia*. Over the edge hangs a piece of Ivy, which twines round the stem of the vase. Let us examine the forms first. There is a harmony in the curve of the inflorescence of the *Oncidium* and the *Polygonatum*; but in all other comparisons, the forms are in contrast, especially in that of the blooms of the different flowers. In the colours, however, the harmonies and contrasts are more evenly divided. The yellow-coloured *Oncidium* contrasts with the blue *Lupin* and the crimson *Gloxinia*, and harmonizes with the light green foliage of the *Polygonatum*. The *Gloxinia* harmonizes with reddish-purple tints in some parts of the *Lupin* flowers, and contrasts both with the light green of *Polygonatum* and the dark green of the Ivy. On the whole, however, the contrasts are more numerous than the harmonies; and it is probably owing to this that the grouping exhibits a style and character which might not please every one, but which is at the same time bold, free, and unconventional. I wonder whether this arrangement would please "D. T. F.," who is so displeased with the magpie mixtures of the present day, that he rushes off into the other extreme of "utmost simplicity," and puts only one kind of flower into each vase. This style is undoubtedly pretty, and very safe for beginners; but the effect of a dinner-table thus arranged will not bear comparison with that resulting from a judicious distribution of harmonies and contrasts in form and colour.

W. T.

COVENT GARDEN MARKET.—May 17th.

Flowers.—Bouquets have invariably some white flowers in their centres, sometimes a light coloured Tea Rose, at other times a Gardenia, or a cluster of Stephanotis blooms; around the centre are arranged sprays of Orchids, Lily of the Valley, White Azaleas, Bouvardias, Heliotropes, Pinks, Pelargoniums, &c., the whole interspersed with Ferns. The prevailing colour in bouquets is generally white, and none of them contain more than some half dozen different kinds of flowers. In some of them the dark blue flowers of *Centaurea montana* are very striking, and contrast admirably with the white. In addition to these we noticed cut blooms of Cacti, *Philæa buxifolia*, white and red *Daturas*, *Cyclamens*, still in fine condition, *Sparaxis*, *Honeysuckle*, *Carnations*, *Ranunculuses*, *Rhododendron Dalhousianum*, with its large trumpet-shaped, cream-coloured blooms, grand examples of *Anthurium Scherzerianum*, and others. Besides these there is no lack of plants in pots, such as *Heaths*, *Hydrangeas*, *Petunias*, *Variegated Grasses*, suitable for the decoration of baskets, *Amaryllis*, *Fuchsias*, *Pelargoniums*, *Calceolarias*, &c., and hosts of spring flowering and bedding plants.

PRICES OF FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples 1 sieve	3	0 to 6	Lemons 100	7	0 to 10
Cherries per box	3	6 to 5	Oranges 100	6	0 to 12
Chestnuts bushel	8	0 to 15	Pine Apples lb.	8	0 to 12
Filberts lb.	0	6 to 1	Strawberries oz.	0	9 to 1
Cobs lb.	0	6 to 1	Walnuts bushel	10	0 to 25
Grapes, hothouse lb.	5	0 to 12	ditto per 100	1	0 to 2

PRICES OF VEGETABLES.

Artichokes per doz.	4	0 to 6	Lettuce (Paris cos) each.	0	4 to 0	8
A-paragus per 100	4	0 to 10	Mushrooms pottle	2	0	3
Beans, Kidney per 100	1	6 to 2	Mustard & Cress, punnet	0	2	0
Bet, Red doz.	1	0 to 3	Onions bushel	2	0	4
Broccoli bundle	0	9 to 1	pickling quart	0	6	0
Cabbage doz.	1	0 to 1	Parsley, doz. bunches	3	0	4
Carrots bunch	0	6 to 0	Parsnips doz.	0	9 to 1	0
Cauliflower (hand-glass) doz.	5	0 to 12	Peas, Continental, quart	3	0	5
Celery bundle	1	6 to 2	Potatoes bushel	4	0	6
Chilies per 100	1	6 to 2	Kidney do.	4	0	6
Coleworts doz. bunches	2	0 to 4	Radishes doz. bunches	0	6 to 1	6
Cucumbers each	0	6 to 1	Rhubarb bundle	0	6 to 1	0
Endive doz.	2	0 to 0	Salsify do.	1	0 to 1	6
Fennel bunch	0	3 to 0	Savoy doz.	0	9 to 1	0
French Beans per 100	1	0 to 3	Scorzoneria bundle	0	9 to 1	3
Garlic lb.	0	8 to 0	Seakale basket	1	0 to 2	0
Herbs bunch	0	3 to 0	Shallots lb.	0	4 to 0	6
Horseradish bundle	3	0 to 4	Spinach bushel	3	0 to 4	6
Leeks bunch	0	2 to 0	Tomatoes small punet	3	0 to 0	0
			Turnips bunch	0	3 to 0	9

SOCIETIES, EXHIBITIONS, &c.

ROYAL HORTICULTURAL SOCIETY.

(MAY 15TH AND 16TH.)

This exhibition was held under a large tent on terraced grassy banks. It was principally conspicuous for its Roses, which were finer than those exhibited at any previous meeting this season. They were individually large in size, and were thickly studded with blooms of the finest quality, of which, the fully expanded ones on each plant would average over four dozen. One plant in particular, *Souvenir d'un Ami*, was furnished with at least six dozen expanded blooms. These collections of Roses were supported by large Bay trees, bushes of Box, Palms, *Dracenas*, *Yuccas*, and similar plants at the back. Amongst hybrid perpetuals was *Camille Bernard*, a very double dark red; *Victor Verdier*, an immense plant with splendid large rose-coloured flowers; *Beauty of Waltham*, in lovely condition; *Vicomte Vigier*, a rich dark coloured sort. Associated with these were also *Edouard Morren*, with immense reddish-pink flowers; *Madame Victor Verdier*, a brilliant deep red; *Horace Vernet*, a fine dark velvety flowered kind; *Pierre Notting*, one of the best dark-coloured kinds, and very double; *Charles Lefebvre*, also a variety of great excellence; and *Marquise de Castellane*, with very large rose-coloured blooms. In addition to these we noticed *La France*, a grand rose, with finely formed pink blooms; also *Charles Lawson*, which we have seldom seen so fine; *Princess Mary of Cambridge*, in the form of a great pyramid of pink Roses; *Mdlle. Therese Levet*, a particularly fine pink, and *Marie Beauman*, a brilliant red. *Madame Villermoz* was a complete mass of light-coloured blooms, and *Catherine Mermot*, also a Tea Rose, promises to take a prominent place among light pink flowers; of *Celine Forestier* there was a grand specimen, covered with splendid very double yellow flowers. Cut blooms filled eleven large boxes; the varieties in which were arranged in threes of each sort, and were very effective.

Of *Succulents* several first-rate collections were exhibited in competition for the prizes offered by Mr. Peacock; and that gentleman sent from his own garden at Hammersmith no fewer than fifty distinct species, including *Agaves*, *Mammillarias*, *Melocactus*, *Echinocactus*, and a few plants of *Opuntias* and *Cereuses*. Of these, several, from the manner in which they were grafted, appeared quite novel. Tall-growing *Cereuses* seemed to be the stocks most generally employed, and plants of these a foot high or so and from one to two inches in thickness, surmounted by a round head from four to six inches in diameter, had a truly singular appearance. *Opuntias* and others have been so successfully operated on in this way by Mr. Croucher, that he finds some of them do better than when

allowed to grow on their own roots. Amongst them were three plants of *Echinopsis* that had never before produced flowers in this country. These were *E. Davallii*, on which were three open blooms of a lovely pink colour, each flower being about eight inches in length and nearly three inches across. In addition to this there was *E. Wilkinsii*, with flowers of a pretty rose colour, one being open and two approaching that stage; and *E. Rollandii*, with blooms of a delicate violet rose; this was more spiny than the others.

The collections of *Agaves* staged for exhibition were of great interest, and comprised many new kinds. *Bonapartias*, *Yuccas*, &c., were also contributed. A dozen plants of *Pilocereus senilis*, or "the Old Man Cactus," as it is commonly called, from Mr. J. Verschaffelt, attracted considerable attention. They were small, and densely covered with white hair several inches in length. *Azaleas* were not exhibited in the shape of large specimens, but a good collection of small plants came from Mr. Turner. These were associated with such plants as *Pandanus*, *Palms*, *Dracenas*, *Yuccas*, *Ficus*, &c., tastefully arranged amongst them. A nice collection of *Rhododendrons* in small pots also added to the attractions of this show.

Amongst miscellaneous exhibitions were some valuable plants; in that from Mr. B. S. Williams, was a grand specimen of the variegated *New Zealand Flax*. We also noticed some fine *Pelargoniums*; various *Mimuluses*, beautifully coloured; *Carnations* and *Picotees* of fine quality; *Herbaceous Calceolarias*, stocky in growth and well varied as to colour; and one or two collections of hardy plants. *Orchids* were not plentiful. Amongst them were several fine varieties of *Cattleya Mossiae*; a beautiful specimen of *Oncidium altissimum* with twenty spikes of bloom; and a plant of *Anderson's* variety of *Vanda teres*, richly flowered; as was also *Lælia majalis*. This last came from Mr. Denning, who had, it was reported, kept it in a cool airy house during the summer, and in an intermediate one in winter. The same collection likewise contained the *Odontoglossum coronarium*, with pretty brown flowers, the lower lip of which is tipped with yellow, the whole having a polished appearance as if varnished. On one spike of a dried specimen of this plant, no fewer than seventy flowers have been counted. In addition to the above, there were also two plants of *Masdevallia* in bloom, one of which was new and unnamed. This is of a deep crimson colour, shaded with violet, and promises to be more than equal in point of beauty to any of this fine genus we as yet have in cultivation.

Fruit and Vegetables were but sparingly exhibited. There were, however, six Melons, all of one kind, named *Little Heath*, which were remarkably well flavoured. Their united weights were forty-three pounds one ounce. There were likewise some well-ripened examples of *Black Hamburg* and *Buckland Sweetwater* Grapes, and also some splendid *Early Grosse Mignonne* Peaches. Two fine examples of *Cucumbers* were likewise shown, named *Maher's Prolific*, but owing to its nearness to the kind called "*Blue Grown*," the committee did not award it a certificate. Besides these there were also some good new *Peas* grown indoors. They consisted of *Carter's First Crop* and *Little Gem*.

First-class certificates were awarded to the following, viz.:—To *Azalea grandis*, from Mr. Turner; to *Odontoglossum coronarium*, and to *Masdevallia* species, from Mr. Denning; to *Agave Hystrix compacta*, A. Leopoldi, A. robusta, and A. Kellschii, from Mr. J. Verschaffelt, Brussels; to *Pelargonium Naomi* and P. Chancelor, from E. Foster, Esq.; to *Gloxinia Cecilia*, from Mr. D. S. Thomson; to *Carnations*, *Empress of Germany*, *Princess Christian*, and *Marchioness of Westminster*, from Mr. C. Turner, Slough; and to *Melon*, *Little Heath*, from Mr. J. Munro.

The exhibitions of *Table Decorations* opened up a field for a fine display of taste, and on this, as on former occasions, the designs simplest in construction and the least costly were the most successful. Some of the sweetest and loveliest flowers which our glass houses can produce, through bad arrangement in clumsy designs, were wholly ineffective compared with materials of even the most common-place description neatly arranged. Differences, indeed, as regards arrangement were more than usually apparent at this show, some of the exhibitors even going so far as to decorate their centre vases with the flags of all nations. Decorations in the tent set apart for tables for twenty persons were much more costly than those in the tent for decorations for twelve persons. The first prize table for twenty persons had one centre-piece, between which and the ends were flat vases, in which were two recumbent figures, and plants of *Pteris tremula* in pots let into the table; at one extreme end of the table was a dish about four inches high, on which was set a *Pine Apple*, and at the other end a similar dish with a *Melon*. The middle centre-piece had three tiers, one consisting of tin filled with sand, being on a level with the table; another, in the form of a small vase about half-way up, the top consisting of a long narrow vase. The groundwork of the base consisted of *Selaginella*, several pieces of *Adiantum farleyense*, and *Pteris serrulata* being inserted in the sand and allowed to hang over on the cloth. Intermixed with these leaves were flowers of *Philocactus*, a few blooms of *Rhodanthe Manglesii*, a flower or two of *Gloxinia*, a spray of *Spiraea japonica*, one or two pieces of variegated *Cyperus*, and a few grasses. The middle tier of this vase was saucer-shaped; in this was also damp sand, in which were inserted a few pieces of *Adiantum*, sprays of *Lily of the Valley*, *Rhodanthes*, and grasses. The top vase was filled with water, in which were placed the sprays of *Spiraea japonica* and one or two other flowers, ferns, and grasses. The vases containing the recumbent small figures were flat, and decorated with *Selaginella* and fern fronds. The finger glasses consisted of saucers in which a little water was placed, and in the bottom three single leaves of *tricolor Pelargonium* with a single double red flower laid on each leaf. In the centres of these stood the narrow finger glasses, properly so called, tastefully filled with a few sprays of fern, *Spiraea japonica*, *Stephanotis*, &c.

Where the base of the finger-glasses contained light flowers the top was composed of dark ones, and *vice versa*.

The fruits were merely placed on a vine leaf in suitable dishes, with perhaps a tiny frond of *Adiantum* run round the handle. The other prize tables were also very tastefully set off with elegant designs, and the floral display on that belonging to Mr. Webber exhibited much harmony and beauty of colour. The tables for twelve persons were equally tastefully got up. That to which the first prize was awarded was in reality the simplest of the whole, and was decorated wholly with hardy flowers with the exception of a few blooms of *Pelargoniums* and a spray or two of fern. The hardy flowers used in this class consisted of *Myosotis*, *Pinks*, *Spiræas*, *Ferulas*, *Thalictrums*, *grasses*, &c.

CRYSTAL PALACE HORTICULTURAL EXHIBITION. (MAY 11TH.)

ALTHOUGH compared with former years, this was a select rather than an extensive exhibition, yet it yielded to none of its predecessors in point of excellence. *Azaleas*, the chief feature of spring shows, were successfully contributed both by nurserymen and amateurs, and some of the specimens were of great size, and so closely set were some of them with flowers that the foliage was almost wholly concealed. One brilliant crimson-bloomed plant of *A. Duc de Nassau* was particularly noticeable on account of its abundance of bloom; it was, however, equalled quite in beauty by a grand plant of *A. magnificent*, whose profusion of pure white blooms completely covered a surface some six feet high and ten or twelve feet in circumference. Besides these huge plants there were also good collections of smaller ones, among which, some of the newer sorts could be distinguished.

Among *Roses* in pots were some wonderful specimens well furnished with finely-formed large blooms. Indeed, this department was unusually well represented both by nurserymen and amateurs. In addition to plants shown in pots there were also several stands of cut *Roses* of different kinds, than which we do not remember ever having seen finer flowers.

Cape Heaths were wonderfully fine, consisting chiefly of plants of great size, some of them being as much as four feet in diameter. They were also well bloomed, although in some few instances the flower-buds had not yet expanded. In shape they varied from that of the compact *Erica depressa* to that of the erect, robust-growing *E. Cavendishii*. In these two kinds we have flowers of the purest yellow; in candidissima delicate white; in *coccinea* minor rose; and in *ventricosa*, *superba*, and others, flowers of deeper red. Two collections of *Pelargoniums* were admirable examples of high culture, their wonderful size exciting the admiration of everybody. Near the *Pelargoniums* was a collection of *Herbaceous Calceolarias*, excellent both in form and marking.

Orchids were perhaps not so abundant as might have been expected; but any defect visible in point of quantity, was more than counterbalanced in the way of quality. Amongst *Oncidiums* were fine plants of *ampliatum majus*, with bright yellow flowers; *bifolium* was also excellent; but the most remarkable, perhaps, of all, was a grand specimen of *O. sarcodes*, with which everybody was delighted. *Dendrobiums*, which were also good, consisted of large examples of *D. densiflorum*, *nobile*, which has been in flower ever since February, and several others equally striking. It is among *Odontoglossums*, however, that fine *Orchids* must be looked for; and anyone attempting to form a collection, however small, must not overlook the different members of this fine genus. There were likewise many others of great interest, such as *Phalænopsis grandiflora*, *Cypripediums*, &c.

Specimen plants owing to their immense size and abundance of bloom, were objects of considerable attraction. Most noticeable amongst them were Mr. Baines's two magnificent examples of *Sarracenias*, to which we alluded a fortnight ago. There was likewise a plant of *Gleichenia Speluncæ* some four feet in diameter; and a huge specimen of *Gynnoگرامma chrysophylla*. *Statice profusa* was also remarkable, one plant measuring nearly four and a half feet through. In addition to these there were *Theophrasta imperialis*, with as fine foliage as we ever remember to have seen on a plant of the kind; *Allamandas*, variegated *Pine-apples*, &c.; likewise grand specimens of *Epacris*, *Tremandras*, *Dracophyllum gracile*, with pretty white flowers, and some plants of *Ixora coccinea* with immense flower heads of brilliant red. Collections of new and rare plants were furnished by most of the leading nurserymen; but although they composed many of the novelties of the day, few occur among them that have not previously been noticed by us in reports of the different spring meetings; among them were the finer kinds of *Ferns*, *Dracenas*, *Marantas*, &c. A striking collection of hardy "foliage plants" which was shown was greatly admired. From the attention which these excited, it is evident that plants of this description must soon become favourites for outdoor decoration. *Fansies* were present in the form of cut blooms, and seldom do we remember having seen so fine a display; there were also good collections of *Tulips*, *Ranunculuses*, *Pyrethrums*, and similar subjects.

EXHIBITIONS FOR THE CURRENT WEEK.—Royal Botanic Society, Regent's Park, Summer Exhibition, 22nd and 23rd instant; First Great Flower Show, Manchester Botanical and Horticultural Society, 17th to 24th instant; and Royal National Tulip Society Grand Horticultural Exhibition, Manchester, 25th; Sefton Park Great Horticultural Exhibition, Liverpool, 21st to 23rd.

Exhibition of Horticultural, Buildings, &c., at Birmingham.—The following memorandum has just been issued by the Birmingham local committee:—"Prizes not having hitherto been offered in this division, the plan now submitted is, necessarily, to some extent experimental; but the sub-committee have very carefully considered the subject, and with respect to horticultural buildings, as they were not prepared to lay down, in the first instance, any special rules of classification, that will be deferred until the entries are completed. At that time the sub-committee will confer with gentlemen possessing scientific and practical knowledge of buildings, &c., who will be selected to act as judges, and who will then group this part of the collection in as complete a manner as possible before proceeding to make their awards. In addition to the medals mentioned in the first issue of this circular, the judges will have two extra gold medals placed at their disposal, one or both of which, at their discretion, may be awarded for horticultural buildings, as well as that first offered." We remind our readers that the last day for making entries is Saturday next, the 25th inst. Applications for entry forms should be made to Mr. B. A. Hallam, *Midland Counties Herald Office*, Birmingham.

Vitality of Roots.—Much has been said concerning the vitality which exists in seeds and bulbs, and we have many times given instances of it. Is the vital force which exists in stems and stalks, even herbaceous, of certain plants, known? I doubt it; and to show how much there is, I give the following instance. The 10th of last November I had a portion of the floor of my library raised to place a mantel-piece. The portion which was taken up was at a distance of three metres from the exterior walls, a part of which, facing the west, was constructed of a soft stone of Touraine, called *bourré*. I lifted, with surprise, long herbaceous filaments (threads), totally white, covered at the nodes with rudiments of microscopic leaves and slender hairs. Their length was considerably, more than two yards. I recognised—but not without some difficulty—this plant to be the stalk of the field bindweed (*Convolvulus arvensis*). The wall outside had not been covered by the plant, and no root was to be found in the vicinity, which is a gravelly soil; nevertheless, the wall had been passed through, with all its thickness, by the stalks, of a similar whiteness, which came to find light in the warm part of the apartment, and climbed up behind my library. Others had run under the flooring, and there had vegetated, but the first which I gathered had its roots in the room. I questioned the mason. He told me that the flooring had been put down twelve years previously, and had never been disturbed since. Before that period the room had had a brick floor (or tiles) for more than a century. Thus, then, here are fragments of roots, buried there for more than twelve years at the least, and perhaps many more, in complete obscurity, without air, which now shoot up long and white every year, two or three metres in each direction, without appearing in the least exhausted. Others have had sufficient strength to pass between the joints of the stones, heedless of the mortar, and come to find heat and warmth in the room.—*Ed. André*, in "*L'Illustration Horticole*."

ANSWERS TO CORRESPONDENTS.

A. D. (1. *Adiantum concinnum latum*; 2. *A. macrophyllum*; 3. *A. trapeziforme*).—R. SAUNDERS (Guano water, if not applied in too strong doses, is of great advantage to cucumbers in pots).—S. S. (The grub to which you refer is uncommon; instances are on record of its attacking rose trees during the night, and eating off their shoots. Search for it during the day in the earth, in which it buries itself. Can you send us a specimen of it?).—C. J. S. (The plants of *Marechal Niel* to which you refer are planted out in a bed inside the house; some are budded on briars, others are on their own roots).

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"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—Shakespeare.

SCIENCE, THEORY, AND PRACTICE.

MR. NEWMAN'S allusion to "practical men," in a recent number of *THE GARDEN*, touches upon a subject of the greatest importance to horticulture and to many other branches of human knowledge. Yet so far as we know it has not been discussed in any periodical devoted to horticulture. We allude to the misuse of the above terms in our literature and in our everyday talk. As Mr. Newman remarks, the gardener does not regard the entomologist as "a practical man." But how do the entomologist and the botanist look upon the gardener? Why, they may, or may not, call him a "practical man," but they will certainly say he is "not a scientific" one. Let one of our most intelligent gardeners, or amateurs, or nurserymen, write a book embodying the results of twenty years' experience and observation, and the probabilities are that he will, as a matter of course, find it alluded to as "not a scientific book," while perhaps it is highly praised for the original and useful knowledge it embodies. The reviewer is probably a gentleman who has mastered the technicalities of botanical language, and perhaps applied them to some local flora or elementary class book of botany. Upon the strength of these accomplishments, comparatively trivial as they are known to be, he presumes to place himself in a group supposed to be entirely distinct from the gardener, nurseryman, and amateur, and calls himself a "scientific man." The object of this article is to point out how much we lose by the wrongful use of words, and how greatly we impede progress, both in horticulture and botany, by using false distinctions as to knowledge and the means of adding to it.

It should be clearly understood by all men that all knowledge is the same in kind; that there is no real difference between "science" and practice, and that what is sound in theory must be sound also in practice, and *vice versa*. There is no real difference. The old meaning of the word science is knowledge; the modern meaning is the same. It has been shown over and over again by eminent men that the methods of investigation applied to the most difficult problems that have yet engaged the attention of man, differ in no essential respect from those used by the humblest observant gardener. What is true scientifically, must be true also in practice. Such an expression as, "It is right enough in theory, but wrong in practice," is simply nonsense. Nothing can be "right in theory and wrong in practice." "It is mere theory," is often the silly comment on some simple statement, the truth of which could be thoroughly tested by direct experiment in the garden. To say that the author of a proposition "is not a practical man," or not a "scientific" one, instead of investigating it, is an easy but ungenerous and unworthy way of saving ourselves the trouble of trying whether he is right or wrong.

Who is to blame for this state of things? Chiefly the class of botanists and "scientific" men who do not rise higher in the study of the vegetable kingdom than the stage of mere technicalities and their application. We might suppose that the Royal Horticultural Society would not propagate errors of this kind. But this is precisely what it does, and at the great Birmingham meeting there is to be a scientific and a practical congress. Addresses are also to be given on separate days on "recent progress in scientific," and "recent progress in practical," horticulture, as if these terms did not mean one and the same thing. Thus a society for the encouragement of gardening says, in effect, to gardeners:—Your labours and

observations have nothing to do with science (knowledge), and we will take care that there is no mingling of such different classes. Your practical notions are of some slight account; we will devote a day to them as soon as we have completed our scientific labours. And thus the most miserable of class distinctions is maintained by the very body whose true work it should be to counteract the effects of a use of language false in itself and really hurtful in its effects on horticulture.

One of the first things done by our greatest thinkers, in clearing the ground for the study of the highest philosophical problems, is to prove the identity in kind of the ordinary and the "scientific" methods of observation, and the ONENESS, so to speak, of theory and practice. It may be urged by the botanist that his knowledge is capable of more accurate demonstration than the gardener's; but this is not the case, except as regards descriptions of plants. Such a book, for example, as Lindley's "Theory of Horticulture" would be called a scientific book, while one of Loudon's might not be considered worthy of that distinction. Yet it has been demonstrated that "The Theory of Horticulture" embodies many erroneous propositions, and more important errors than will probably ever find their way into a gardening book. The object of this article is not in any sense to attempt to undervalue the labours of the botanist or of any other worker in the cause of knowledge, but simply to plead for a better understanding than now exists between classes of men that are really working in the same cause and with the same tools.

Let, then, no lover of gardening or of knowledge concern himself whether things are described as scientific or practical. Our business is, in whatever statements concern horticulture, to ascertain whether they are true or false. Let us describe books or articles relating to our art as profound or elementary, lucid or obscure, learned or the reverse, right or wrong—there are plenty of true and understandable words and distinctions; but do not let us despoil our fair garden ground by bolstering up in it such obstructive and unnatural barriers as those above pointed out. W. R.

NOTES OF THE WEEK.

— THE wintry weather we have experienced throughout May has considerably retarded the Rhododendrons, but they are now opening in great beauty in the London parks.

— IN consequence of the severity of the weather there is as yet scarcely any of the summer occupants of the flower beds planted out in the London parks. The great lines of beds along Park Lane are yet brown and naked.

— MR. J. ORCHARD HALLIWELL, having, says the *Architect*, purchased the entire area supposed to be occupied by Shakespeare's garden, Stratford-on-Avon, intends to present it to the town. All houses built on it will be removed.

— IT may be laid down as a rule, says the *Scientific American*, that a larger proportion of white flowers are fragrant than those of any other colour; yellow comes next, then red, and lastly blue, after which, and in the same order, may be reckoned violet, green, orange, brown and black.

— THE vintage on three of the vineyards on the Barrabool Hills, says the *Australasian*, has commenced, but owing to the oidium which has this year affected the vines, the yield is not expected to be more than half that of last year. The Black Prince variety has more particularly suffered from this cause.

— ON the 13th instant an Act received the Royal assent to amend the Public Parks (Ireland) Act, 1869. Doubts have arisen as to whether the parks, which the governing bodies of towns were authorised to establish and maintain, must be situate within the boundaries of the towns. Parks may now be maintained within or without the boundaries of the towns. Power is given to sell superfluous land.

— SINCE our last issue the weather has been most unfortunate for plants. In the Midlands, in some low-lying districts, the effect of the frost of Saturday night the 18th, was most disastrous. The hardiest plants and trees suffered severely. The young shoots of the Norway spruce were every one killed. Hardy British ferns, the budding leaves of the hardiest forest trees, and roses are among the things scorched almost to the quick; even the golden flowers of our British Globe-flower were blackened. A fine mass of the Prostrate Gromwell (*Lithospermum prostratum*) in Mr. Vertegan's nursery, at

Birmingham, on the 18th a sheet of gentian-like blue, had, on the 19th, every flower drooping and dead. It would require a long list to enumerate all the disasters.

— THE near ends of the Row and Drive in Hyde Park are just now quite fragrant with the breath of Stocks and Mignonette, arising from masses of these plants. The planting of these is a step in the right direction. Apart from the intrinsic merit of the plants as used here, they fill a great blank between the early and the summer flowers.

— ALL interested in spring bedding plants who have an opportunity of seeing the display in the Lower Grounds, Aston, near Birmingham, should not fail to do so. Anything more brilliant could not be seen, even in the summer flower garden; the weather has somewhat retarded the display, so that it will remain in good condition for a considerable time to come. Nearly 16,000 persons visited these grounds on Whit-Monday.

— THE dingy old shed in which the flower department of Covent Garden Market has been carried on for some years has been pulled down, together with three houses in Wellington Street. Several thousand tons of earth have been excavated, massive groined arches have been constructed, and an iron and glass floral hall reared on the top of them. It is fifty-four feet high in the centre, and when finished will cover an area of 16,000 superficial feet.

— RAPID progress is being made with the preparation of the show ground of the Royal Horticultural Society at the Lower Grounds, Birmingham. The large tent is complete all but the covering, and seems suitably designed, but appeared to us too small, and its scheme of walks too complicated for the large numbers of persons that may be expected to visit the show. The plants in the main tent will be arranged on turfed steps, somewhat like those at the International Exhibition of 1862 at South Kensington, but lower.

— At a late meeting of the Metropolitan Board of Works a resolution was passed (rescinding a previous resolution) by which some acres of land near Southwark and Finsbury parks are to be thrown into those parks. The public are indebted for this concession to the renewed interest taken in questions of metropolitan administration. Hampstead Heath and the lands round Victoria Park, have also been saved from the builder; and there can be no doubt that a little vigilance will save Epping Forest.

— THE usual "flower sermon" was preached, according to custom for these last twenty years, on Whit-Tuesday evening, at the church of St. Katherine Cree, Leadenhall Street, by the Rev. Dr. Whittemore. Each young person brought a bouquet, and the fine old church brightened wonderfully under the influence of beaming faces and gay flowers. Service commenced at seven o'clock, but long before that hour the church was full. Dr. Whittemore preached from the text, "Awake, oh, north wind, and come, thou south; blow upon my garden, that the spices thereof may flow out."

— DR. HOOKER has issued his report on the Royal Gardens at Kew for last year. The number of visitors has not been quite equal to either of the two preceding years. Sunday visitors embody more than two-thirds of the total number on all the other days of the week; Monday, the "artisans' day," showing considerably the largest numbers of any of the week days, and Dr. Hooker speaks of the almost uniformly orderly conduct of the visitors on that day. In the Gardens themselves, no change of importance has been introduced.

— WE would remind intending exhibitors at Birmingham, that to-day is the last for making entries of implements, horticultural buildings, &c.; and that Tuesday next, the 28th instant, is the latest time for making entries to show table decorations. On reference to our advertising columns it will be seen that a final edition of the schedule will be ready for issue in a few days; but we are authorised to state that in no important particular does it differ from the schedule already in the hands of our readers. Intending exhibitors will, however, do well to get a copy of the new edition—it may be interesting to know that 5,500 copies of the first edition have been distributed.

— SEFTON PARK was formally opened by H.R.H. Prince Arthur on Monday last. It is situated about three miles from the Exchange, and will be a great boon to Liverpool. It contains 382 acres, 115 of which are to be let off in building leases. It is to contain a cricket and review ground. It has a large lake, with a depth of about four feet, and is thus safe for skaters. This is fed by several little streams, which twist and turn about, and are prettily laid out, two of them springing from rock grottoes or cascades; little waterfalls are constructed all along their courses. A year at least must yet elapse ere the whole of the departments in this park are completed. The roads and footpaths are wide and well laid down, and the drainage arrangements perfect.

— THE broccoli growers in West Cornwall are greatly aggrieved by a contemplated attempt on the part of the owners of the small tithe of the lands, to increase the rent-charge on the extensive broccoli-growing lands. A large and influential meeting has resolved to use every effort to resist the increase, if necessary, by an appeal to the Legislature to alter the 22nd clause of the Tithe Commutation Act, which sanctions a higher charge on gardens than on agricultural land, the appellants contending that the clause was intended for a limited time only, and that broccoli-growing cannot be fairly included in market-gardening.

— THE Earl of Shrewsbury again offers the British public a privilege and a warning. The grounds around Alton Towers will be thrown open to them as usual, but, as we infer, solely during their good behaviour. Last year, it may be remembered, towards the close of the season, his lordship expressed his dissatisfaction at the excesses sometimes committed by excursionists, and as he traced their origin to drinking habits, he announced, as his own solution of the licensing problem, that "unless people ate they should not drink." Some such plan is to be adopted during the present season, for the Earl states that the refreshment-rooms are to be open "only at meal times."

— THE Sunday promenade in the Zoological Gardens, like most other *al fresco* entertainments, may generally be said to commence for the summer season about Whitsuntide. The fine weather, so entirely unexpected by all but the profoundly weather-wise, allured no fewer than 45,000 visitors into these gardens on Whit Monday. These gardens just now are very beautiful. Notwithstanding the bleak cold weather we have had lately, the vivid young green of the trees is profusely decked with the bloom of chesnuts and crimson hawthorn, laburnums, rhododendrons, lilac, and so forth. To lovers of nature, animate and inanimate, these gardens afford real pleasure.

— GRAPE culture has become so extensive in California that some growers are at a loss to know how to profitably work up the surplus product, and the manufacture of saccharine substances from ripe grapes is now exciting attention. It is found that not only can a sweet viscid substance be obtained simply by boiling the juice, but that crystallised sugar can be easily manufactured therefrom. For this purpose the sweetest grapes are allowed to hang until they begin to shrivel. They are then picked, rapidly pressed, and the juice boiled to a thick syrup before any chemical change can take place. The syrup is placed in tight casks, and allowed to stand for four or five months, at the end of which time about two-thirds of the mass are found converted into sugar.

— SAYS the *Times* notice of the flowers at the Crystal Palace:—
The specimens of *sarracenia drummondia*, of the imantophyllum miniature, of the cyanophyllum magnificum, of the *sarracenia drummondia*, and of the *spharogyne latifolia* call for distinct notice.

And they shall not call in vain, and the distinct notice *Punch* gives them is that they are sesquipedalian kusses. We shall have the really lovely flowers, the Fairies of the Old Creation, crying out for new titles next. Who remembers, or rather, who forgets, Barry Cornwall's Weavers' song, "Tis better to Sing than Grieve"?—

Come, show us the rose with its hundred dyes,
The lily without a blot,
The violet, deep as your true-love's eyes,
And the little forget-me-not.

Are we to have this re-written in the following fashion?—

The *Rosa deschenhaultiana*, come, show us;
The *Lilium sepalsabitis*, white.
With the *Viola ranunculifolia* endow us,
And the wee *Myosotis palustris* hight.

—*Punch*.

— FLOWERS, says *Harper's Weekly*, exert a wonderfully refining influence upon character. There are few who are not susceptible to it, under favourable circumstances. The model farmer of olden times, who begrudged his wife or daughter a bit of land to beautify, who denounced all blossoms which resulted in no marketable fruit as useless, and ploughed up the bright pinks and marigolds with ruthless hand, has passed away, we trust, or at most but a few of the species remain. It is becoming more and more the pleasant fashion, not only in towns and villages, but in secluded rural homes where the plain farmer's family toil hard, for the children to have little plots of ground where they may raise flowers to charm the eye. If parents only realised the educating power of plants, and how keenly most children enjoy watching the growth and development of vegetable life, they would foster the desire they so often express "to have a garden of their own." Now, in the spring-time, let at least a few seeds and roots be obtained; let a bit of ground, or, if this is not possible, some flower-pots, be devoted to the amusement and instruction of the little folks. It will not merely keep them out of mischief to have some pleasant occupation in the open air, it will be health-giving and mind and heart improving. Don't forget the flower seeds!

GARDEN IN THE HOUSE.

BRACKETS FOR PLANTS.

SOME plants look so well against the wall of a greenhouse or conservatory that it is a wonder brackets are not in more general use than they are. It is not necessary that they should be so elaborate as that which supports the fine-leaved *Begonia* in the accompanying engraving; this is of course a matter to be determined according to individual taste and means. For growing plants in, the least ornamental form is just as good as any other. The simplest kind of bracket which I ever saw was a flower-pot with one side flattened, and having a hole near the top of the flat side, so that it might hang upon a nail in the wall. Some years ago I remember seeing a collection of Ferns grow against the wall of a greenhouse in these flat-sided pots, which were hanging thickly all over the wall; and the effect of the drooping fronds, which in many instances quite hid the pots, was exceedingly pretty. I see no reason why *Mesembryanthemums* should not be grown in such pots, by which means the wall of a conservatory might be covered with their blooms; and those who would like to see ribbon beds executed upon a wall, might be able with this genus alone to produce some curious effects. Wall gardening, in short, is a subject to which as yet little attention has been paid; but if well carried out it would doubtless be productive of the very best results.

W. T.

WINDOW ROSES.

NOTWITHSTANDING all that has been said and written respecting Roses, there appears to be room for further discourse on the subject, and this will always be the case so long as new crosses give rise to new uses and new experiments. Roses for the window is a branch of culture hitherto little touched upon, although through its means many may enjoy possession of this flower of flowers to whom, in any other form, it is emphatically denied. Some years ago I was induced to turn my attention to this subject, in consequence of a small collection of certain kinds in pots coming under my control. The drawing-room window of a suburban dwelling was the only field for experiment at command; but the air of the locality was pure, the aspect favourable, and the varieties, as trial proved, eminently propitious. In due time Roses came, and the possibility was proved of having charming flowers without a glass house and without a garden. Indeed, the produce of the window differed but little from that of the same varieties under glass in a special Rose house. The master-key of the position was the selection of varieties. It is not pretended, as a matter of course, that any Rose stuck in a pot will necessarily thrive under the special and peculiar conditions of window culture. But, given the requisite attention, and, as said before, the proper sorts, failure need hardly be apprehended. There are, however, certain essentials of procedure to be mastered by the window-cultivator of Roses. First he must have the following sorts: the plants on their own roots, and well-established as to size. Nothing in less than thirty-two sized pots is permissible; twenty-fours are better; but the dimensions, on the other hand, must not be too large, because many inconveniences, needless to particularise, would result from bulk. The plants themselves should be compact and bushy, well furnished with shoots from the very collar. Any kind of worked Rose must be avoided, because stocks of all sorts require far too much room for effective growth in pots. Liquid manure also, which forms an important element in the pot-culture of Roses, is apt to exercise a

detrimental influence on worked plants with limited root accommodation, through developing latent suckers, hurtful to the plants and deceitful, by their treacherous simulation, to inexperienced and unwary cultivators.

The routine of treatment to be laid down for window Roses is tolerably simple. Repot them every year in rich fresh soil; whether in November or February is of little moment, provided they are kept "closish," warm, and shaded for a few days, after which they may be pruned into shape. See that they are sufficiently supplied with water, but not kept too moist, and occasionally administer an invigorating tonic in the form of liquid manure. Let this be clear, and of Peruvian guano, two ounces to the gallon. The foliage is to be kept scrupulously clean and free from dust. Seize every opportunity of exposing the plants to genial rains, in the absence of which subject them to an evening sprinkle with the syringe, particularly in the summer time, in any convenient spot, restoring them to their proper locality when somewhat drained. Occasionally sponging the leaves with soap and water will be a beneficial practice; but beware the suds do not soak into the soil, converting thereby pots of earth into pots of paste, to the utter discomfiture of the roots therein. Study the future contour of the plants in cutting blooms.

Let us now proceed to the paramount consideration—that of the choice of sorts. Four Roses are by far the most generally useful and reliable for the task we have in hand: *Souvenir de la Malmaison*, *Mrs. Bosanquet*, and the old white *China*, and the blush, frequently termed the "monthly rose." The two first-named flowers are greatly the best, yet the latter are pretty, and constantly in bloom, a point of much importance. There is a new white *China*, named "Ducher," highly promising for windows or for beds. We have next the *Teas*—*Safranot*, *Madame Falcot*, *Vicomtesse de Cazes*, and the brilliant-coloured *Fabvier* and *Cramoisi Superieur*, to give life and contrast. Some may feel disposed to add many undeniable fine pot Roses to the list, but pot Roses and window Roses are different things. In the latter, only those producing constantly new shoots, and upon every shoot a bloom, are really fitted for the purpose of growth in rooms. As soon, however, as the experimentalist feels master of his art, there is nothing to prevent him from endeavouring to extend his collection. Beginners should confine themselves to the first-named five, but the more skilled and confident may launch out "at discretion" in the kinds which follow, always keeping in mind that the plants must be upon their own roots: *Admiral Nelson*, *Anna Alexielf*, *Docteur Andry*, *Elie Morel*, *John Hopper*, *Monsieur Noman*,



Plant Bracket.

Marquise de Castellane, *Marquise de Mortemart*, *Princess Christian*, *Pauline Lansezeur*, *Charles Lefebvre*, *Baron Gonella*, *Catherine Guillot*, *Bourbon Queen*, *La Quintine*, *George Peabody*; the *Teas*—*Devoniensis*, *Madame Bravy*, *Madame Halphen*, *Pauline Labonte*, *Souvenir d'un Ami*, *Melanie*, *Willermoz*, *Niphetos*, *Triomphe de Luxembourg*, *Odorata* (old); the *Noisettes* *Narcisse* and *Celine Forestier*. Many of these will succeed, but must be adopted rather as probabilities than certainties, because, after all, in rose-growing, as in other things, something must be risked.

No window plant should stand permanently in a saucer, which is merely a device to save dirt and slop after watering, which should be done rather by total immersion than by sprinkling, which is only useful administered overhead. Plants should never stand in draughts, or be exposed to the beams of the scorching midday sun. When window Roses have done blooming, they should be set out of doors in any convenient place, until again beginning to grow. Removing the upper surface of the soil and replacing it with fresh is a valuable point of culture, and will be found of great assistance towards healthy growth. Dead leaves and bygone blooms should be quickly removed, the latter always cut off just above a plump, well developed eye. Rose trees kept close have always a tendency to be

attacked by red spider. Watch carefully for the first inroads of this pest, and wash the backs of the leaves with soft soap and water.

It may be added that some of those glass-cases termed Belgian window gardens are well adapted for the growth of Roses, where a sunny aspect exists, with facilities for affording plenty of light and air. A few fine Roses such as have been named in this paper will convey a charm, a finish, and an interest to apartments that few other objects can give.—*W. D. Prior, in "Gardeners' Magazine."*

TEACHINGS IN TABLE DECORATION.

I THOUGHT I knew something about decorating a dinner-table, but I wanted to know more, so I went to the great show of the Royal Horticultural Society, at South Kensington, the other day, and there I learnt a great many lessons. I learnt that as fine feathers do not always make fine birds, so good fruit and good flowers will not ensure good table decoration, unless properly arranged; that fine fruit and choice flowers may be very beautifully arranged in dishes and vases, and yet be so placed on a dining-table as to be an inconvenience, instead of a pleasure, to the invited guests, and an annoyance to the host and hostess, whose friends might just as well be dining in another room or another house if they cannot see them and each other.

I learnt that there are two classes of table decorators—those who crowd on as much as they can, and those who put on as little as possible; that in each class there are people with good taste, people with bad taste, and people without any taste; that in each class there are those who run into extremes, and consequently into absurdities, in carrying out their particular views; that each style has its admirers; and that, amongst the ladies, it is an easy matter to see from the style of their costume to which style of table decoration they will give a preference. I learnt that it is possible to decorate with good taste in the heavy style, as well as in the light style, although there was not a good example of the heavy style to be seen there; that heavy fruits are only admissible on a table dressed in the heavy style, and are quite out of place in any arrangements of a light character; that highly odoriferous fruits, like pines and strawberries, ought not to be placed upon a dinner-table at all, but should be handed round at the proper time at a *dinner à la Russe*; and that at such dinners it would be better, in my opinion, if no fruits were used as a decoration when flowers sufficient for ornamenting the table can be commanded.

I also learnt that a few flowers, well selected for size, form, and colour, and well arranged, will produce a more pleasing effect than a larger supply of what may be finer and choicer flowers, however well put together; that there should be a proper proportion between the size of the table and the sizes of the vases used upon it; that not only should vases be chosen to suit the size of the table, but that, in like manner, flowers should be chosen to suit the sizes of the vases; that large flowers should be used in the lowest dish of a vase, medium-sized flowers in the middle dish, and small flowers at the top; that dark colours should be used at the base, paler colours in the middle, and light colours or white at the highest part; that flowers of too fragrant a description should be avoided, or used very sparingly, lest they prevent some possessors of susceptible noses from enjoying their dinner; that large vases should not be placed near the edge or at the corners of a table; that the largest vases should be as far as possible from the edge of the table; that if there is room for other vases between them and the edge, these other vases should be decidedly smaller, and that their size should be smaller and smaller, in proportion to their proximity to the wine glasses of the diners.

I further learnt that the same rules which govern the sizes and the colours of flowers vertically, that is, from the base of a vase to its summit, should also be observed from the centre to the edges of the table in all decorations that are flat upon the table.

All this, and much more, I learnt on the 15th instant, and yet I was not satisfied, so I went again on the next day, when I learnt something more. I learnt that if I want to give dinner-parties for two or even three days running, I can, by careful selection of proper flowers, make the same decorations answer again and again, provided that I arrange them in water, or in moss that is in water; that shallow dishes filled with sand are very inferior to deeper dishes filled with moss and water; and that wiring flowers is all very well for supporting flowers whose heads are too heavy for their stalks, but it will not keep up their pristine freshness, unless their stems are in water.

I looked over the names and addresses of the competitors, and I found glass and china merchants, whose object appeared to be to try how many different forms of receptacles for fruit and flowers they could put upon the table; I found Covent Garden Market represented with the main idea of showing both quantity and quality in the

flowers and fruit, in which their success was indisputable; and, lastly, I found amateurs, who, unbiassed by such views, or rather influenced by very opposite views, had endeavoured to produce a good table without stripping their houses or spending a fortune upon the decorations for one dinner; and I saw that four out of the five prizes awarded were taken by amateurs.

It must not be supposed that I am going to name the tables from which I learnt these various lessons; indeed those who arranged them would not be flattered if I were to do so, and for the following reason: more of my lessons were learnt from errors in judgment and taste on the part of the decorators, than from illustrations of their ability in the art. Yet those who saw them could not fail to be impressed with the amount of labour involved in getting together and arranging such a grand display of fruits and flowers, and it is very doubtful if anyone there passed a more enjoyable morning amongst the dinner tables than did—

AN IMPROVER.

GARDENIAS FOR CUTTING.

Who has not been charmed with Cape jasmines?—almost a name, I fear, for anything unusually sweet and spotlessly white. No kind of flowers, not even orange blossoms, are more charming for wedding and other bouquets. Six or eight blooms of *Gardenia Fortunei* around a white rose or camellia, with padding and fringing, would make a bridal bouquet fit for an empress. *Gardenia citriodora*, again, produces single white flowers that are better than orange blossoms, while the different varieties of *G. radicans* are charming for cutting either for vases or bouquets. The *Gardenias* are also well adapted for the decoration of rooms, as most of them flower freely in a small state, and have a neat habit. Of course only those who enjoy living in an elysium of sweetness could live with them; but there is one considerable advantage—that of introducing plants rather than cutting the flowers. And this brings me to note one frailty of the *Gardenia*. Soon after being cut it loses its white colour, and in the course of a day or two it dies, a dirty orange or yellow. Of course the flowers on the plant last longer. Some might select bridal bouquets chiefly formed of these flowers to send to a distance for a wedding three days hence. Don't do it. For the same day or the next they are safe, not later. Almost all the varieties are suitable for bouquet-work but *G. Stanleyana*, which is of quite a different character from the rest—in fact, a trumpet-flowering plant with white margin and purple throat, eight inches deep and five broad. It is sweet like the others, and is an effective flower for standing up in or hanging over a vase. The garden variety of *G. florida*, *G. Fortunei*, *radicans*, and *radicans major* are the most useful.

Sometimes *Gardenias* are called greenhouse plants, but no one can cultivate or flower them in perfection treated as such. They luxuriate in a high temperature and a genial bottom heat from fermenting materials when flowering and making their wood. For the rest, they should never be under 50° even when dormant. They do well in a mixture of peat and loam, half and half, coloured with sharp silver sand, and darkened and enriched by, say, a sixth of well-rotted cow-dung.

The best season for potting is when they are in full growth after flowering. A moist temperature of 70° to 75° suits them well until the growth is finished, when they can be removed to a cooler house until within six weeks of the time the flowers are wanted. Mealy bug is very partial to them. Rapid growth in an atmosphere charged with ammonia from decomposing manure is the best preventive. A drachm of pure alcohol, applied through a showerer, is a certain exterminator.

Rhapis humilis—This is an exceedingly pretty "dwarf-fan palm," and one from its stature peculiarly suited for room decoration. It does not, like most of the small palms seen in our hothouses, send all the leaves from the root, but has a distinct woody stem not much thicker than the finger, and the most graceful little pillar of leaves that can be conceived. There is a very pretty specimen of it in Mr. Vertegan's nursery, at Edgbaston.

Triteleia uniflora as a Pot Plant.—I can endorse all that "R. D." (p. 454) says about the usefulness of this plant for pots or borders. It is sweet as a primrose if uncut or unbruised; but touch it not, unless you can revel in the smell of onions intensified a hundredfold. How "R. D." could write that the cut flowers can be mingled with others, without the unpleasant smell which unfortunately belongs to them being discernible, is beyond my comprehension. They are simply and wholly intolerable in a house.—T.

Bramble Leaves in Winter.—In one of the February numbers of a respected contemporary of yours, the leading article of which is devoted to not very dignified abuse of poor William Cobbett, Charles Dickens, and other distinguished men, who did not happen to know quite as much about gardening as the writer, there appeared a recommendation from Mr. Wynn, of Holbrook, Suffolk, in favour of the leaves of the common bramble for garnishing the dessert. To the note the following editorial remark is appended:—"But bramble leaves are not to be had during the winter.—Eds." Now in my part of the country, bramble leaves are not only to be had during the winter, but on this 8th day of May I could gather cartloads of leaves of the past year.—J. M.

THE INDOOR GARDEN.

THE INDIAN AZALEA.

THIS must always be a favourite, not only on account of the beauty of its flowers, but also on account of its free and cleanly growth, and dressy appearance even when out of bloom. It is likewise one of the best of plants for yielding cut flowers for bouquets of all kinds with which I am acquainted, and therefore merits our best attention.

SOIL.

This must be sandy peat—a good peat with a fourth part or nearly so of sharp sand. Some peats have a good deal of sand in their composition, and of course in such a case a smaller quantity need be added. But decidedly sandy the soil should be, no matter how that is brought about. As a rule, people do not use enough of good sand in their Azalea soil. There are some soils that go by the name of peat, but which, being made up of a sour and marshy kind of dark loam, have very little in common with good peat, and should therefore be avoided. Nothing is more common in garden books and papers than to find it laid down that the soil should be used “in as rough a state as possible.” That is not necessary; it is not good management. If a pot is well and thoroughly drained, as it should be, with a couple of inches of potsherds, and over that a very thin layer of clean moss, the soil may be fine and thoroughly mixed up, and the plants will prove all the better for it. It should be passed through a coarse sieve—rubbed through it if necessary—the old fibres, roots of brake, and similar material generally abundant in peat, being removed.

POTTING.

If there is any one thing to be more particularly insisted on than another it is the “firming” down of the fresh soil that is placed round the ball of a plant that is getting a shift. Many employ the right kind of soil and sand, but leave the fresh compost in a much softer and looser condition than the old ball; a mistake that often proves fatal to many plants. Even some gardeners pot a plant so loosely that the slightest pressure of the hand sends down the new soil an inch or two. What is the result? Why, the ball being full of feeding roots loses its moisture quickly, and then, in consequence of the earth that surrounds it being much softer than the consolidated ball, the water that is poured on slips down through the fresh soil at the sides, in which there is as yet no roots, and thus affords no moisture to the mass of roots in the ball. After a little while the ball becomes quite dry, and then death ensues. Many Azaleas perish annually from this cause, or the nearly similar one of the pot being wet at the top and not thoroughly soaked through; but that is easily guarded against by giving thorough waterings. In potting Azaleas, the soil should be rammed quite firmly with a short blunt stick, and in several stages as the soil is put in, if the pot and specimen are large. In a word, the soil placed round the old ball in potting should be made as firm as the ball itself, and then the water will sink through all parts equally, free and vigorous growth will ensue, and accidents will be avoided. Should the cultivator discover a plant perishing from either of these causes, the remedy is to plunge it into a tub of water deep enough to cover the rim of the pot, and there let it soak for an hour or two, till it is thoroughly saturated and refreshed. Azaleas are free feeders, and therefore should be well watered at all times. No plant better enjoys a thorough soaking; and in the case of large pots or tubs it should be given twice or thrice.

TRAINING.

Many Azaleas have a dense thicket of cross shoots immediately over the pot; so much so that the hand can scarcely be got in to lay hold of the stem, and potting becomes an awkward operation. It was at one time thought that this was necessary to ensure a bushy plant. Instead of that, however, some of the handsomest-shaped and finest plants ever seen at our exhibitions have stems clear eighteen inches from the pot. The Azalea is so tractable, and yields so readily to the will of the trainer, that the shoots may be tied down and the specimen made to look as well as if you let the stem break forth close to the soil. Better, in fact, because by having some length of clear stem the operations of potting and training are much facilitated; and, after all is over, the branches droop down gracefully over the edge of the pot. Exhibitors of the Azalea generally train it so as to form a rigidly pyramidal outline, and it is the best way, with the exception of the rigidity. It is not nice to see beautiful plants trained as precisely as a sugar-loaf. Naturally, the Azalea assumes an agreeable outline; and there is no reason why, in some instances, it should not be allowed to take any shape it likes. In order to form a pyramid a central stake is

necessary; but it should not rise above the top of the plant. The leading or strongest shoots should be attached to this, and then the training should begin by gently tying down the lowermost branches first to the position desired, and following with the others. This shape may not seem pleasing at first, but soon the plant will have made a fresh growth, and will look much improved. The aim should be to make the specimen equally well furnished on every side, and not, as in some specimens now and then shown, good on one side and a bunch of bare stakes and shoots on the other.

TREATMENT AFTER FLOWERING.

When Azaleas have done flowering they should be put into a moderate and genial moist heat, to make their growth; that is, if it is convenient to do so. But if not, never mind; as they will flourish in a well-managed greenhouse or conservatory all the year round. If, however, it can be done, give a gentle close heat when they are growing. At that season they should be freely syringed, both in the morning and afternoon, and immediately after the afternoon syringing the house should be shut up, so as to retain a moist and genial heat. Many have but one house in which to grow their Azaleas, and that one it may not be quite convenient to shut up; but they need not despair of growing a good Azalea. It is a very tractable, accommodating plant. We are merely giving the treatment pursued by those who grow it best. A slight shade must be given when the sun is powerful in summer; but it must be slight, and only applied during the heat of summer and when the plants are in a soft and growing state. When growth is finished, and the plant approaching the “ripened” stage, shade is not desirable. They should not be shifted into large pots until they have quite filled with roots those they are already in. See that the ball is thoroughly moist before repotting it.

Pinching off the strong shoots should be attended to during the growing season, particularly in the case of young and freely-growing specimens; tying down strong shoots is also desirable. Pinching should not be done late in the season. Thrips is the chief and most destructive insect pest with which the Azalea is afflicted. The best way to get rid of it is to fumigate the house with tobacco or tobacco paper. It should be done in the evening, and, if convenient, during a still evening. Some fumigate two evenings in succession; it is a better plan to do so three or four times in succession, an interval of four days being allowed to elapse between each smoking. Fumigation destroys the insect, but leaves the eggs safe; the successive smokings recommended, however, catch the young fry as they come out, and finally exhaust the stock of vermin. If a collection of Azaleas is clean, care should be taken to examine additions that are made to it, as vermin are often introduced in that way. Fumigation should not be carried on when the leaves of the plants are wet or very moist.

It is a common practice with Azalea-growers to place the plants in the open air in summer. This is by no means necessary, as some of the largest and finest Azaleas we have ever seen were kept in a conservatory the whole year round. However, in country places, where the glass houses do not get regular and skilful attention, it is safest to put them out after they have made their growth, as by so doing they get well cleansed by the summer rains.

As it is of some importance to know the best kinds, I append a list of the most beautifully coloured and freest growers: Beauty of Reigate, Coronata, Criterion, General Williams, Iveryana, Eulalie Van Geert, Chelsoni, Perryana, Cedo Nulli, Broughtoni, Rosalie, Admiration, Louise Margottin, Murrayana, Lateritia, Gem, Extrani, Magnet, Queen of Whites, Reine Blanche, Juliana, Halfordiana, Rubens, Iveryana Improved, and Modèle. A.

Plant Remedies for Insect Pests.—With the approach of summer weather this subject has a practical interest for medical men and their patients. Linnaeus informs us that the seeds of the *Absinthium maritimum* are deadly to the flea; and we have likewise heard that the odour of the alder is equally obnoxious to other insects. It is said by the devotees of botany that on a hot summer's day the cattle may be seen to cluster round the alder for protection against the sting of flies. We have thought sometimes, in our summer rambles, that the verdict of the wise was unproven. We entertain a strong belief that the perfume of the chamomile is destructive of the *Acarus scabiei*; and we use it accordingly in our pomades for the treatment of scabies. Bazin was wont to recommend, for the same purpose, an unguentum anthemicum; and our Italian contemporary, the *Gazzetta Medica delle Malattie della Pelle*, reminds us that an infusion of chamomile flowers has been recommended as a wash to the skin, for the purpose of protection against gnats. Gnats are said to shun the traitorous perfume; and, if such be the case, it would be easy to convert the essential oil of the anthesis into an agreeable lotion, like that of lavender water or eau de Cologne.—*British Medical Journal*.

THE FLOWER GARDEN.

GOURDS FOR ORNAMENT.

As the season for planting out these singular plants is now at hand, a few words on their treatment may not be out of place. The Gourd tribe is capable, if properly used, of adding much remarkable beauty and character to the garden. They are as a rule, however, rarely seen in variety and beauty. There is no natural order more wonderful in the diversity and beauty of its fruit than that to which the melon, cucumber, and vegetable marrow belong. From the writhing Snake-cucumber, which hangs down four or five feet long from its stem, to the round enormous giant pumpkin or gourd, the grotesque variation, both in colour and shape and size, is marvellous. There are some pretty little gourds which do not weigh more than half an ounce when ripe; while, on the other hand, there are kinds with fruit as large as a goodly-sized barrel. Eggs, bottles, gooseberries, clubs, caskets, balls, vases, urns, small balloons—all have their likenesses in the gourd family. Those who have seen a good collection of them will be able to understand Nathaniel Hawthorne's enthusiasm about these quaint and graceful vegetable forms when he says, "A hundred gourds in my garden were worthy, in my eyes at



Gourds.

least, of being rendered indestructible in marble. If ever Providence (but I know it never will) should assign me a superfluity of gold, part of it shall be expended for a service of plate, or most delicate porcelain, to be wrought into the shape of gourds gathered from vines which I will plant with my own hands. As dishes for containing vegetables they would be peculiarly appropriate. Gazing at them, I felt that by my agency something worth living for had been done. A new substance was born into the world. They were real and tangible existences, which the mind could seize hold of and rejoice in." Of course the climate of America is much better suited for fully developing the gourd tribe than ours, but it is satisfactory to know that they may be, readily, and beautifully grown in this country.

There are many positions in gardens in which they might be planted with advantage—as, for instance, on low trellises, depending from the edges of raised beds, the smaller and medium-sized kinds trained over arches or arched trellis-work, covering banks, or on the ordinary level earth of the garden. Isolated, too, some kinds would look very effective, particularly if trained over an old stump or branched stake. In fact, there is hardly any limit to the uses to which they might be applied. A very curiously covered tent might be made of them by using a few rough branches of trees as a framework, and the gourds planted round the sides in rich earth.

OUTDOOR CULTIVATION OF THE CAMELLIA.

It was affirmed, not long since, that the Camellia is unfitted to be an outdoor flowering shrub, because of the damage that unfavourable spring weather inflicts on its flowers. That such damage may result under the most unfavourable conditions I admit; but no one would plant any choice flowering shrub where it could be swept by all the winds that blow, or where it lacked all ordinary shelter and protection. That Camellias have proved themselves to be at once amongst the hardiest of evergreens and, at the same time, in moderately sheltered situations, the most beautiful of flowering shrubs, plenty of proofs exist; and probably in no place will better examples of these statements be found than at Glen Eyre, Basset, near Southampton, the residence of Mrs. Eyre Crabbe. In that locality, however, the earliest examples of outdoor-grown Camellias are to be found on the kitchen-garden walls at North Stoneham Rectory, which stands in a low-lying situation in the Itchen Valley. There are some splendid

specimens, each covering a space of wall twenty feet by nine feet, and having stems at the base from seven to eight inches in diameter. These trees are one mass of close laid wood and foliage, and in the early months of the year are literally covered with blossom. Either from a fear of mischief from early frosts, or to enforce a precociousness of bloom, these Camellias are each protected by a broad coping of boards, from which, during severe weather, mats are suspended, and thus a certain amount of protection is given. Bushels of flowers are annually cut from them; and of course their cultivation is regarded as being a perfect success. Glen Eyre is situated on the high lands that overlook Southampton Water, the Victoria Hospital, and much of the charming surroundings of that picturesque locality. The gardens occupy the head and sides of a pretty dell looking due east, and upon the north are considerably sheltered by groves of Fir trees. The soil naturally is poor, being a combination of black bog earth, gravel, and clay, all now pretty well mixed by human labour; and in it, in all sorts of situations, and especially upon the sides of long grassy declivities, many of our best ornamental coniferæ thrive most



Camellia growing out of doors at Glen Eyre.

luxuriantly, whilst Rhododendrons, Azaleas, and indeed all kinds of ornamental shrubs, grow in rich profusion. The working out of the original design of these pretty gardens during the twelve years that have elapsed since the first sod was turned upon the once barren heath, has necessitated a large amount of well-directed thought and labour; but Mrs. Crabbe has, in her able gardener Mr. Stewart, a worthy supporter; and their combined efforts have resulted in the production of one of the most charming gardens of which the south of England can boast.

Camellia culture in the open air was first attempted here by planting against the stable walls such kinds as Double White, Imbricata, old Double Striped, Monarch, and others; and these, without any other protection than the building affords, have thriven and grown in the most satisfactory manner. The next step was the planting out as a single specimen a rough plant of the old Double Striped, and which had been growing for several years in a tub in the house. Its position, though sheltered by buildings north and east, admits of its being frequently swept by south-east winds; and, as it stands midway between the conservatory and a block of shrubs, the current of air to which it is exposed is occasionally very severe. In spite, however, of this disadvantage, and also that it gets no dressing, but is entirely growing upon a surface of

gravel, the plant has thriven amazingly, and carries yearly hundreds of blooms, scarcely one of which when fully expanded but would vie in quality with flowers of the same kind grown under glass. It is now about eight feet in height and the same number of feet through, and is, as the sketch on the preceding page will show, a luxuriant specimen. If there were no other *Camellia* growing unprotected in the open ground than this one, it would sufficiently prove that the plant is not only an outdoor flowering shrub, but also one of the most beautiful and most effective. In this garden, however, there is no such limitation, for in all directions—in beds, in borders, and in secluded spots—*Camellias* crop up, growing well, and in the most robust health. On the sides of a grassy slope looking to the north-east, are two beds of *Camellias* that have been planted there several years, and are now developed into perfect masses of wood and foliage. I look upon these beds as presenting the most favourable example of the capacity of the *Camellia* to withstand severe weather and complete exposure; and the blooming is of the most abundant kind. During the past few years large numbers of young *Camellias* have been turned out, and among them, in addition to those already named, may be mentioned *Lady Hume's Blush*, *Tricolor*, *Florida*, *Chandleri*, *Anemonæflora*, *Juliana*, *Mathottiana*, *Valtervado*, *Adrien le Brun*, *Duchess of Northumberland*, and *Eclipse*. No special preparation is given to the soil, but when young plants are turned out, a little good compost is added, which greatly facilitates rooting.

Mr. Stewart gives it as his experience that, should no great amount of growth result for the first year or two, no discouragement should be felt; but when the plant is fairly established, then a permanent and continuous growth is certain. As a rule he thinks the *Camellia* to be very accommodating with respect to soil, provided it is sweet and well drained. Unlike the laurel, its summer shoots are never made until all danger of spring frost is past; but both wood and foliage are of the hardiest kind. Mrs. Crabbe, who has had long experience of outdoor *Camellia* planting, affords no covering of any kind. Glen Eyre is at all times worthy of a visit, but especially is it so when its *Camellias* are in full bloom, and when the charming spring flower garden that exists there is in the height of its beauty.

A. D.

CALADIUM ESCULENTUM.

This species has, for flower-garden purposes, proved the best of a large genus with very fine foliage. It is only in the midland and southern counties of Great Britain that it can be advantageously grown, so far as I have observed; but its grand outline and aspect when well developed make it worthy of much attention, and of a prominent position wherever the climate is warm enough for its growth. It may be used with great effect in association with many fine foliage plants; but *Ferdinanda*, *Ricinus*, and *Wigandia* usually grow too strong for it, and, if planted too close, injure it. This may have been noticed, particularly in cases where it was used as a bordering to masses of the strong-growing kinds above named. For all kinds of stonework, vases, &c., it is peculiarly effective and beautiful. This plant requires, above all others, a thoroughly-

drained, light, rich, warm soil. In times of great heat, it should be plentifully watered, and occasionally with liquid manure. The latter end of May is the best time for planting; and if groups are formed, the plants should have a space of 2 feet or 2½ feet between them. The foliage generally arrives at its full beauty and development in August and September. At the approach of cold frosty weather, all the leaves, or all but the central one, should be cut down to within an inch or two from the crown, and a few days afterwards the tubers should be taken up and left on the ground for a few hours to dry; they should then be stored on the shelves of a greenhouse, or in a cellar, or other place where they will be sheltered from frost and moisture. By placing the tubers in a hotbed in March, plants may be obtained with well-grown leaves for planting out in the open air about the end of May or the beginning of June.

ORANGE TREES.

THE time has now arrived when these may be placed in the open air with much advantage. No plant, perhaps, has had more attention bestowed on it, and with a poorer result, than the orange in this country. In old times it was very popular, but not of late, people being frequently deterred from cultivating it by the scraggy appearances generally presented by the trees in most instances. The whole gist of successful orange-tree culture in England consists in letting them make all their growth in the open air, and keeping them in a rather dark cold place all the winter. The more at rest they are kept during that season, the more perfect will their development prove in the following summer. The best of all structures is an outhouse with side light—the walls, &c., thick enough to prevent frost entering, and only as much light from windows or side sashes as will keep the plants from being quite in the dark. In fact, such a light as prevails in an ordinary dwelling-house will suit them to a nicety. Wherever they are allowed to make their growth under glass in spring, and then put out, failure always results. The trees should

remain in such a house till the month of May, getting abundance of air and being kept cool to prevent them starting a bud before placing-out time comes. They may be put out at any time in the month the cultivator's judgment may select, say from the 12th to the 25th, or even the end of the month, if it prove unusually cold or severe. At first they might with advantage be put in some sheltered place for a week or two, and then placed on the terrace, or in some other sunny and favoured position. The growth will soon commence, and prove equal to any change of temperature or vicissitude that may assail it. Give plenty of water, and if the roots have well filled the pots, a little top dressing of about an inch of rotten manure, to be covered for appearance sake with a dust of fine mould. The waterings required during the summer months will wash this down to the roots and do much good; but it should be observed that it is only necessary in cases where the pots are well filled with roots, which require more food than the soil can well afford. Take the trees in in October, say about the end of the month. Good turfy loam, with a little sand and some well-rotted



Caladium esculentum. (After Vilmerin.)

vegetable manure, will be found the best soil, while abundant drainage is indispensable.

The first time I ever saw orange trees in England grown well as I describe, was at Arundel Castle, where they are placed along the walks in summer, and stored in a half darkened house or shed in the pleasure grounds during winter.

Lately, at Holland House, I have seen magnificent trees treated in exactly the same way; the famous Hanoverian specimens are grown in like manner. At Holland House they are stored in a structure which was once a high arched stable, and which has now an opaque roof, having, however, lean-to glass houses thrown against its sides, which furnish side light to the orange trees. So they flourish almost without aid from artificial heat. It need hardly be said that if the object in growing oranges be the production of fruit and flowers, and not good specimens for open-air ornament, a very different system must be pursued. Plants treated in the way I recommend, are of course of great value as ornaments in the cool conservatory, or even in cool halls, during winter.

F.

EFFECTIVE FLOWER BEDS.

DURING a careful examination of a great many beds in the neighbourhood of London last year, the following combinations were selected as the most effective, and we now produce them as a guide to those who contemplate bedding out such plants. The weather has, however, hitherto been so cold, that even at Battersea Park no progress has yet been made in the way of bedding-out sub-tropical plants. In some places a few edgings have been planted; but that is all. These consist of *Semprevivum californicum* and *tectorum*, *Echeveria secunda* glauca, *Cineraria maritima*, variegated *Funkias*, *Gazanias*, and golden *Feverfew*.

Round bed.—Centre planted with *Aralia papyrifera* and a dark-leaved *Canna* interspersed; outside these a ring of *Wigandia macrophylla*, with a dark-flowered *Calceolaria* here and there, and edged with blue *Lobelia*.

Round bed of *Erythrina Crista-galli*, with small plants of *Aralia papyr* era at the edge.

Small oval bed.—Centre, nice plants of *Acacia lophantha* two and a half feet to three and a half feet high. Outside the *Acacia* small plants of *Grevillea robusta*. Groundwork of variegated vine and Japanese honeysuckle, edged with *Alternanthera paronychiodes* major and a silvery saxifrage (*S. incrustata*), the latter outside.

Small round bed with a *Dracæna ferrea* in centre, dotted with *Chamaepeuce diacantha* and medium-sized plants of *Echeveria metallica*; carpeted with purple *Oxalis*; edged with *Chamaepeuce Cassabona*, and outside *Echeveria secunda* glauca.

Oblong-oval bed with centre of *Acacia lophantha*, outside this a row of green-leaved *Canna* and a broad margin of the common vine.

Small round bed.—Centre, *Dracæna ferrea*, with a groundwork of young plants of *Amicia zygomeris*; outside the *Dracæna* a ring of small plants of *Abutilon Thompsonae*, and edged with *Echeveria secunda* glauca.

Green-leaved *Canna* dotted over a bed of *Dahlias*.

Small bed of *Cineraria maritima* mixed with the old *Verbena venosa*.

Mass of *Acer Negundo* variegatum edged with *Coleus Verschaffeltii* in an isolated small glade in a high wood.

Round bed of *Aralia papyrifera*, with groundwork of *Plumbago capensis*, and edged with *Pelargonium tomentosum*.

Small round bed.—Bronze-leaved *Pelargonium* and *Nierembergia gracilis*, intermixed with a belt of a silver variegated *Pelargonium*, and edged with *Mesembryanthemum productum*.

Gladioli thinly planted in *Rhododendron* beds.

Wigandia macrophylla edged with *Chilian* beet.

Edgings of variegated *Dactylis* and *Viola lutea*, plant for plant, backed with common blue *Lobelia*; good in all cases, particularly so in the case of a bed consisting of young *Dracænas*.

Panicum palmifolium, and *Solanum marginatum*, dotted over a carpet of *Alternanthera*, *Mesembryanthemum*, and *Iresines Lindenii* and *Herbstii*.

Small bed with vase in centre, next *Aralia papyrifera*, and edged with *Geranium anemonifolium*.

Acacia lophantha excellent in any kind of bed.

Small beds of mixed *Fuchsias* edged with green *Saxifrage*.

Arundo Donax versicolor mixed with *Sonchus laciniatus* and a flowering edging.

Mass of green-leaved *Cannas* surrounded with a belt of *Chilian* beet, and edged with *Centaurea gymnocarpa*.

Panicum palmifolium, very good as an edging to medium-sized foliage plants.

Round bed of *Castor-oil* plants, with a belt of *Chilian* beet and edging of variegated *Coltsfoot*.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Achillea aurea.—This is one of the showiest, if not the showiest, dwarf member of its large family, and is admirably suited for the rock-garden, for choice borders, for bedding out, or for edgings. It grows twelve inches or more high, has finely cut leaves and bright golden yellow flowers, abundantly produced, and appearing for a long time in succession on young plants recently transplanted into rich ground.—J. C. NIVEN, *Botanic Gardens, Hull*.

The Silvery Saxifrages on Walls.—One day when visiting the garden of the celebrated botanist, M. Boissier, in Switzerland, I was not a little pleased and surprised to see a fine rosette of the noble *Saxifraga longifolia* growing out of the face of the wall, like a silver star. The wall was a retaining one, but much exposed to the sun, and the garden was in a warm lowland part of Switzerland, where such plants would find greater difficulties than with us. There can be no doubt that these charming alpine plants may be readily grown on old walls in this country. To establish them it is better to sow the seed in the chinks, &c.—W. R.

Iris nudicaulis.—Do lovers of hardy plants sufficiently know and esteem this? I think not. It has the vigour of the German *Iris*, which thrives so well on all soils in town and country, and the dwarfness of the old Crimean *Iris*. It is, however, much sturdier than this, and is, in a word, second to no hardy plant introduced of late years. It is suited for the front ranks of the herbaceous border, and also well deserves a position among the more vigorous plants in the rock-garden, being so dwarf. It should be in every garden where early summer flowers are valued. I first saw it in the Paris gardens in 1867, and brought home some plants, which have since multiplied, so that the plant is now easily obtained.—W.

Gentiana acaulis as an Edging.—At Priory Hill, St. Neots, this lovely little alpine is extensively used for edgings. They vary from nine to eighteen inches in breadth, and when in flower are extremely beautiful. Mr. W. Ratchetons, who has been gardener at Priory Hill for upwards of a quarter of a century, had at first only a small plant of it, but he has gone on increasing it till he has accumulated nearly 150 yards of it. To see its thousands of bright blue flowers nestling thickly and closely to the evergreen foliage is a sight worth seeing. As an edging plant this *Gentian* ought to stand in the foremost rank, as it far surpasses many of our more tender plants now cultivated for that purpose.—R.

THE FRUIT GARDEN.

THINNING FRUIT.

THOUGH trees in a state of nature may produce fine crops of fruit, it is only on rare occasions, when the greater part of the blossom gets destroyed, that they produce a crop of fine fruit. Go into Covent Garden with a poor sample of fruit, and you will be fortunate if you recompense yourself the cost of plucking and carriage to market; take, on the contrary, a sample of fruit nicely packed, and you sell at once at the top market price. Now, the difference between poor fruit and fine fruit is just the numerical quantity produced. For example, a tree in good health may have sufficient vigour to bring, say five hundred fruits to great perfection; if you leave upon it one thousand fruits, they will only be half the size, and perhaps not that. Every tree has its fruit-bearing capability, and beyond that it cannot go; but if we want fine fruit it is always wise to reduce the limit of production. This reduction may be made either by thinning the fruit as soon as it is set, or by reducing the number of bearing branches, or by both. The first thing, however, should be to apportion the branches to the size of the tree. No two branches should be allowed to cross each other, nor should they be so thick or close together that the sun's rays cannot in the height of the season penetrate to every part of the tree. Thus you will get fine, clean, well coloured, richly flavoured fruit—fruit that you may be proud of; but if you allow the branches to remain thick, so that a part of the fruit is shaded, then an inferior sample and a low price at market must be the result. If a humble, but at the same time earnest illustration of the doctrine we wish to inculcate is desired, look to Gooseberry-growers; they know they cannot have size and quantity at the same time, and therefore they reduce the crop of their prize kinds to a few fruits upon each plant. If we do the same with our Apple and Pear trees, we shall see less in our markets of what the salesmen call seconds and thirds. But there is yet another aspect in which this subject may be approached. Fruit-growing north of the Midlands is too frequently considered a lottery in which the winners do not gain much. Well, it must be confessed the chances of success decrease with the neglect of cultivation. If trees are left to the sole care of Dame Nature, and go untrained and unpruned, we must not be surprised if in the struggle for existence they produce inferior wood and that that wood is badly ripened. Therefore the further north we go the greater the necessity for good cultivation and careful training and pruning. There is scarcely a neglected fruit tree in existence which would not pay for having

half of the worst wood cut clean away, while in many cases it would be wise to cut all away and begin again. This may be done either with the same kind or by grafting with a superior one. And really what is the use of growing inferior fruit where good fruit may be had for the same trouble? Who would plant the Keswick Codlin when Lord Suffield may be had at the same price? Or what is the use of the scores of inferior Apples when Blenheim Orange, Normanton Wonder, and other good kinds may be purchased at nearly the same price? It would not be wise to confine ourselves to a very limited number, as some bloom early and others late, so as to give several chances of a crop; but if we take a dozen varieties of kitchen apples and the same of dessert fruit the chances are that we shall not leave many other varieties to covet; and the same may be said of Pears and Plums, but in a more limited degree. Those who have been growing inferior varieties would do well to avail themselves of the power of improvement which grafting affords, and an old tree may be grafted all over; in this way they are soon brought into profit, and with superior kinds that profit will increase every year. We cannot too strongly urge this fact upon the attention of our country friends. Many of them have large orchards of inferior fruit, good enough for making cider, but not good enough to bring a profitable result from market. To all so situated we would say, cut over and graft, and in three years you will thank us for the advice. Even at a shilling per peck Apples are not a bad speculation, and bring home in the course of a season a considerable amount of money.

W. P. A.

THE GRAPE VINE IN THE OPEN AIR.

SOME will call in question the propriety of considering the Vine hardy at all. Our first care will therefore be to establish the fact of its being hardy. True, its culture out of doors has gone greatly out of fashion of late years, and various reasons have been assigned for it: such, for instance, as the extraordinary increase of hothouse grapes, the improved tastes of the population, the larger importation of foreign fruits and wines, and the deterioration of the climate. The two first are perhaps the strongest reasons for the decline of grape culture out of doors. Unless in exceptional circumstances, it must be admitted that out-of-door grapes are not equal to those grown under glass. And yet, throughout the greater part of England south of the Thames, grapes may be ripened in the open air, equal and often superior to the usual run of those grown in cool vineries; and as to taste, I know it is a favourite argument that as our very remote progenitors feasted on crabs and sloes, so our more immediate forefathers enjoyed grapes filled with verjuice. Unfortunately for this hypothesis many of us have eaten out-of-door grapes of excellent quality. True, we have more fruit now, both home and foreign. But we have likewise more mouths to eat it; and I question if more or better comes to the share of all than in the olden time, when our fathers, secular and holy, were busy planting vineyards on the sunny sides of their hills, and eating the fruit, or drinking the wine thereof. The climate's deterioration theory won't hold water for a moment. On the contrary, the climate is improving every year. It is far drier and warmer than it was in those olden times when vineyards were thick as blackberries throughout the country. Every forest cleared, swamp, mere, or wet field drained has ameliorated our climate, and made it better for the growth of the Grape Vine. Neither is the Vine, by any means, a tender plant. In a thoroughly ripened dormant state it is well nigh as hardy as the oak. It is frost-proof within a few degrees of zero, which we seldom reach in England. We are not left to speculation to establish the hardness of the Grape Vine in England. The experience of many centuries has established its hardness beyond all controversy. As far north as the Thames, and indeed in favourable localities far beyond it, the Vine will ripen its fruit in the open air in England in average seasons, when properly managed.

We have no proof that the Grape was assisted by artificial heat in England till towards the close of the seventeenth or beginning of the eighteenth century, and yet as early as the third century it seems that Britain was included among the Roman provinces permitted to plant vineyards. Vine culture had spread throughout the Roman Empire to such an extent as to produce a scarcity of bread and an excess of wine, resulting in famine and drunkenness; and hence many vineyards were destroyed, and no new ones permitted to be formed without imperial license. With the rise of the monasteries, Vine-growing assumed national importance. The monks had capital taste; in the choice of pleasant sites for their homes and the sunniest spots for their vineyards no landscape

artist or horticulturist has excelled them. Wherever they built an abbey or a monastery, there they also planted a vineyard and formed a garden of herbs and of flowers. Many of the vineyards formed by them bear their ancient names to this day.

At Chilwell, where Mr. Pearson rears new and grows old grapes so successfully, it seems there used to be a famous vineyard. For Miller tells how, "in an ancient house, called Chilwell, near Nottingham, there yet remaineth as an ancient monument, in a great window of glass, the whole order of planting, pruning, stamping, and pressing of Vines. Besides, there is yet also growing an old Vine that yields grapes in sufficient quantities to make right good wine, as was lately proved by a gentlewoman in the said house. And," adds Miller, "there hath moreover good experience of late years been made by two nobles and honourable barons of this realm, the Lord Chobham and the Lord Williams of Tame, who have had growing about their houses as good vines as are in many places in France." This is as true of many Vines in the England of to-day as it was in Miller's time.

In 1325 the Bishop of Rochester sent presents of grapes and wine to his sovereign King Edward II. from his vineyard at Halling, in Kent. Sixty years later the president of Trinity College, Oxford, Dr. Bathurst, is reported to have made as good claret as one could wish to drink; and Sir Henry Lyttleton, at Over-Arley, such as was not to be distinguished from the best French wines. The Duke of Norfolk had such a noble vineyard at Arundel Castle, that, about a century ago, in 1763, he had in his cellars sixty pipes of excellent Burgundy, much exceeding in quality quantities of Burgundy which were annually imported into England, and most of what is usually drunk in France. We read of most excellent grapes being grown on the walls of the Botanic Garden, Oxford, in 1702. About a thousand years before, the Venerable Bede wrote that the vine was raised in certain parts. Somers states, that in 1285 the Priory of Canterbury was plentifully furnished with vineyards. Domesday Book—that grand repository of old world facts—takes note of the extent and produce of several vineyards.

The Monks of Ely not only made wine and vinegar, but sold both. Martin, Abbot of Peterborough, planted a large vineyard in Saxon times. The king had a vine-dresser at Rockingham who was furnished with livery and necessities for the Royal Vineyard by the Sheriffs of Northampton and Nottingham. Wines were well known to the Ancient Britons; and the wine-press—the Anglo Saxon "win vin vingar"—is engraved on ancient records. The Vineyard at Bury St. Edmund's was called the "Vine," and contained six acres of land, as appears from an abstract from the title deed of the monastery; and besides this there was the Palace Garden containing one acre, two little gardens near the Chamberer's Office, the garden called the Lecture Yard, several other gardens, and the Walnut-tree Yard containing three acres, showing that the monks did not forget to grow nuts to crack with their wine. The Vineyard was formed by Robert de Gravill, the Sacrist to the Benedictine Monks, in the twelfth century, "for the solace of his friends."

CHASSELAS.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Strawberry Vicomtesse Hericart de Thury.—This strawberry is pronounced, and proved to be on the whole, the best and most generally now grown. It is also considered the best variety for general cultivation in the neighbourhood of Paris, where strawberries are grown to a great extent. It is good both for forcing and growing in the open air. Can any of your readers tell me who raised it?

Vine Border.—Will you or any of your readers kindly say what sort of vine border I am to make where the subsoil is a free gravelly one, and the soil a good deep sandy loam? The situation is in Kent.—MARTIN F.—[You are fortunate in having your garden on one of nature's ready-made vine or fruit "borders," and we should say you have little to do beyond planting suitable kinds. Perhaps, however, some of our vine-growing readers may have some thing to say in the matter.]

Fruit Trees on Walls.—I have moved about a little in what are called good gardens this spring, and it has been to me quite painful to see how fruit trees suffer from want of a little coping, temporary or otherwise. The little projection of permanent coping that usually crests a garden wall, is of no use except perhaps to harbour a few insects. We could have regular crops of fruit on our walls if the glass coping recently figured in THE GARDEN were generally adopted, or even if a common light temporary wooden coping, eighteen inches wide or so, were put up for a few months every spring.—VIVIAN.

A New View of Root-Pruning.—Popularly this is supposed to be quite a triumph for British fruit culture; while really it is only useful in special instances curiously performed, and a source of endless danger and expense to many hapless amateurs who drag their little trees out of the ground year after year. If people will persist in seeing any merit in very minute trees, root-pruning must be resorted to to keep them down; but for moderately-sized fertile trees it is to be avoided if possible. It should, however, only be applied to a last resource, after all other modes of checking vigour and inducing fertility have failed. Root-pruning tends too much to weaken the whole system of the tree, to take away the powers of the plant which are required for the support of what fruit there may be produced. It is not exactly a weakening of the entire system of the tree which is required, but a retention of all its powers, and a direction of those forces towards the production of fruit instead of that of shoots.—FIELD.

THE ARBORETUM.

THE PLANES.

BY GEORGE GORDON, A.L.S.

IV.—THE MAPLE-LEAVED PLANE (*PLATANUS ACERIFOLIA*—WILDENOW).

This bears considerable resemblance to the Occidental Plane, especially in its broad, angular-lobed leaves and large seed-heads, but none whatever to the Oriental Plane, although considered by most writers as only a variety of that species, which is a great mistake.

The Maple-leaved, or, more properly, the Sycamore-leaved Plane, is a native of the Levant, Persia, and Western India. It was first introduced in 1724. Dr. Royle found it growing plentifully, along with *Platanus orientalis*, in the great Valley of Cashmere, forming a stately tree from fifty to sixty feet high, with a straight and lengthened stem, somewhat thickly furnished on the upper part with twiggy branches. The stems of the young trees are smooth and of a dark greenish-brown colour, while the stems of adult ones are never so smooth as those of the Occidental Plane, as the bark adheres longer on them, and scales off in comparatively much smaller and thinner pieces. The principal branches are tolerably straight, not very stout, and more or less uniform in size, with the lower ones somewhat horizontal, or slightly declining; the middle ones ascending or curved upwards at the ends; and the upper ones more or less erect, and all amply furnished with slender sprays or twigs, which give the tree, when in full leaf, a rather thick and close appearance. This is a hardy vigorous kind, which commences growing later in the season than any of the other planes, and



Leaf of the Maple-leaved Plane.—Natural size, $8\frac{1}{2}$ inches long, including footstalk, and 8 inches broad.

in consequence of which it seldom suffers from the late spring frosts, which prove so injurious to all the other kinds.

The leaves of *Platanus acerifolia* are large, rather thin in texture, broadly and acutely five-lobed or angled, with a few remote coarse serratures along the margins, and nearly straight at the bases, or but slightly tapering to the footstalk, which is long and rather slender. The balls or seed-heads are about the size of those of the Occidental Plane, but more bristly, and generally produced in threes, but frequently in twos and fours, at regular distances and wide apart on the peduncles.

It is sometimes called *Platanus intermedia*, and the largest tree of it near London is at Elmhurst, Finchley, where in 1840 it was fifty-six feet high, with a stem three feet in diameter.

There are the two following very distinct varieties of the Sycamore-leaved Plane:—

1.—*The Spanish Plane* (*Platanus acerifolia hispanica*—London).

Why this kind has been called the Spanish Plane is not very clear, and no doubt originated in some mistake, for no kind of Plane in a wild state has ever been found so far to the westward as Spain. The leaves of this kind are very large, some-



Leaf of the Spanish Plane.—Natural size, $8\frac{1}{2}$ inches long, including footstalk, and $8\frac{1}{2}$ inches broad.

what fan-shaped, with five, shallow, broad, angular-pointed lobes, furnished on the edges with several large, wide serratures, and strictly heart-shaped at the base, tapering a little to the footstalk, which in some cases is two inches in length.

There are trees of this kind in the Victoria Park, twenty feet or more high, with ample roundish heads.

It has the following synonymous names:—*Platanus macrophylla*, *grandifolia*, *flabellata*, and *hispanica*.

2.—*The Spreading-Branched or Canopy Plane* (*Platanus acerifolia umbellata*—Knight).

This singular variety, when grafted standard high, forms a flat spreading head or canopy, full of rather long slender brown horizontal branches and semi-pendulous shoots, the principal ones of which have a tendency to curve upwards at the ends. The leaves of this kind are also generally larger than those of the species, with the lobes longer and more entire in the margin.


This variety of the Sycamore-leaved Plane is said to have originated in Lombardy, about thirty years ago, and was first introduced by the late Mr. Joseph Knight, of the Exotic Nursery, Chelsea.

The Deodar.—Will any of your readers kindly tell me if Deodars struck from cuttings make as fine trees as those from seed? Also, how the Deodar does grafted? I happen to live in a part of the country where this noble tree does beautifully, and even in the largest specimens never shows a tendency to debility or disease, and am anxious on the above points before planting a good many trees.—*CENARS.*

A Fine Tulip Tree.—Being on a visit at Coughton House, near Ross, I was astonished and delighted to see a very fine specimen of the Tulip tree (*Liriodendron Tulipifera*) in full bloom. I have often read in the *Field* notices of fine trees, and believe this Tulip tree is unrivalled in England. It measures fourteen feet six inches at the base, and is over seventy feet high, and at this present time is one mass of green leaves and beautiful orange blossoms. To anyone who has not seen this tree in its native soil (North America) a visit would amply repay.—*Chas. Dundas Everett, in "Field."*

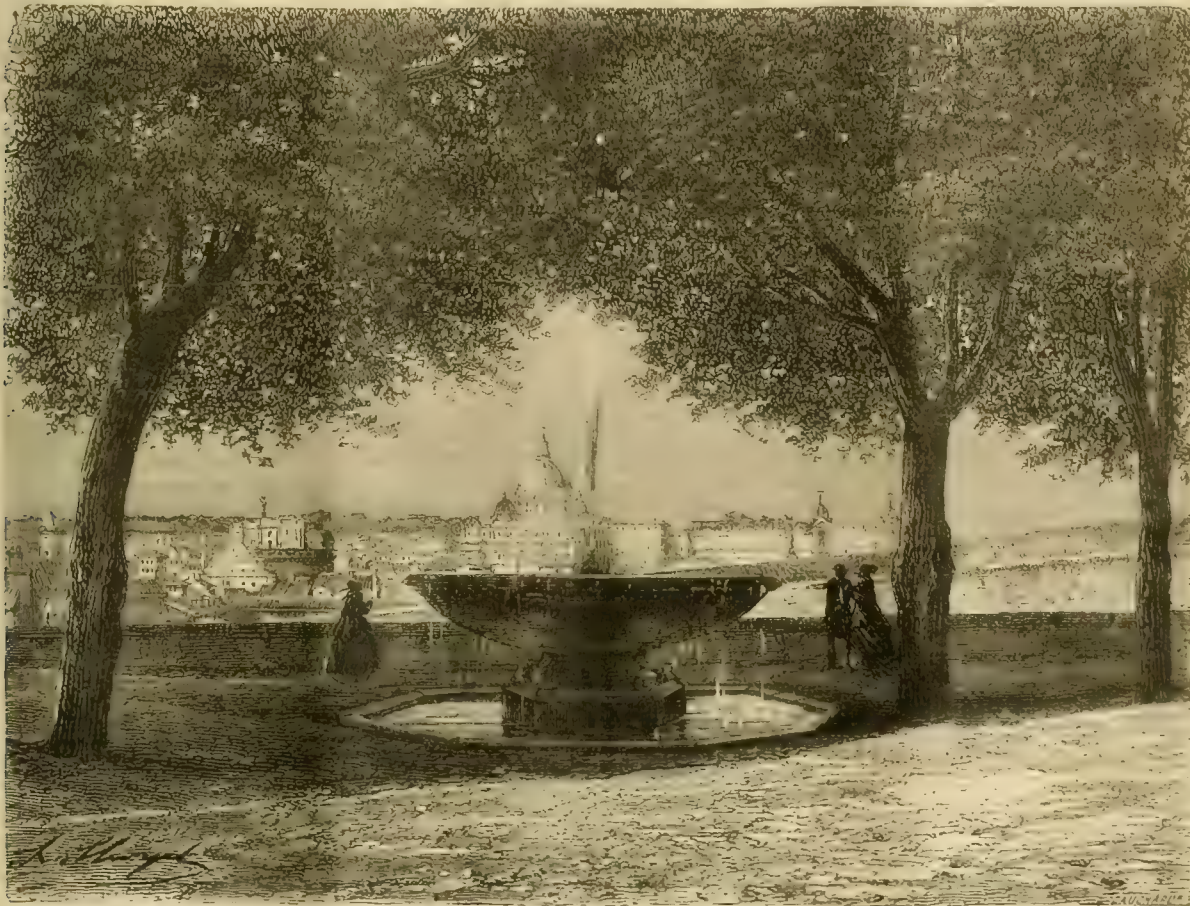
PUBLIC GARDENS.

THE GARDENS OF THE PINCIO, ROME.

 ON the brow of the Pincian Hill are the public gardens, with their carriage drives and shady promenades, which form a very favourite resort of the inhabitants of modern Rome. These pleasant walks and drives are due to the taste and energy of the French during their occupation of Rome in the time of the first French Republic, about the year 1790. Previously to that epoch, the present Piazza del Popolo, which still preserves in its name its republican origin, was an irregular and comparatively waste piece of ground; while the Pincian Hill, which rises on its eastern side, was utterly bare, with the exception of a few somewhat squalid tenements, which were swept away at the time that these unpromising sites

resort of the Roman population, but is also much frequented by foreign visitors, on account of its being so near to the great hotels of the Piazza del Popolo and the Piazza de Spagna. It is indeed very often the first point a visitor rushes to, five minutes after his arrival, because, from the level of the upper terrace, a magnificent view of St. Peter's is obtained, as represented in the annexed engraving.

The first glimpse of the vast fabric of the great Roman cathedral has long been deemed one of the chief sensations of European travel. Madame de Staël described with enthusiasm the shouts raised by her postillions at the point of the road from Florence, where the form of the great dome is first seen looming, vast and dim, on the blue horizon. But far more impressive is its aspect, especially at time of sunset, from the Pincian Hill, whence it is seen rising against the sky in the golden haze of those cloudless Italian evenings, which so rapidly pass through their brief twilight into darkness. St. Peter's is never seen to greater advantage than from the Pincio at that hour, the fountains and foliage of the garden promenades making a noble foreground to the more distant part of the picture.



View from the Pincian Hill Gardens Rome.

were converted into a picturesque garden and a handsome public square. The approach to the summit of the Pincio is made easy to carriages by means of inclined terraces, which form a very successful example of the manner in which a precipitous hill may be turned to account, and rendered easily accessible either for a public garden or for any other purpose. The hard lines of the architectural walls of this series of rising roads are agreeably broken by rose-flowered Robinias, at short distances; which are kept closely cropped to a certain height, in order to preserve their harmony with the architectural features with which they are associated.

This charming promenade-garden is not only a favourite

From other points of the Pincio, far more extensive views of the city are obtained, and few visitors fail to remark, as a salient feature, the ancient column of the Antonines, one of the most marvellous monuments of Roman sculpture, which towers above the modern houses, as the glance of the spectator travels along the line of roofs formed by the palaces of the Corso. Another object, and one of no less interest, is visible from the opposite side of the Pincian Hill, one that lovers of art linger long to look upon—it is the casino of Raphael, the dwelling in which many of his finest easel pictures were painted.

Though the merit of planning and planting this noble public

promenade has little to do, in a horticultural point of view, with the surrounding associations, it must yet be conceded to the planners of it, and to all other successful planners of public parks and gardens, that the selection of a site is one of the chief points to be considered in the creation of a public promenade of this kind. It is not always, however, that a desirable site can be obtained, and in such cases a bad one is better than none, for the healthgiving and civilising effects of public gardens are so valuable and so important, that, where interesting spots are not available, one without adventitious interest must be accepted: for a garden—yes, a beautiful garden, may be made almost anywhere, with the requisite amount of taste and skill. It happened fortunately for the French planners of the Pincian Gardens that a spot combining natural beauty with historic interest lay vacant and ready to their hands, and they had the good taste to avail themselves of it.

The trees of the Pincian plantations have thriven wonderfully, and, with their stalwart growth during three quarters of a century, have formed such umbrageous bowers and such deeply shaded walks, as in the sunny South are beyond price. The available space on the northern level of the hill on which the gardens were devised was of very limited extent, and consequently the laying-out was necessarily of the simplest kind—a few rectangular alleys, a carriage-drive round the external boundary, and a few open spaces for flowers, fountains, and the display of gardenesque statuary being all that it was possible to accomplish. That which was possible was nevertheless exceedingly well done, and few great cities can boast a more agreeable garden-park, on a small scale, than that of the Monte Pincio at Rome.

H. N. H.

THE KITCHEN GARDEN.

THE CUCUMBER.—ITS CULTIVATION AND USES.

(Continued from p. 576.)

ANOTHER KIND OF HOT BED.

ONE of the most successful growers of frame Cucumbers, the late Mr. Barnes, of the Camden Nursery, Camberwell, used to prepare his beds in a rather singular manner, and always attained the best results. Instead of forming a bed of solid dung, as before advised, he used to build up a foundation three to four feet high of refuse timber, branches, and faggots, in fact anything that came to hand, packed closely together, and of sufficient size for the frame to be used. On the top of this foundation a foot or so of prepared dung was placed, and then the whole was surrounded by a dung lining which, thatched with clean straw and protected by the framework before referred to, had not only a very neat appearance, but retained the heat for a long time. The advantage of this arrangement is not only that it prevents over heating at the centre, as is sometimes the case with the dung bed, but it also offers the certainty of increasing the heat at any time throughout the frame by renewing the linings. The success attending this form of bed, as exhibited by Mr. Barnes's practice, was as complete as could be desired, so much so that we consider the plan decidedly preferable to the bed of solid dung. A framework of this kind once formed may stand for years, and merely requires the lining to be applied when fresh heat is required.

THE CUCUMBER IN BRICK PITS.

These are of various constructions, that of M'Phail being perhaps as good as any. It is formed in the following manner:—The foundation being put in of suitable size—say six feet wide, and of any desired length—single or four-and-a-half inch brickwork built in cement is carried up in what is called chequered or pigeon-hole work to the height of three feet all round, and then the walls are finished solidly to the height which it may be considered necessary to carry them—say five feet six inches at the back and four feet at the front, so as to give a good slope to the sun. Then inside, four inches from the outer wall and parallel with it, a solid wall of brick on edge must be constructed, carrying it to within one foot of the top of the outer walls, and then covering it with thin flooring tiles, so as to make the flue quite steam-tight. Sometimes cross

flues, six inches wide and two feet high, are constructed under each rafter, these too being built brick on edge. This is not a bad plan, as it facilitates the admission of heat to the centre of the pit. The advantage of this arrangement is, that beyond the small quantity of prepared dung necessary to fill the inside to the soil level, the other may be used fresh from the stable; indeed, where brick pits and dung beds are also used, the linings of the former may be considered as the preparatory state of the material for dung beds, and hence there is no useless waste of labour. Where good sweet leaves can be had, the pit may be filled with them, a lining applied outside, and in a few days the pit is fit for work. Pits of this kind are always the best sunk two or three feet below the level of the surrounding soil, the lining space being walled round two to two feet six inches wide. Take also the precaution to have at the lowest point of the lining space a small tank to receive the draining of the dung, as that will be found useful either to return to the lining when it requires to be remoistened, or to enrich the garden ground. A tank of this kind may be readily extemporised by sinking a large oil cask outside the pit. Other materials as well as dung and leaves may be used for heat inside the pit, and for that purpose there is nothing better than spent hops, such as may be procured from the brewers. These retain a mild wholesome heat for a long time, and when decayed, are not objected to by the roots of the plants. Another material extensively used where it can be procured for bottom heat is bobbin chips, that is the small chips obtained from bobbins made for winding cotton and for other uses. These, however, it is necessary should be made of soft home-grown wood, such as lime, sycamore, horse-chestnut, &c., and for the purpose of generating heat it is necessary the chips should be in a state of slow decomposition, and chips containing resin and tannic acid—those from foreign timber and oak—do not ferment except in very large quantities. Bobbin chips of the right kind must not be used fresh from the lathe; it is necessary that they should be moistened, placed in a heap, and frequently turned until fermentation sets in. Then they may be moistened and put in the pit, and a layer two feet thick will give a fine growing temperature for several months, and then if a little fresh material is added, and the whole watered and mixed together, fermentation will again go on for a long time—in fact bobbin chips where they can be procured cheaply are the best material that can be used for bottom heat. We cannot close these remarks without mentioning tan as a cheap method of producing bottom heat. Where it can be procured without the cost of carting it from a distance it is a certain method of producing heat, but it has the objection of being valueless as a manure, and very liable to generate worms, which are a great nuisance among the roots of plants, and especially injurious to those of the Cucumber.

THE FRENCH SYSTEM OF MAKING HOT BEDS.

Before concluding our remarks upon hot beds it may not be out of place to mention that our French friends in horticulture make their hot beds upon a plan entirely different from that practised here. They do not make up a bed for a single frame or a range of frames, but the commercial gardeners collect a large quantity of material—manure, leaves, garden refuse, weeds, &c., and having mixed and left it to ferment for a time, as soon as it is in a fit state, they form it into one large bed, twenty to fifty feet square, and then cover it with frames, just leaving sufficient room between each range of frames to get between them to perform the necessary work of cultivation. The beds are made of the depth necessary to give the desired temperature, three to four feet, and they present the following advantages:—First, a large mass of fermenting material in a state of slow decomposition; second, a very small space exposed to the cooling effects of atmospheric changes, merely the pathway between the frames; and, thirdly, economy of material, inasmuch as the dung necessary for a two-light frame with us, would be sufficient for a three-light one on the French plan. The drawback is that of inability to replenish the heat when the first supply becomes exhausted, and no linings can be applied. Still, as a means of growing a summer crop the plan is worth following, especially for market purposes. A bed twelve feet wide might be made facing east and west; upon this two ranges of frames might be fixed back to

back and close together, and upon such a bed it is fair to infer crops of either Cucumbers or Melons, or in fact any other crop requiring bottom heat, might be grown with a certainty of success.

(To be continued.)

THINNING THE SHOOTS OF POTATOES.

THE late frosts have in many places cut down early potatoes to the ground. Where this has happened a complete thicket of shoots is now springing up, and if all of them are allowed to remain, the crop may be heavy, but the tubers will certainly be small. The best plan is to go over them at once, and thin out the shoots by pulling them up with the hand; leaving one, or at the most only two stems to each root, retaining, of course, the strongest ones. This will not only conduce to the excellence of the tubers, but, what is, perhaps, of equal importance, will render them fit for digging at least a week earlier than they otherwise would be. Many good cultivators before planting their potatoes, reduce the number of eyes by cutting them out, leaving the strongest one on the crown of the potato. The advantages claimed are, a more even-sized crop and earlier maturity. By reducing the number of shoots, sun and air will be admitted more freely among such as are left; the growth will be sturdier, and they will be better able to resist disease. I have observed for years, when potato digging has been going on, that whenever the digger came to a root with only one stem, the produce was invariably finer and more even in size than where there were many shoots. Time is found to thin mangolds and turnips, then why not potatoes? The two cases, it is true, may not be exactly analogous, but the principle of concentrating the producing power is similar. At all events, I am convinced that anyone giving the plan a trial will be satisfied with the result.

E. HOBDAV.

TOMATOES.

THE *Solanum* family generally is not a very edible one, indeed often markedly poisonous; but we manage to get some very good things out of it notwithstanding. There are, for instance, the potato, the egg-apple, the many kinds of capsicum, the tobacco, the *Solanum anthropophagorum*, or cannibal's tomato, which the natives of the Fiji Islands use with their cold missionary; and, finally, we have the tomato, which is, in our opinion, the one of the family—bearing in mind our opportunities of cultivating it—which is not sufficiently known or appreciated amongst us. Of course, it is largely used and grown in many places in this country, and yet but to a limited degree, considering its merits. There are very few houses or gardens where bare spaces along the lower parts of fruit walls, &c., may not be found to grow a good crop. In the south of England it may be grown well away from walls on sunny borders, &c.; and in the colder parts of the north the frames, pits, &c., that are emptied of bedding plants in the summer months will grow it to the greatest perfection; while everywhere the plant may be grown with the greatest ease in pots. Some of the new varieties would seem to be well worthy of pot culture, from their pretty and distinct character, and even in places where the plant may be grown with ease in the open air. To tomatoes, then, and knowledge of the best way to employ them, we wish wide popularity. Many of the under-mentioned varieties are curious and distinct; they come chiefly from America, where the tomato is enjoyed to a degree unknown in this or any European country. The following is Mr. Barron's description of the varieties:—

The earliest variety is the Red Cherry (syn. Cherry-formed), the fruits of which are round, red, about the size of cherries, and borne in clusters of from six to ten fruits in great abundance. It forms a very handsome plant. The Yellow Cherry (syn. Small Yellow) is the same as the Red Cherry, except that the fruits are yellow.

The Pear-formed (syn. Pear-shaped) has the fruits from 1½ inch to 2 inches in length, red, of the form of a small pear, and borne in clusters, in great abundance. It is very handsome.

The Yellow Plum (syn. Plum-formed) has the fruits small, yellow, oval in shape like a damson, and very handsome.

The Round Red (syn. Extra Early Red, and Sim's Mammoth) is a few days later than the foregoing; the fruits are red, roundish, ovate, and smooth, about the size of a Washington plum. It is very prolific.

The Large Red Italian (syn. Orangefield) is the earliest of the large-fruited sorts; it is very dwarf and prolific, bearing fine fruit within six inches of the ground. The fruits are very large, red, corrugated or ribbed. It is an excellent variety, and one of the best in the collection.

Kayo's Early Prolific is a tall-growing variety, with the leaves

much more entire, and of a lighter colour, than in any of the other sorts. The fruit is medium-sized, pale red, corrugated, somewhat later than the Orangefield, and very productive. It is altogether a first-class variety.

The Grosse Rouge Hâtive of Vilmorin is later than the Large Red Italian, and a stronger grower, but a fine and true variety.

The Filden (syn. Red Valencia Cluster, New Giant) is a strong-growing variety, much praised in America. The leaves are deep green. It is late, and not so prolific as the others.

The Large Yellow is the same as the Common Large Red, except that it has yellow fruits.

The Tomato de Laye (syn. Grenier, Upright or Tree Tomato) is of a stiff erect habit of growth, and will stand without stakes. The leaves are deep green, and the fruits are large and slightly corrugated; but it is very late, and not suited for cultivation in this country, excepting in exceptionally warm seasons.

The Great Mammoth of Barr & Sugden, or Large Red of Thornburn, has smaller and more finely-cut leaves, with the fruits very similar to those of Grosse Rouge Hâtive. The Large Red of Veitch, is synonymous with Powell's Prolific. The fruits are medium-sized, roundish, and slightly corrugated, and the plants very prolific. The Filden of Thornburn, or Red Valencia Cluster, is a strong-growing variety, which appears to be very highly esteemed in America. The fruits are large, full, roundish, slightly corrugated near to the stalk only, of a deep red colour, and the leaves are deep green; it is rather late, and not so prolific as others, but very excellent. The Fiji Island, or Lester's Perfected of Thornburn, is very similar in all its characters to the Filden, excepting that its fruits are of a decided crimson, quite a distinct colour among tomatoes. The fruits are large and very fine, both of this and of the preceding variety.

The finest variety raised for a long time, and one that is generally allowed to be a great improvement, is Trophy, an American variety.

LIME A CURE FOR THE POTATO DISEASE.

SOME years ago—I think it was in 1857—I saw several experiments tried, both for the prevention and cure of the potato disease. In a field of potatoes several rows were planted in the ordinary manner, and left to themselves without anything else being done beyond earthing up; the same number of rows had lime put over the tubers or sets at the time of planting, and a similar number were planted in the ordinary manner, and soon after coming through the ground had slaked lime dusted over their tops, and again repeated when they were earthed up. I was present when they were lifted, and the following are the results:—The first lot were half diseased, the second not much better, whilst in the third there was not a diseased tuber to be found. I believe the potato disease is caused by sudden changes of the atmosphere, and generally appears after a heavy thunderstorm, when the earth is suddenly changed from a warm and genial temperature to a damp and cold one; that is the time, in my opinion, when the disease attacks the haulm and works its way down the stem into the tubers. The next year I tried the liming process in my own garden on a small scale. Where I was living, in Suffolk, there were two cottages, the gardens of which were divided by a line of box about a foot high. I planted three parts of my garden with early Shaws and a few of the newer sorts. My neighbour did the same. At the time of my second operation of "liming" he had a good hearty laugh at me, and well he might, for I was as white as a miller's man; but at taking up time it was my turn to laugh, for my potatoes were all good, and his three parts bad.

Liming or dusting with lime is easily performed; choose a dewy morning, and putting on an old coat and apron, carry a box of lime in one hand, and scatter it with the other.—R. H. BARD, Wellington Nursery, St. John's Wood.

Tomato Culture. The great secret is in pinching off the head continually just above the bunch of fruit. This pinching is continued throughout the season. On the above management they may be grown against ridges in this way, or even staked up if the situation is warm. My principal object is to encourage the cottager to grow this plant for his own consumption. Now before I found out this simple way of making the plant bear a heavy crop, I dared not have recommended the cottager to waste his time about it, for this plant, if allowed to grow anyhow, is the most barren of any plant I know of; and when fruit is produced half of it never ripens at all.

Fertilizing Melons and Cucumbers.—The artificial fertilisation of the female flowers of Cucumbers and Melons constitutes a most important article of faith among practical horticulturalists. The "setting" of the crop by hand is insisted on in all garden calendars; if it is not necessary, the immense amount of time consumed thereby is wasted. In the thousands of gardens where handsome and well-flavoured fruit is everything, and seed of no consequence at all, we believe the operation to be altogether unnecessary. At all events, we have managed to secure for our own use for many years past cucumbers and melons in sufficient plenty, without putting ourselves to the trouble of applying the pollen, and have long since been satisfied that, except for the production of seed it is labour waste!—*Gardener's Magazine*.

GARDEN DESTROYERS.

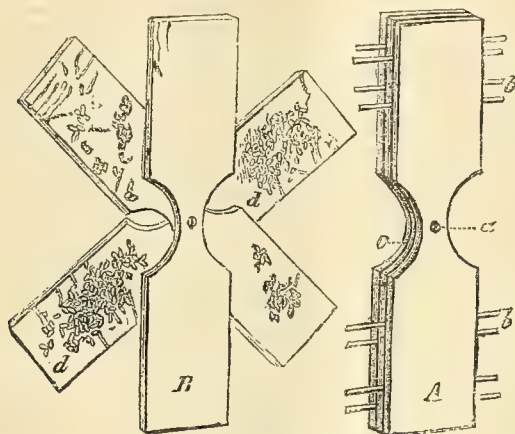
AN APPLE WORM TRAP.

THE Americans, long pestered with this hateful "worm," have paid it much attention, and have devised some sagacious schemes for its destruction. To one of the best of these we now desire to call attention. It is thus described by Mr. Riley in the *American Agriculturist* :—

Mr. Thomas Wier, of Lacon, Illinois, has hit upon a simple device for alluring apple-worms, which is destined to play an important part in counterworking their injuries. In conjunction with his cousin, he has patented his trap, and though I do not think that the patenting of such simple devices is quite in accordance with a progressive horticultural spirit, or that the patentees will find it a very profitable undertaking, they have a perfect right to think otherwise. It was too late in the season when the trap was brought to my notice to give it a thorough trial, but I was at once favourably impressed with its usefulness; and what little I have seen of its work has not altered that impression.

The trap (see figure—A closed, B open) consists of two, three, or more thin pieces of board, twelve to twenty inches in length, and two to four inches wide, with a screw (a) through their centre. The screw must be long enough to be firmly driven into the trunk of the tree, so as to hold the boards in position. The boards are cut out on each side of the screw, as at c, to facilitate their separation when fastened together by the silken threads of the worms, and to better expose the latter when the trap is opened.

The advantages of this trap so far outbalance the disadvantages, that it may be considered the best we yet have. These advantages



Apple Worm Trap.

may be stated as follows :—It is cheap, accessible to all, easily placed on the tree and removed again; wood forms, perhaps, the most natural covert for the worms; the traps may be collected with little trouble, by the barrowful, submitted to a killing heat, in one way or another, and replaced again; they may be used on the ground as well as on the tree. Its disadvantages are few. One it has, in common with all other snares or traps for this insect, namely, that it can never exterminate the Codling moth, for many reasons that will suggest themselves to all who have any acquaintance with the insect. Another is, that where one trap only is used it can be attached to but one side of the tree, and in this single respect, notwithstanding all the theories of my friend Wier, it must always be inferior to any trap that encircles the tree.

The worms will spin their cocoons between the inner shingle and the tree as freely as between the shingles themselves, and I suspect that it will be found less tedious and cheaper to detach the traps and kill the worms by wholesale, than to open them on the tree. Concerning the latter method, Mr. Wier says: "The quickest and best way is to have a large tin pan bent in on one side, so as to fit closely to the trunk of the tree. When you reach the tree, drop upon your knees, place the depression in the pan against the trunk of the tree, hold it there by pressing your body against it, and you have both hands free to open the trap. When opening it, many of the pupæ or chrysalids will fall into the pan, and some of the worms. Kill the rest or scrape them into the pan. The trap must be turned clear around, as many will be found between it and the bark. A person will open and kill the worms in from four hundred to eight

hundred traps in a day." I have known one of these traps to be so thoroughly torn to pieces by the Downy Woodpecker, that if they are to be preserved from year to year, it would be dangerous to leave them on the tree during winter. The inventor informed me that he believes his trap is more apt to come into general use by being patented, than if offered without price to the public. The danger is, that patentees are sure to claim too much for their pet creations. This fact is well exemplified in the present instance, for the label pasted on such of the traps as have been so far sent out, commences as follows :—"Thomas Wier's apple-worm and curculio trap, which catches apple-worms, curculio, and every species of insects infesting fruit."

The love of gain obscures the light of truth; and this wonderful power of a pair of shingles to catch "every species of insect investing fruit" is altogether too much like Mr. Quackenbosh's patent universal, never-failing elixir, which cures all diseases that possess mankind. Other evils will likewise result from the sale of this trap under such spurious claims, and without some explanation of the insects' habits. One of them may be illustrated by the following dialogue, which is not altogether imaginary, but is founded on an actual occurrence. Agent Gaingreed—his desire to sell rights being stronger than his love of accuracy—meets farmer Glauball, and straightway expatiates upon the merits of the patent trap. He shows how the worms gnaw their way in between the shingles, and how easily they may be destroyed. "Ach!" cries the credulous German, "und is it true das de worm rader eat de schindel dan de apfel?" "Oh, yes!" says Gaingreed, "screw one of the traps on to this tree, and in a week I will come back, and we will examine it." At the expiration of the week the trap is opened, and upon viewing with wonder the worms that have secreted in it, Glauball rapturously exclaims, "Ist es möglich? das is de best ting I yet see," and purchases the right to use much quicker than he would if he knew that the worms had already been in his apples.

I have thus indicated the mischief that may be done by over-estimating the value of this trap, in order that the patentees may strip it of all appearance of sham, and present it to the fruit-grower for what it is—a useful and important device—and not extol it as a sure Codling-moth exterminator.

THE GARDENS OF ENGLAND.

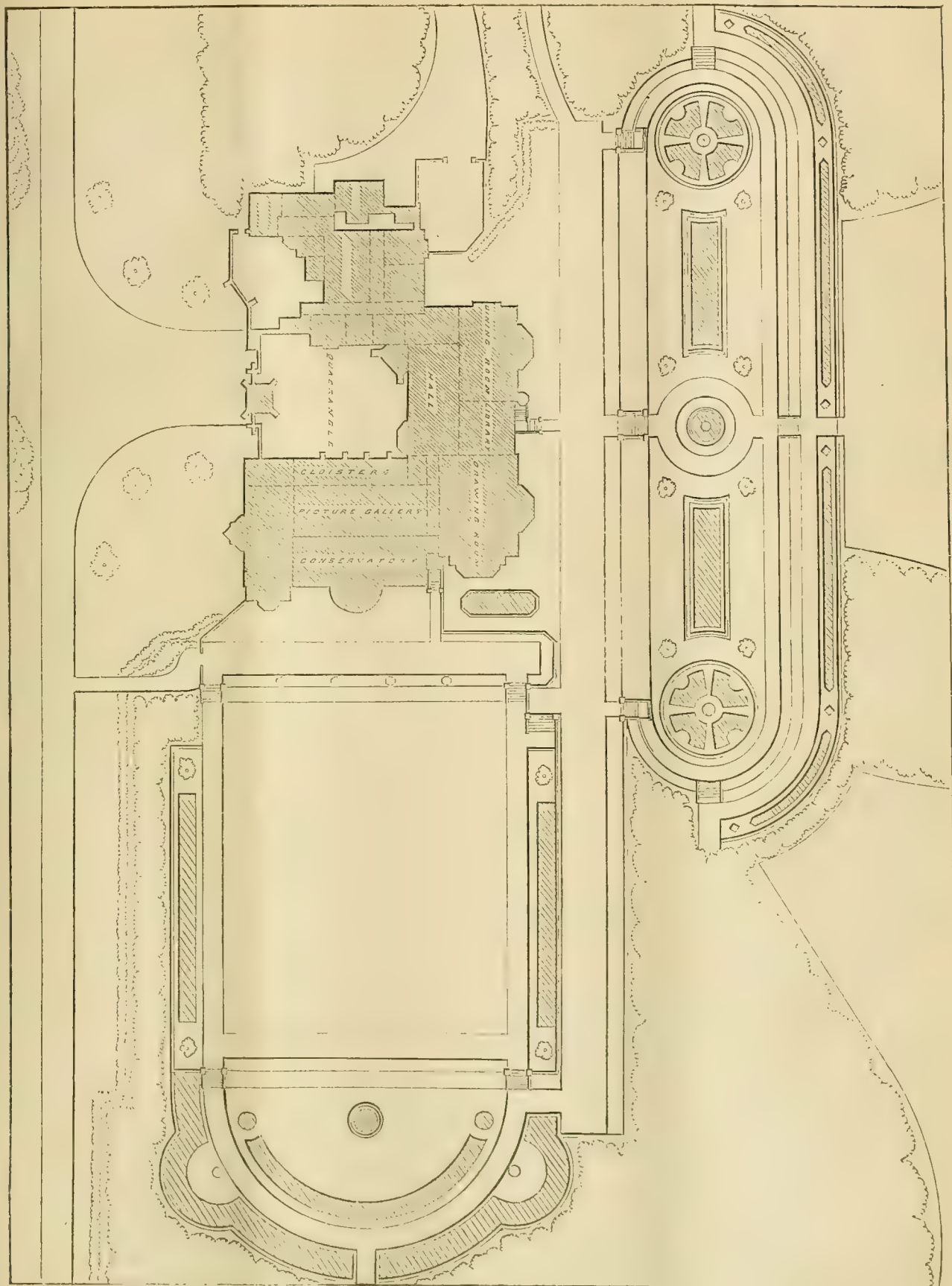
THE TERRACE GARDEN AT POSSINGWORTH.

POSSINGWORTH, in Sussex, the seat of Mr. Louis Huth, as recently laid out by Mr. Marnock, promises to be a noble place when its many plantations have attained to a riper age, and when the finishing touch of Time has been given to the margin of its fine expanse of artificial water and its many other fine features. To some of these we may again advert, and now merely say a few words to introduce the terrace garden and immediate surroundings of the house to our readers.

The terrace garden at Possingworth differs from most of its kind in the absence of the numerous geometrical figures and beds usually considered indispensable to the style. When at Possingworth in the autumn we were struck with the good effect of the few but rather large masses of flowers in front of the house and the great pleasant spread of green to the left.

RYTON HOUSE, RYTON-ON-DUNSMORE.

EUREKA! A small old-fashioned garden, the like of which I began to fear was extinct. Something like it has been described by Mr. Henry Kingsley in "Hornby Mills." So bare were the large gardens in Warwickshire, that I began to feel I was no longer in a land of spring flowers. Here is a little oasis of them. A lawn green as tufts of the mossy saxifrage on the 1st of November spreads from the back of the house to a belt of surrounding trees. The abominable orthodox little terrace-garden of the ordinary landscape gardener does not violate the carpet of verdure that rolls to the steps of the verandah; nothing disturbs the repose of the sweet foreground, and the eye rests in peace on the deodars and other pines with which the lawn is adorned. So far nothing remarkable by way of improvement, except the abolition of formal spaces of bare earth. To the right and left, a little in the distance, a gay little crop of varied blooms is seen peeping over the emerald grass. These are the May bloomers of a very interesting collection of hardy flowers arranged in mixed borders. The earth here is not, as usual with much of our garden beds and borders nowadays, less interesting than the adjoining meadow, for here is the fair little St. Bruno's Lily, which just now is opening its pale green-tipped trumpets on many a



PLAN OF THE TERRACE GARDEN AT POSINGWORTH.

wide waving sea of meadow grass just below the receding snow in the valleys of Piedmont; here, too, are some of our own rarer wildlings, like the Creeping Gromwell (*Lithospermum purpureo-cæruleum*), which is quite wild and full of deep purple bloom on the little rockery; here the Dog's-tooth Violet, the Snowy Crowfoot, the Alpine Erinus; little shrubs eighteen inches high of the tree Linum (*L. arboreum*), flakes of the alpine Phloxes of the Rocky Mountains; healthy plantations of the old double primroses, now become so scarce; stately tufts of Globe flowers, and blue dots of Gentian; wide edgings of Mountain Cat's-foot, bestrewn with its dull crimson little "everlasting" flowers; summer Snow Flakes, beginning to open in May hail showers; tufts of Adonis, with its last great yellow stars; rich golden Welsh Poppies, as well established as they are by the roadways near Windermere; sheets of the wood Forget-me-Not, and of the Mountain Avena, running over the rocks with its crowds of white, yellow-stamened bloom, with many of their fair companions passing out and coming into bloom.

Let us pass away from the garden, and into a small wood partly surrounding the place. It is a rather dense grassy plantation with a little green walk winding through the trees and by the margin of a small lake. Through the weeds and long grass bold Lilies are pushing up nearly ready to flower. Tufts of the Poet's Narcissus are already in bloom in this pleasant wilderness. The large-flowered Everlasting Pea is tangled through the low bushes all carelessly and wild like the rest; but here, in an open spot, is a tuft of *Acanthus*, evidently recently and carefully planted; and the pleasant fact is seen that the plants here are no chance outcasts from the garden, but carefully planted by loving hands. It is, in fact, a wild garden we are wandering through, and in which, quite at home, exotic Irises and Daffodils flourish in the domain of the Solomon's Seal and the Periwinkles. Such is a glimpse of this charming garden, as far as I can feebly express its beauty. But as,—

"When spring herself is here, in vain we look
To find her likeness pictured in a book,"

so is it exceedingly difficult to describe on paper the early summer loveliness of such a garden.

It is impossible to avoid drawing comparisons between this garden and others, and the comparisons are wholly in its favour as compared with the ordinary type of villa garden. That it enjoys a long season of beauty before people begin to think of covering the brown earth with their bedding plants, is proof enough of this, and that season is the most delightful of the year. But let no one suppose that such a garden offers us the only alternative with the bedding system. There are many other ways in which we may vary and beautify our gardens as well. Besides, the bedding system itself must ever be, when properly arranged, one of the most beautiful ways of growing plants. There is no reason whatever why what are called bedding plants should not be arranged in as true and beautiful a way as any others. Nevertheless, I was charmed to see what was the result here of depending on hardy flowers alone. There was not, so far as I could see, a single bed in the place destined to receive bedding plants; yet the garden was full of beauty and interest, and evidently had been so for the past three months. Be it observed, however, that much of the good effect would have been spoiled if the foreground of the picture—the untortured little lawn, with its trees—had been broken up by geometrical patterns.

This garden is the property of Miss Freeman, whom I had not the good fortune to find at home, or perhaps I might have discovered more beauties than I had the pleasure of seeing. For kindly guidance to it, as well as to many of the gardens of Warwickshire, I am indebted to Mr. William Miller, of Combe Abbey.

THE COVENTRY CEMETERY.

It was a good idea that of making our cemeteries suburban gardens, which was carried into effect in this country, and more extensively in America, when burying closely in towns was discontinued. Rarely, however, does one meet with such a happy illustration of the result as is now given by the Coventry Cemetery. This is an ornamental garden in a very high sense. It is not only with our dreary old town cemeteries that such an oasis contrasts in beauty. The country graveyards, many of which offer the most inviting positions for hardy plants, and all of which could be easily converted into beautiful gardens with very little trouble or expense, are, for the most part, as devoid of any grace as a barrack-yard. There is no need why this should be so; only a Vandal would recommend that these hallowed spots should be embellished in any sense like what is called a "modern flower garden." It were better they should lie fallow for ever, than that any such blight should fall upon them. But much might be done to make them more beautiful, without in any sense violating their character or the fitness of things. They invariably offer sites for a few beautiful trees; and

never was country so rich in weeping and other highly-suitable trees as ours is now. Yet you may go for days through villages without seeing an attempt at planting. Then the walls! What a difference between an old church draped with ivy, clematis, and Virginian creeper, and the like, and one as bare as a new factory wall! It is with churches as with cottages; they are generally pleasing in proportion to the degree in which their walls are covered with vegetation. Here, again, we have no end of almost unused wealth; some of which, like the ivies and the new Japan creeper (*Ampelopsis tricuspidata*), do not even require training over the walls, but hold on with their own rootlet-fingers. The ivies, in their now numerous and beautiful varieties, give us all we want for the embellishment of our churches and churchyard walls, which are often bare of all life except seams of moss sown by the wind.

The Coventry Cemetery is very agreeably and boldly diversified. It abounds with stately and beautiful tree-life, much of it evergreen. The planting is quite superior to that usually seen in what are considered the best gardens. Near the entrance stands a tall and not ungraceful monument to the designer of the cemetery, and for years member for the city, the late Sir Joseph Paxton. Most fitting is it that the city of the dead should be embellished with such life as here springs from the turf. If we make our cemeteries combinations of a graceful garden and arboretum, such as this is, we throw a charm round the brink of the grave itself. The total absence of bare earth here gives the place a refreshing look, too rare in gardens. The well-broken easy margins of the plantations also deprive the place of the disagreeable air imparted by formal margins. Fortunately, almost every one of our fine evergreens thrives in perfection here, from the hemlock to the Wellingtonia. The hemlock is a peculiarly graceful cemetery tree; the red cedar should be more employed for cemetery planting, especially where other tapering trees do not succeed owing to the cold.

The place is in admirable order, and reflects much credit on the superintendent, Mr. Dawson, and on the town. One important improvement might, however, be made by embellishing the place liberally with spring and early summer flowers. This could be done without any formal or expensive gardening in beds, by merely dotting the plants or seeds about in the margins of the extensive shrubberies, &c. It may be objected that these would be destroyed by the visitors to such places, but the objection is a groundless one. As instances of the spring flowers which may be naturalised in such a place, and which would add to it many charms in spring, I may mention the Apennine anemone, the Geneva bugle, the Japan and snowdrop anemone (*A. sylvestris*), snowdrops and crocuses, the winter aconite, the snake's head, hepaticas, snowflakes, lilies, honesty, grape hyacinths, forget-me-nots, daffodils, *Omphalodes verna*, bluebells, and violets.

There is one great eyesore here which interferes sadly with the beauty of the scene. It results from the mutilation of a great number of weeping limes. These were planted in abundance all over the cemetery; in one place they border a winding avenue. Some years ago these trees (they are all strong and vigorous specimens), were pollarded! Yes, all the limbs and branchlets, which constitute the charm of every weeping tree, were lopped off close to the main lower branches. It would not be easy to find a sadder sight among trees, than these presented on the 9th of May. What their summer aspect may be, I know not, but it is most unwise to disfigure a fair scene like this by such monstrosities, even if they were only seen for a week in the year. Want of room is said to have been the reason for mutilating them. Surely, it would have been better to remove all for which there was no room, than make tree-scarecrows of them. I never saw anything uglier than the avenue of these weeping limes in this cemetery in their winter dress. If this were altered, I know of nothing of the kind, which, for its size equals in picturesque beauty and in the richness of its tree flora the Coventry Cemetery.

Maidstone Public Garden.—The work of laying out the public garden to be presented to the town of Maidstone by Mr. Julius Brenchley, nearly approaches completion. About five acres of an old apple orchard adjoining the private garden at Chillington House have been converted into a picturesque garden, in the centre of the town, from all parts of which it will be easily accessible.

The Garden.—A garden is a beautiful book, writ by the finger of God: every flower and every leaf is a letter. You have only to learn them—and he is a poor dunce that cannot, if he will, do that—to learn them and join them, and then to go on reading and reading. And you will find yourself carried away from the earth by the beautiful story you are going through. You do not know what beautiful thoughts grow out of the ground, and seem to talk to a man. And then there are some flowers that seem to me like overdutiful children: tend them but ever so little, and they come up and flourish, and show, as I may say, their bright and happy faces to you.—*Douglas Jerrold.*

THE PROPAGATOR.

SOFT-WOODED PLANTS IN SAND AND WATER.

MR. WM. GARDENER'S mode of striking cuttings of soft-wooded plants (see p. 481) is quite right with the exception of two things, first; after inserting the cuttings, he says, "fill up with water;" secondly, he recommends the same pans of sand to be refilled with fresh cuttings. Now, in the first case, if the sand is too wet, the cuttings, especially Verbenas, will curl up, and the base of the cutting will come out on the top of the sand. Fresh sand should always be used, as I find that the second batch in the same sand never strikes so readily. I thank Mr. Gardener for bringing forward the subject, for though I have practised a similar mode of striking soft-wooded things for fifteen years, I have never seen anything respecting it in print before. My mode of proceeding is this: first, I make my cuttings, keeping account how many I have got as I go on. Next, I fill pans with sand level with the top, and sprinkle them with water through a fine rose to consolidate the sand. Then if I have, say a hundred cuttings, I proceed to insert them with the end of a small quill, than which nothing is better, say fifty in a twenty-four sized pan, more or less according to circumstances; another sprinkling of water through a rose settles the sand firmly down about them, and the work is finished. The sand should never be allowed to get dry, nor should it ever be made the least sloppy. A nice brisk dung bed and frame is the best place in which the pans can be set. I use a small one light frame for the purpose, with a two-light frame to receive them when potted off. The old sand when dry is employed for general bench purposes, but in no case do I use the same pans or sand again, unless well washed.

Guildersfield, Streatham Common.

WM. WILLE.

THE ART OF GRAFTING.

(Continued from page 575.)

TREATMENT AFTER SIDE-GRAFTING UNDER THE BARK.—In grafting with a dormant eye, with a view to propagation, the particular treatment will consist in heading down the stock, after winter, to four inches above the graft, and immediately tying up quite erect the top of the woody scion, in order to avoid a knee or bend at the graft. The first process (with a simple branch) when employed for purposes of restoration, does not require the amputation of the stock; but in order to hasten the development of the graft, a notch is cut in the stock, about a quarter of an inch above the graft, in spring. The notch, in form of a crescent, about half an inch broad, is made with two cuts of the pruning-knife in the bark. An example of a similar operation has already been given. At the same time the branches above the graft are pruned short. A thin stake is indispensable for fastening up the young graft. When the grafting is made with a shooting bud, at the flow of the sap, the scion should be covered with grafting-clay, to preserve it from the sun and the scorching winds. If, notwithstanding its speedy vegetation, it exhibits a tendency to remain puny, its growth may be accelerated by making small longitudinal incisions. By cutting the bark the sap is induced to

flow more freely under the dilated surface, and causes the branch to increase in thickness.

SIDE-GRAFTING IN THE ALBUMUM.
GENERAL DIRECTIONS.—This method is more specially adapted for ever-greens; therefore it is more frequently adopted for grafting under glass, the season for which is in February and in August. If the same kinds are to be grafted in the open air, it should be done in April and in August. For ever-green scions, a branch of medium size, and furnished with a terminal bud, is to be preferred. It is to be

cut from the tree at the moment of using it; none of the leaves are to be removed, except those at the base; and to keep it fresh it should be placed in the shade with the end in a vessel of water or in sand. The stock is not headed down, and the leaves on the part destined to receive the scion, are cut off at the stalk or in the middle. In order to insert the scion into the alburnum of the stock, the bark and outside layers of alburnum are removed, directing the blade of the

knife from above downwards, taking care not to penetrate to the pith. The scion is cut thin on both sides, if it is to be inserted at the top of the cleft, or cut in a wedge-shape if inserted in the side of the incision. Hence arise the following two subdivisions:—

SIDE-GRAFTING WITH A VERTICAL CUT. The camellia scion (A) is cut for the half of its length on both sides (a), leaving on each side a strip of bark of equal width, and tapering gradually to the point. The stock (B) is cut as at (b) with one stroke of the grafting-knife, allowing the blade to penetrate as far as the alburnum. The scion (A) is introduced by its base (a), and then bandaged, as shown at C. Should the grafting be done in the open air, grafting-wax



should be applied on both sides of the cleft, so as to fill any vacancies that may occur. With the camellia, and other hard-wooded shrubs, the stock is maintained entire at the time of grafting; but the Aucuba, the tissues of which are less dense, is cut down to within four to eight inches above the graft at the time of the operation.

SIDE-GRAFTING WITH AN OBLIQUE CLEFT.—The scion E is the top of a branch of holly. The lower part of it is represented at B with a sloping cut (C) on both sides, and with the back of the slant much longer on the outside. An oblique incision (D) is made in the stock (A) by cutting through the bark and alburnum in a slanting direction with reference to the axis of the stock. The scion will thus be inclined at an angle, and its leaves will not be embarrassed by the stock. It may also be placed in an upright position by giving an oblique direction to the sloping cut. It should be bandaged with some elastic material. A certain number of conifers are best grafted

with the oblique incision; the wound does not enlarge so much as in the case of the vertical incision, and a slender scion is more securely fixed in it. To the group of side-grafting we might

add the method termed gimlet-grafting, in which a gimlet or drill is used to pierce an oblique hole from above downwards through the bark and alburnum without reaching the pith. The mouth of the hole is smoothed, and the end of the graft is cut round and pointed so as to fit it properly. This method is seldom used; it should only be employed on old stocks, which do not exude gum, and when it is required to supply a branch to a very bare stem.

TREATMENT AFTER SIDE-GRAFTING IN THE ALBURNUM.—If the grafting has taken place in the month of April, the head of the stock should be gradually cut away, as soon as the cohesion of the parts seems to be assured, continuing the operation in proportion to the development of the graft. But if the grafting has occurred in autumn, the stock is cut, after winter, to within four to six inches of the graft, preserving on the heel the principal leaves and small branches, which will be removed afterwards when the graft has developed its shoots. The heel, which serves at first as a prop for the young shoot, is to be cut off level with the graft, as soon as the young shoot shall have acquired sufficient strength to maintain itself.—*C. Baltet.*

(To be continued.)

THE HOUSEHOLD.

ORANGE-MILK MUSHROOM.

(*LACTARIUS DELICIOSUS.*)

THERE is no possibility of mistaking this fungus. It is the only one which has orange-red milk, and which turns green when bruised. These properties distinguish it at once from *Lactarius torminosus* or "necator," the only fungus which in any way resembles it. This acrid fungus (*Lactarius torminosus*) is somewhat similar in shape and size, and is also zoned. But the involute edges of the pileus are bearded with close hairs. It is of a much paler colour, and with gills of a dirty white. The milk, also, is white, acrid, and unchangeable in colour. The orange-milk agaric chiefly affects the Scotch fir-tree, and is generally to be found beneath the drip of the branches around the tree. It is also found in hedgerows occasionally, but is most abundant in plantations of Scotch fir or larch.



Orange-milk Mushroom (*Lactarius deliciosus*). Under fir trees, in autumn; colour, brown-orange; milk at first orange, then green; diameter, three to ten inches.

Pileus smooth, fleshy, umbilicate, of a dull rufous orange, turning pallid from exposure to light and air, but zoned with concentric circles of a brighter hue; margin smooth, at first involute, and then becoming expanded; from three to five inches across. Flesh firm, full of orange-red milk, which turns green on exposure to the air, as does any part of the plant when bruised. Gills decurrent, narrow, each dividing into two, three several times from the stem to the edge of the

pileus; of a dull yellow by reflected light, but being translucent, the red milk shines brightly through them. Stem from one to three inches high, slightly bent and tapering downwards; solid, becoming more or less hollow with age; short hairs at the base; sometimes pitted (scrobiculate).

OPINIONS ON THE MERITS OF *LACTARIUS DELICIOSUS* AS AN EDIBLE FUNGUS.—"This is one of the best agarics with which I am acquainted, fully deserving both its name and the estimation in which it is held abroad. It reminds me of tender lambs' kidneys."—*DR. BADHAM.*

"Very luscious eating, full of rich gravy, with a little of the flavour of mussels."—*SOWERBY.*

"Cook them well, and you will have something better than kidneys, which they much resemble both in flavour and consistence."—*MRS. HUSSEY.*

MODES OF COOKING *LACTARIUS DELICIOSUS.*—"The rich gravy it produces is its chief characteristic, and hence it commends itself to make a rich gravy sauce, or as an ingredient in soups. It requires delicate cooking, for, though fleshy, it becomes tough if kept on the fire till the juice is exuded. Baking is perhaps the best process for this agaric to pass through. It should be dressed when fresh and pulpy."—*EDWIN LEES.*

STEWED *DELICIOSUS.*—"The *tourtière* (or pie-dish) method of cooking suits *Lactarius deliciosus* best, as it is firm and crisp in substance. Be careful to use only sound specimens. Reduce them, by cutting across, to one uniform bulk. Place the pieces in a pie-dish, with a little pepper and salt, and a small piece of butter on each side of every slice. Tie a paper over the dish, and bake gently for three-quarters of an hour. Serve them up in the same hot dish."—*MRS. HUSSEY.*

***DELICIOSUS* PIE.**—Pepper and salt slices of the agaric, and place them in layers with thin slices of fresh bacon, until a small pie-dish is full; cover with a crust of pastry or mashed potatoes, and bake gently for three-quarters of an hour. If with potato crust, brown nicely before a quick fire.

***DELICIOSUS* PUDDING.**—Cut the agaric into small pieces; add similar pieces of bacon, pepper, and salt, and a little garlic or spice; surround with crust, and boil three-quarters of an hour.

FRIED *DELICIOSUS.*—Fry in slices, properly seasoned with butter, or bacon and gravy; and serve up hot with sippets of toast. A steak in addition is a great improvement.

How to Make the Most of Coffee.—According to M. Schadler only half the quantity of finely ground coffee is needed, in order to produce the same strength of beverage obtained by the ordinary coarse-ground article. If, after Oriental fashion, the ground coffee is crushed fine in a mortar, only two-fifths of the coarse is needed. Infusion, boiling, or filtering through a bag, all have the same result as regards strength, except that by filtering the aroma of the coffee is better preserved.

Preserved Orange Peel.—Clean carefully; cut in thin strips; stew in water until the bitterness is extracted; drain off the water, and stew again for half an hour in a syrup of sugar and water, allowing half pint of water and pound of sugar to each pound of peel. Put it aside in jars, and keep it in a cool place. If desired, a little cinnamon and ginger may be stewed with the peel, but it is more delicate cooked simply with sugar. Lemon peel may be prepared in the same manner, either alone or mixed with orange peel. These form pleasant "relishes" eaten with cake or bread, or if chopped finely when prepared they form excellent flavouring for puddings and pies.

Potatoes Boiled or Steamed.—It is stated at p. 383 that potatoes become watery from being covered with a weight of water, and that, moreover, the particles are not able to expand and burst into flour. I venture to challenge that assertion. Potato flour is not so easily compressed as all that. I should like to see the pot of water big enough to prevent the potato flour from bursting during the process of boiling. Very little water indeed can enter the potato during the process of cooking; and as for its weight it is virtually inoperative. Potatoes boiled are almost as floury as potatoes steamed, if the boiling has been properly done, and they are better flavoured. This is my argument for boiling—the potatoes are sweeter. Does anyone doubt it? then let him try a draught of potato water, and doubt no more. Where does the water pick up that loathsome flavour? Assuredly from the potatoes, in the process of boiling. And the potatoes must needs be the better for the loss; and they are. I thought otherwise at one time, but I am now fully convinced that the best mode of cooking potatoes is boiling them. The mode of boiling given at p. 383 is good. But one water—a liberal supply—with a handful of salt, will finish them in style, without the trouble of several changes.—*D. T. FISH.*

PROGRESSIVE GARDENING.

BY THOMAS JERROLD.

To the Romans we no doubt owe the elements of the art of gardening. In the time of Pliny, they seem to have carried it to such perfection, that he speaks of a single head of asparagus weighing three pounds, and cabbages so "pampered" that the poor man's table was not large enough to hold them. Whatever progress we may have made towards artistic beauty, I do not think that our kitchen gardening of the present day very greatly surpasses that of our forefathers. Vineyards planted in the third century existed in the eighth and in the twelfth. William of Malmesbury speaks highly of the vineyards then existing in Gloucestershire. In 1512 the Earl of Northumberland kept *one* gardener; yet, in Scotland gardening seems even then to have progressed more rapidly than in England.

During the early part of the sixteenth century, after the fierce Wars of the Roses, gardening began to occupy attention, as we may infer from the great progress which had been made in this art during the reign of Henry VIII., when the magnificent grounds of Nonsuch were laid out. These contained groves ornamented with trellis work, cabinets of verdure, and walks embowered by trees. In these gardens, in which wealth and invention seem to have been lavished, a concealed fountain is mentioned, which spouted upon all who came within its reach; and this vulgar taste still seems to have prevailed in the reign of Elizabeth, when the gardens of Holland House and Hatfield were laid out in mazes and labyrinths, and with concealed pipes, which deluged in a moment unwary visitors. During the succeeding reign, if we may judge from the description of Theobalds, a slightly better taste prevailed. A large square had its walls covered with Phillyreas, and a beautiful *jet d'eau* occupied its centre; the *parterre* had many pleasant walks, part of which were planted on the sides with espaliers, and others were arched all over. At the end, a small mount, called the Mount of Venus, was placed in the midst of a labyrinth.

During the reign of Charles the Second, the gardens at Hampton Court, Chatsworth, and many others, were laid out. But with the accession of William and Mary to the throne, the perverted taste of the Dutch school of ornamentation came into fashion, and our gardens were disfigured by trees, evergreens, and shrubs clipped into vile forms. In this country gardening has always been a favourite art; it was pursued by the monks with a knowledge and a taste perhaps not excelled in our own day, more particularly in regard to the products of the kitchen garden and the orchard; but it received a great check in England by the dissolution of the monasteries. Bacon, during the reign of James the First, had spoken with contempt of the images cut out of Juniper and other evergreens; and after the rage for the Dutch style began to die out, English gardens appear to have begun to have a character peculiarly their own. While the French were clipping trees into fantastic shapes, like the Dutch, until their groves appeared like so many "green trees set upon poles"; and while Maréchal de Biron flanked his garden walks with nine thousand pots of Asters, we strove to dress Nature with a freer and a wilder grace. Bishop Hatched described his ideal garden as "a large, beautiful lawn, edged with even rows of trees, a flowery meadow, with a stream running by it, a beautiful garden, a belvedere, with rare figures of composites," &c. Dryden, speaking of gardens, says: "The plan must be great, entire, and every portion—even the least—must have a reference to the whole." But Cradock, according to Southey, goes further than Dryden, and says: "Gardening, in its highest stage of improvement, is of the nature of an epic poem." Cradock refers rather to the garden Milton describes as the home of our first parents, and to the scene of Acrisea's bower of bliss, than to the Saardon Gardens, where tables and punch bowls were cut out of evergreens, and where an evergreen stag with leafy antlers guarded the walks. Concerning this kind of gardening, Addison has written:—"Our gardens are not so entertaining as those in France and Italy, where we see large tracts of ground covered with an agreeable mixture of garden and forest, which everywhere represents an artificial rudeness much more charming than that neatness and elegance we meet with in those of our own country. Our

British gardeners, on the contrary, instead of humouring nature, love to deviate from her as much as possible. Our trees rise in cones, globes, and pyramids; we see the marks of the scissors upon every plant and bush. For my own part, I would rather look upon a tree in all its luxuriance and diffusion of boughs and branches than when it is thus cut and trimmed into a mathematical figure; and cannot but fancy that an orchard in flower looks infinitely more delightful than all the little labyrinths of the most finished *parterre*." Pliny thought gardening could not be carried farther than it was in his time; but no year has passed for many a cycle in which something new has not been added to our gardens. Our nosegays, indeed now gathered in British *parterres*, consist of contributions from every part of the habitable world.

In the culinary department I fear that gardening has not been carried out with a progress so rapid and so marked as that which distinguishes the art in the park, landscape, and pleasure ground. We have many grand kitchen gardens it is true; but few to excel those laid out and tended by those early gardeners, the monks. Cobbett speaks enthusiastically of the kitchen garden at Waverley Abbey, founded by Giffard, and inhabited by the first colony of Cistercian monks who came to this country. He tells us it was the finest situation for a kitchen garden he ever saw, and thus describes it:—"It lay full to the south; of course, it had a high hill to the back of it, and that hill covered with pretty lofty trees. The wall on the north side of the garden was from twelve to fourteen feet high, built partly of flints and partly of the sandstone which is found in abundance in the neighbourhood, and it was about three feet through even at the top. The ground of which the garden consisted had been the sloping foot of a hill, taking in a part of the meadow that came after the hill, and lay between it and the river Wey. A flat of about twenty feet wide had been made on the side of the hill, and at the back of this flat the wall was erected. After the flat, towards the south, began the slope, which grew more and more moist as it approached the river. At the foot of the garden there ran a rivulet, coming from a fish pond, and at a little distance from that emptying itself into the river. The hill itself was a bed of sand; therefore, the flat—at the back of which the north wall stood, that is to say, the wall on the north side of the garden—must have been *made* ground. The slope must have been partly made, otherwise it would have been too sandy."

New flowers, new trees, we hear of constantly, but a novelty in kitchen-garden produce is seldom introduced. This may be owing as much to want of purchasers as to the want of enterprise; when a new esculent appears, only such epicures as Fin-Bec become purchasers; the housewife of the middle class is afraid of innovations, she contents herself with that to which she has been accustomed; and the same annual routine of vegetables, cooked in the same old manner, makes its appearance on the dinner-table.

The French, who, to some extent, excel us in the cultivation of fruits and vegetables, have certainly not surpassed us in laying out grounds, or as it is more popularly termed, "landscape gardening." May not this same natural style of gardening which we now possess have had its origin in the simple taste first evinced in early English gardens, which are described in the "Harleian Miscellany," as usually walks of sand made perfectly level by rolling them, and between the walks are smooth grass plots covered with the greenest turf, without any other ornament? How easy the transition from turf to a few trees; then to a group; and, lastly, to flowering shrubs and plants in the foreground!

In our progress from the Dutch or formal school of gardening to the graceful freedom of Kent's style, no doubt many old gardens were sacrificed needlessly to the rage for improvement; and many monuments of the talent, taste, and industry of our forefathers may have thus been lost to us, which might otherwise have stood for years as landmarks in the history of the art.

Sir Walter Scott, who, in gardening matters at least, was conservative, and who had a poet's love and enthusiasm for the rugged beauty and grandeur of antiquity, speaks in bitter terms of the wholesale destruction of fine old gardens,

in flower are removed to the coolest end of the house or to an intermediate house, where they receive additional shade, and by being also kept cooler their blooming season is considerably prolonged. Suspended baskets and blocks on which plants are growing are occasionally taken down and steeped in chilled water to ensure thorough saturation. Fire-heat is greatly economised by shutting up early, and air is given with caution. Ferns receive plenty of moisture and shade, and where it is desirable to promote the growth of specimen plants of *Blechnums*, *Lomarias*, *Dicksonias*, &c., they are being shifted a second time.

Pits and Frames.—These are now nearly emptied of bedding plants, which are placed in sheltered positions out of doors. Where large specimen *Fuchsias* are required they are again shifted into rich rather rough material. *Petunias* are shifted as they advance, pinched so as to induce stubby plants, and their flowers are also picked off until the plants attain a good size; their growth is encouraged by weak applications of manure water. Some, however, prefer growing them without stimulants until after they have set their bloom. *Carnations* are top-dressed and staked, and the most forward removed to the conservatory. Where the production of really good blooms is aimed at, only a few are retained on each plant. Annuals sown in pots for conservatory decoration are kept near the glass, and have plenty of air. *Chrysanthemums* are shifted as they require it, some removing all shoots coming directly from the root except one, that is in cases in which the plants are required for exhibition. They are kept in cold frames, well aired, trained, and stopped, they are also placed on beds of ashes in open sheltered places, frequently syringed and well attended to in the way of water. The finer kinds of *Polyanthus* are being divided and potted into a compost of good loam, enriched with leaf-mould or well decayed cow manure; they are then put in frames, well shaded for a time, and as soon as they get properly established, will be placed outside in sheltered positions, from both cold winds and sun. *Antirrhinums* for indoor blooming are shifted as required; those thought unworthy of being kept are planted outside. Young plants of *Phloxes* are potted singly as soon as properly rooted. *Auriculas* are kept in frames, from which the lights are removed when practicable; they are protected from heavy rains. *Heartsease* in pots are kept in frames facing the north; they are increased by means of cuttings.

Flower Garden and Shrubbery.—Most kinds of ornamental trees and shrubs are now beautifully in bloom. Hedges of *Privet*, *Elder*, or *Hornbeam*, rapidly making growth, are gone over and pruned with the knife. Borders in front of shrubberies are neatly trimmed, and in addition to the herbaceous and dwarf-growing plants which they contain, all empty spaces are being made up with *Gladioli*, turned out of pots, dwarf *Dahlias*, and any plants that can be spared from the stock of bedding material. *Ranunculuses* and *Iris*es, especially in damp ground, constitute a conspicuous feature in these borders. The unfavourable weather of the past few weeks has rendered it advisable to delay, for a time, the planting out of tender plants; which, where turned out, have made no progress, except in well-sheltered places. This week, however, has been more encouraging; and furnishing beds with summer plants has more earnestly engaged attention, the hardier plants only being used first. Edgings are made to beds of one or two lines of *Sempervivums* or *Echeverias*, *Cerastiums* turned out of pots, *Cineraria maritima*, *Centaureas*, *Saponarias*, *Violas*, &c. The hardier *Pelargoniums* are also being planted out, but such things as *Heliotropes* and *Perillas* are withheld for a time. Unless in warm and sheltered situations *Dahlias* have not yet been consigned to the open ground. In sub-tropical gardens but little has yet been done further than having the edgings made up, the beds prepared and held in readiness to be filled when convenient. Hardy edgings, such as *Eonymuses*, *Santolinas*, *Ivies*, &c., are being pruned. *Aralia Sieboldii* has stood the winter out of doors near London uncathed, and is now putting forth young shoots. Green-leaved *Yuccas* in pots are being plunged in the lawns where they are required to form isolated specimens. *Hollyhocks* pushing many shoots have them all removed to three or so, according to the strength of the crowns; and, where not in prominent positions, a mulching of rotten manure is placed around their roots. *Phloxes* and *Pentstemons* are top dressed with well-decayed manure, slightly forked in. Hardy annuals sown last month are being transplanted; those from September sowings are in full bloom. Sowings of *Mignonette*, *Saponaria*, *Nemophila*, *Collinsias*, &c., for late flowering, are still being made in shady borders, from which they may be transplanted. *Lophospermums*, *Cobæas*, *Tropæolums*, *Sweet Peas*, *Scarlet Runners*, and other climbing subjects are planted where they can receive a little support. *Roses* are being mulched, and syringed occasionally; sometimes with tobacco-water. *Choice Rhododendrons*, and other shrubs, are also being mulched, either with decayed leaves or litter.

Indoor Fruit Department.—Pines, the fruit of which is colouring, are kept drier at the root, and also as regards the atmosphere, than others; those swelling fruits are assisted by moderate applications of manure water, a bottom heat of 85°, and an atmospheric one of from 70° to 80°. Succession plants are encouraged, and the most forward of them shifted; these will be required for autumn fruiting. Suckers, as they can be procured, are twisted off and potted. Vines approaching maturity are kept at a steady temperature, and a decrease of atmospheric moisture is allowed with a more liberal supply of air. In order to promote well-coloured fruit, as well as firm, thoroughly ripened wood, the supply of front air is limited; but a little top air is left on day and night, according to circumstances, and the temperature maintained by fire heat. Grapes generally are being thinned and the shoots pinched and tied; later houses are allowed a little fire heat to assist the setting of the fruit. Peaches and Nectarines beginning to ripen, have a drier atmosphere and more air than hitherto. In order to prevent the ravages of red spider, now that syringing has been discontinued, the hot-water pipes are smeared with sulphur. Advancing crops are liberally syringed and the young wood thinned, only leaving that necessary for next year's crop. Cherries bearing fruit, are allowed plenty of air, and as the fruit begins to colour, they are sparingly watered. Such trees as have borne fruit are removed to temporary protections for a time, where they are freely supplied with water at the root and overhead; they are afterwards plunged in the open ground. Figs are frequently stopped, and if shoots are not produced vigorously, weak applications of manure water are given. Melons ripening, receive little water, as it would spoil their flavour; those in beds are placed on tiles, slates, or pieces of wood; and such as are on trellises are supported by pieces of net, or by a piece of board placed under each fruit and attached to the wires. Thinning the wood, removing male flowers, fertilizing female ones, and giving water both at the root and overhead are operations necessary in the case of advancing crops. Cucumbers also receive plenty of water, and as their roots make their appearance above the surface of the bed, they are top-dressed with manure; and to those in a bearing state manure water is given. A few of the strongest Tomatoes, and best hardened off, are being planted along the foot of south walls. Of Strawberries, another succession is introduced to the forcing house.

Hardy Fruit and Kitchen Garden Department.—Fruit trees on walls are being carefully disbudded. Over-luxuriant shoots are stopped, in order that the sap may be more equally distributed. Frequent syringings from the garden engine are given, and where Aphides are present tobacco-water is used. The operation of training and nailing the youngshoots is being attended to. Apricots and Peaches are being thinned, diseased leaves picked off, and all suckers removed. In the kitchen garden Brussels Sprouts, Savoys, and Cauliflowers are being transplanted into deeply-worked, well-manured soil. Another plantation of white Paris Cos Lettuce is being made. The ground intended for the main crop of winter Greens and Broccoli is being prepared by well manuring and deeply digging it. These crops generally succeed Celery, autumn-sown Onions, Parsnips, or early Cabbages, as may be most convenient. New Zealand Spinach is being planted out, as is also Basil in rich warm soil. A sowing of Scarlet Runners for a succession is now made, also of French Beans, and a few of the Broad Windsor. Some dwarf Marrow Peas are now sown, and early ones topped; Spinach for succession is being sown, also a few seeds of Scorzonera and Salsafy. A few Lettuces and Turnips, if required, are sown in cool shady places; sowings of Rampion and Corn Salad are also being made. Root-crops, such as Beet, Carrots, Parsnips, and Turnips are thinned as they advance in growth. Potatoes are being hoed, and in some cases the soil between the rows is loosened with a steel fork; a little earth is drawn to the most forward of them. Ridges for Cucumbers are being prepared, and the ground is also being got ready for celery.

NURSERIES.

SOFT-WOODED plants are being increased for next season's sales. Many of the finer kinds of tricolor *Pelargoniums* are being retained, and placed in heat to yield cuttings more abundantly. *Cinerarias* from rooted slips are being potted singly and kept in cold frames, those from seed are being pricked off, and the furthest advanced potted into sixty-sized pots. Hard-wooded greenhouse plants, such as *Epacris*es, *Boronia*s, &c., are now being propagated from cuttings of the young wood, inserted in pots filled to within half an inch of the brim with light peaty soil, a surfacing being added of pure sand. Cuttings of such plants are taken off an inch or so in length, stripped of a few of their lower leaves with a pair of shears, and inserted in the pots, on which bell-glasses are placed; the pots are then plunged in gentle heat, and kept well shaded. Rooted cuttings of these are potted singly into thumb pots, using a compost of peat and sand.

Ceropegias, Allamandas, and Bignonias are also similarly propagated, only larger cuttings are used. *Indigofera decora*, in addition to being grafted, is also increased by means of cuttings of the young wood, about six inches in length. *Stephanotis* is increased from cuttings, having two joints, one of which, divested of the leaves, is placed in the soil, whilst the other, on which all leaves are left, remains above the surface. The cutting pots are plunged, in gentle heat, under hand-lights. Rooted cuttings of *Roella ciliata* are being potted off singly into small pots. *Mandevillas* and *Maurandias* from seed are being potted singly, and placed on the shelves of an intermediate house well shaded. *Anthurium Scherzerianum* from seed is pricked off into a mixture of chopped sphagnum, peat, and silver sand, kept rather close and well shaded. *Allocasia Jenningsii* is increased by means of the eyes that are produced on its roots. Fern spores are still sown, covering the surface of the pots with pieces of glass, and placing them in a shady part of a pit; those requiring potting are attended to. Crowns of *Isolepis gracilis* are being divided into small pieces, potted singly, and placed in gentle heat. *Delphinium nudicaule* is sown in pans of sandy loam, in very gentle heat. Seedling *Rhododendrons* are now being pricked off into pans of sandy peat, and kept well shaded; rooted cuttings are potted singly. Seedlings of *R. ponticum* for grafting purposes are re-potted into six-inch pots, and placed on the north side of walls or hedges; these will be operated on next spring. *Thuja*s are being grafted in close frames inside the propagating house, and well shaded. *Azaleas*, *Oranges*, *Acacias*, and other plants of that kind making growth, are being gone over a second time, and the young wood pinched in, so as to encourage another growth, and make stubby plants. If rightly treated, they will mature such wood before the end of the season. Young Vines are potted into eight-inch pots, and arranged, some along front stages, and others on centre stages, of houses in which there is a little heat.

Outdoor Department.—Suckers on grafted and budded fruit or other trees, are removed as soon as they appear. The same care is also exercised in the case of *Roses*. The branches of *Wistaria sinensis* are being layered by sharply bending the branches into the earth, where they are fixed by means of wooden pegs; the shoots are also sometimes cut half through to facilitate the rooting process. Shrubs, such as *Berberis*, *Cotoneaster*, *Spiræa*, *Ghent Azalea*, &c., are being pruned, an operation which prevents them from getting unshapely. Shoots infesting the base of young fruit trees and bushes are removed, none being left below the required head; on seedlings that have set fruit, all are picked off, except two or three on each, which are merely left for determining their value. *Robinias*, and a few such out-door plants that have been grafted on the tops of tall stocks, which have been bent down so that the grafts might be covered with mould, have, in some cases, made good progress; and where sure signs of union is manifest, they are allowed to get up. Evergreen bushes are pruned into shape, and standards firmly staked. Young *Aucubas* are transplanted into lines twelve inches apart, by six inches plant from plant. Seedling *Deodars* are also set in rows twelve inches by three inches. Herbaceous and alpine plants in pots are placed outside on beds of ashes; those requiring it are top-dressed. *Phloxes* in pots are planted out into beds.

MARKET GARDENS.

FRUIT TREES, especially Pears, also bush fruit, present encouraging signs of a fair crop. Ground crops, notwithstanding the backward weather we have lately experienced, are looking well, though less forward than in more favourable seasons. Early Cauliflowers are being obtained from plants reared under hand-lights, in clumps of three or four together; the next in succession are those planted out in lines, which, although few of them are as yet headed, promise an excellent crop; other plantings are coming on in time to succeed these. *Cos Lettuces*, grown between the lines of early planted Cauliflowers, are fit for market; and in succession to these are those planted between the second crop of the same; these are now being tied round with strings of matting, to cause them to blanch. The crop of early Cabbages is nearly consumed. Leeks and Carrots from last year's sowing, also young Carrots raised in frames, are plentiful. Abundance of Parsley and herbs are obtained from spaces under fruit trees. Neither Peas nor Beans are much grown in market gardens, with the exception of early ones; these are now in flower, and pods are beginning to be formed. Spinach is plentifully obtained from early broadcast sowings, made on pieces of ground planted with Cabbages or Cauliflowers; now that the Spinach is being cut for market, the other crop has more room for development. Asparagus has not been so good this season as usual, owing doubtless to the cold, ungenial weather; now that a favourable change however has set in, better produce is anticipated. Turnips from March sowings are of fair size and good quality. Many of the Mushroom beds are exhausted, but a few of them yet continue to produce fair crops. Cucumbers

in frames are obtained in abundance. Pine-apples in astonishing numbers are produced in some of these establishments, and the quantities of Grapes and Strawberries they are now sending to market are wonderful.

Cucumbers in frames are regularly pinched and thinned; fruits inclined to be crooked are placed in tubular glasses, about 2½ inches in diameter, by a foot in length. Vegetable Marrows under hand-lights are slowly advancing; those under baskets, and having the assistance of a little bottom heat, have also done pretty well, but where they have had no bottom heat, and only baskets for a protection, they have succumbed to the cold weather; such blanks are now, however, made good from the reserve stock. Tomatoes have been mostly grown, two in a six-inch pot; the furthest advanced and best hardened off are planted out about three feet apart, leaving the two together at the base on both sides of spent Mushroom ridges, and also at the foot of fences and walls. Lettuces are being tied with pieces of matting, and young plantations are made from those sown between beds of early Carrots. French Beans sown on the tops of Asparagus ridges have suffered considerably from cold, those in sheltered places are doing well; and the earliest ones sown in frames are having their protection removed. Another main sowing is being made in lines with a row of Lettuces between them. Young Onions from early spring sowings in frames, have the frames removed, and the crop is now in a fine condition to succeed the autumn-sown ones for salading. Radishes are being sown in six feet wide beds. Young Celery plants are transplanted in the open ground in beds, in rows six inches apart, and two or three inches plant from plant, with eighteen-inch alleys between the beds; in some cases they are only in lines, not in beds, but here the lines are eight or nine inches apart; a line of them is also planted between rows of Cabbages. Young Cabbages for Coleworts are being planted between lines of Moss Roses under fruit trees; Stocks, for producing cut flowers, are also planted in a similar situation. Cabbages are also planted in spaces emptied by the removal of early ones for market. Bush fruits that have been layered have some earth laid over their shoots. Loosening the soil among growing crops is assiduously persevered in.

MY WINDOW IVY.

OVER my window the Ivy climbs,
Its roots are in homely jars;
But all the day it looks at the sun,
And at night looks out at the stars.

The dust of the room may dim its green,
But I call to the breezy air;
"Come in, come in, good friend of mine!
And make my window fair."

So the Ivy thrives from day to day,
Its leaves all turned to the light;
And it gladdens my soul with its tender green,
And teaches me, day and night.

—*Hearth and Home.*

The Gardener and the Owls.—Our highly esteemed correspondent Mr. J. Barnes is, as is well known, an enthusiastic student of natural history. The following is one of his adventures when on this usually peaceful pursuit, when head gardener at Bicton:—"One barn owl's nest that I knew was in the hollow of an immensely large ivy-clad elm tree that stood on the lawn at no great distance from the mansion. I never can, and I believe I never shall, forget, how terribly I was once taken aback, on a visit to this nest, one evening in the month of September. I was crossing the lawn, when there arose a heavy thunderstorm. I ran under the leeward side of this tree for shelter. Hearing, while standing there, the young owls hissing and snapping their beaks, at once suggested to me to run up and have a look at them. The entrance to their den was about eighteen or twenty feet from the ground, and the tree, as stated, was clothed with large strong ivy. Up I clambered, and no sooner had I arrived, and was about having a peep, when, in an instant, I was furiously, and desperately, attacked by both owls. Oh, what a battering with their wings—pecks with their beaks—scratches and pinches with their claws—I did receive from those two desperate beauties! I was in no small danger of losing my eyes, or of getting battered down from the tree. I slunk down the best way I could, keeping my face as well sheltered and as near the tree as possible; unfortunately my cap was torn or battered off, and fell to the ground in the early part of the battle, and my poor head received a terrible combing, battering, scratching, and pecking. When I arrived on the ground, I was still the object of an unmerciful attack. I ran with all speed to a large Portugal laurel tree, hard by. Mine enemies were still whirling round, and watching me. I took out my knife and cut off a branch, trimming off the side branches and leaving the leaves on the summit. I then sallied forth, with pretty good assurance, in defence, followed by mine enemies at a considerable distance. The branch I kept whirling about, and kept them at bay, till they were tired of my company. I assure you I was very glad to get quit of such society."

COVENT GARDEN MARKET.—May 24th.

Flowers.—Those in pots chiefly consist of Calceolarias with well formed flowers beautifully marked. Pelargoniums of all kinds, some of the show varieties bearing very large trusses of bloom. There are also good examples of the Golden-rayed Lily; sweetly scented, double-flowered Gardenias; well bloomed, gracefully grown plants of single and double Fuchsias; Petunias, both single and double, and of various colours; fine collections of Heaths, a few small plants of Azaleas, Roses, Rhododendrons, Hydrangeas with immense flower heads, and many other noteworthy plants. In addition to those in flower, we noticed several fine-foliaged plants, such as Caladiums, Begonias, Dracenas, small Palms, and a great variety of Club Mosses and Ferns; the last included the more graceful forms of Adiantum and Pteris, some of the more easily grown Polypodiums, a few Aspleniums, and white and yellow-powdered Gymnogrammas. In addition to these, hardy shrubs in pots are supplied in great abundance, and consist of Aucubas, Eucalyptuses, the finer kinds of Maples, Box, dwarf Cypress, and other small Conifers. Cut blooms and hardy flowering plants are also liberally supplied.

PRICES OF FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples ½ sieve	3	0 to 6	Lemons 100	7	0 10 0
Cherries per box	2	0 3 6	Oranges 100	6	0 12 0
Chestnuts bushel	8	0 15 0	Pine Apples lb.	8	0 12 0
Filberts lb.	0	6 1 0	Strawberries oz.	0	9 1 3
Cobs lb.	0	6 1 0	Walnuts bushel	10	0 25 0
Grapes, hothouse lb.	5	0 to 12 0	ditto per 100	1	0 2 0

PRICES OF VEGETABLES.

Artichokes per doz.	4	0 to 6 0	Lettuce (Paris cos) each.	0	4 to 0 8
Asparagus per 100	4	0 10 0	Mushrooms pottle	2	0 3 0
Beans, Kidney per 100	1	6 2 6	Mustard & Cress, punnet	0	2 0 0
Beet, Red doz.	1	0 3 0	Onions bushel	2	0 4 0
Broccoli bundle	0	9 1 6	pickling quart	0	6 0 0
Cabbage doz.	1	0 2 0	Parsley, doz. bunches	3	0 4 0
Carrots bunch	0	6 0 0	Parsnips doz.	0	9 1 0
Cauliflower (hand-glass) doz.	8	0 12 0	Peas, Continental, quart	2	0 4 0
Celery bundle	1	6 2 0	Do. English doz.	3	0 0 0
Chilies per 100	1	6 2 0	Potatoes bushel	4	0 6 0
Coleworts doz. bunches	3	0 6 0	Kidney doz.	4	0 6 0
Cucumbers each	0	6 1 6	Radishes doz. bunches	0	6 1 6
Endive doz.	2	0 0 0	Rhubarb bundle	0	6 1 0
Fennel bunch	0	3 0 0	Salsify doz.	1	0 1 6
French Beans per 100	1	0 3 0	Savoy doz.	0	9 1 0
Garlic lb.	0	8 0 0	Scorzonera bundle	0	9 1 3
Herbs bunch	0	3 0 0	Shallots lb.	0	4 0 6
Horseradish bundle	3	0 4 0	Spinach bushel	3	0 4 6
Leeks bunch	0	2 0 6	Tomatoes, small punnet	0	4 0 6
			Turnips bunch	0	3 0 9

SOCIETIES, EXHIBITIONS, &c.

ROYAL BOTANIC GARDENS, REGENT'S PARK.
(MAY 22ND AND 23RD.)

THE weather during the two days on which this show was held was remarkably fine, and the display of plants, although perhaps inferior in point of numbers to that of preceding years, was nevertheless all that could be desired. Azaleas were abundant and brilliant; of these, six specimens, including two white ones, Vesta and Gledstanesi, and four red-coloured ones, named, coronata, conqueror, gem, and Extrani were remarkable for large size. These formed pyramids, some six feet through and nearly nine feet in height, and so densely were they bloomed that the foliage was hardly distinguishable. In addition to obtaining the first prize in their class these were awarded a gold medal for superior cultivation. On smaller plants were some very fine flowers, but to these we have alluded on former occasions.

Roses in pots, both from nurserymen and amateurs, though really meritorious, were nevertheless scarcely so fine as were shown last week at South Kensington. Several boxes of cut blooms beautiful in colour and form were also contributed.

Cape Heaths, in the form of specimen plants, were well represented, and some staged in miscellaneous collections were beautifully grown and flowered. Amongst them were plants of *Erica coccinea* minor over three feet through, compact and well flowered; *E. candidissima*, four feet in diameter; tricolor elegans, massive plants, fully four feet through, and the same in height; Massoni, about two and a half feet through, the points of the shoots bearing from twelve to eighteen whorls of showy flowers. Amongst smaller plants we also noticed nice examples of *E. Springelii* and *Devoniana*, both fine dark-flowered kinds, depressa multiflora, elegans, delecta, and others.

Specimen stove and greenhouse plants were in beautiful condition, large and finely flowered. Conspicuous amongst them were *Clerodendron Balfourii*, well furnished both with leaves and flowers; *Dracophyllum gracile* fully four feet through; *Tremandra ericifolia*, a plant about four and a half feet in diameter, and densely furnished with masses of graceful shoots bearing abundance of bloom; *Pimelea Hendersoni*, a complete mass of soft, rose-coloured flowers; and some fine plants of *Aphelexis*, *Genetyllis*, and *Dipladenia*, the last scarcely in perfection.

Two fine collections of Herbaceous Calceolarias were furnished, one being superior to the other in having flowers of finer form, whilst the other excelled in possessing pure and distinct colours; both groups were, however, examples of great perfection.

Show Pelargoniums were also represented, but in the amateurs' class only, and these, except one collection, were not so fine as we have often seen them. Among first-prize kinds the following were particularly worthy of mention, viz., Maid of Honour, Fair Rosamond, and Patroness.

Orchids were tolerably good. Besides those staged in classes specially set apart for them, several fine kinds were noticeable amongst miscellaneous collections of plants. Amongst Dendrobiums, *Devonianum*, formosum, and nobile were the best; there were also some good plants of *Cypripedium villosum*, Lowii, caudatum, and fine broad petalled varieties of *barbatum*. Of *Aerides* there were some good plants, such as *Fieldingii*, *Warnerii*, with beautiful light, rosy, purple flowers, and a few specimens of *odoratum*; *Anguloa macrantha*, with beautiful canary-coloured flowers, contrasted admirably with the rich tints of some of the others. The most beautiful Orchid in the show perhaps was *Saccolabium retusum*, with two spikes of bloom in splendid condition; there were also several fine *Oncidiums*, *Odontoglossums*, *Laelias*, and others; likewise a prettily bloomed little plant of *Chysis Limminghii*.

Of Ferns there was a good supply, both of tree, ordinary, and filmy kinds. Conspicuous amongst these was a grand specimen of *Adiantum Farleyense*, fully four feet through, and densely furnished with fine healthy dark-green foliage. There were, moreover, several smaller plants of the same, and some fine examples of *A. concinnum latum*, intermediate, tenerum, &c. In addition to these we noticed a fine example of *Asplenium Nidus*, with fronds nearly five feet in length and ten inches in width; these more resembled young Banana leaves than those of Ferns. There were likewise a grand plant of *Lomaria Gibba*, with fronds about three feet in length and eighteen inches in breadth; a fine specimen of *Gleichenia semi-vestita*; some pretty little plants of *Chelidonium elegans*, *Pteris scaberula*, &c.

Prizes were offered to nurserymen for a group of flower-garden plants in pots or boxes arranged for effect; in this class Messrs. E. G. Henderson, St. John's Wood, were the only competitors. They staged a charming group, edged with *Echeveria secunda glauca*; next to that was a border of golden Feverfew, then a border of *Coleus Verschaffeltii*; at the back of these were arranged, in boxes ten inches by ten inches, several kinds of alpine plants, either remarkable for their flowers or for the beauty of their foliage; these were relieved by other boxes containing flowering plants, such as *Petunias*, dwarf *Pelargoniums*, *Mimulus*, &c. The background of this group was made up of some of the fine kinds of variegated *Yuccas*, *Dracenas*, *Palms*, *Aralias*, and a few good plants of *Strelitzia juncifolia*. In this collection we also observed two very fine varieties of *Cineraria maritima*, with deeply lacerated white leaves.

Among the first-prize lot of hardy herbaceous plants were grand specimens in twelve-inch pots of *Cheiranthus Dillenii*, *Linum flavum* (fine), two good varieties of *Iris germanica*, named *spectabilis* and *Walner*, the first a deep purple and the latter a lilac purple kind; *Iberis correæfolia* (a fine plant for exhibition purposes), three *Pyrethrums*, a double *Pæonia*, *Veronica verbenacea*, *Spirea japonica*, and *Ranunculus acris plena*. From Mr. Ware came a very good plant of *Astilbe* (*Spirea*) *japonica*, and two good *Trolliuses*, named *europæus* and *Fortunei*, shown in large pots, while the remainder of his collection consisted mostly of flat pans apparently made up of duplicate plants from store pots.

Certificates of merit were awarded to the following:—Golden Eagle and Enchantress, two tricolor Pelargoniums from Messrs. E. G. Henderson; to forcing *Pink coccinea*, and tree *Carnations* *Marchioness of Westminster*, *Princess Christian*, *Queen of Belgians*, and *Caliban*, from Mr. Turner; to pyramidal stock, *Mauve Beauty*, from Mr. R. Dean; to *Zamia cycadæfolia*, *Veitchia Canterburyana*, *Kentia australis*, and *Davallia Tyermanni*, from Mr. B. S. Williams; to *Iberis Pruitii*, from Mr. R. Parker; and to *Polystichum angulare gracile* Grayii, var. *cristata*, from Messrs. Lucombe, Pince, & Co., of Exeter.

The following prizes were awarded, viz.:—

Nine stove and greenhouse plants: 1, Mr. J. Ward, Leyton; 2, Mr. J. Wheeler, Stamford Hill; 3, Mr. G. Wheeler, Regent's Park. Six stove and greenhouse plants: 1, Mr. G. Ward; 2, Mr. J. Wheeler; 3, Mr. G. Wheeler, Regent's Park. Six stove and greenhouse plants (nurserymen): 1, Messrs. J. Jackson & Son, Kingston; 2, Mr. Morse, Epsom; 3, Mr. W. Cutbush, Barnet, Herts. Twenty greenhouse plants in eight-inch pots (nurserymen): 1, Messrs. J. Jackson & Son. Nine exotic Orchids: 1, Mr. J. Ward; 2, Mr. Isaac Hill, the Poles, Ware, Herts; 3, Mr. J. Wheeler. Six exotic Orchids (amateurs): 1, Mr. T. Godfrey, Ankerwyche Park; 2, Mr. G. Wheeler. Twelve Cape Heaths in twelve-inch pots (amateurs): 1, Mr. J. Ward; 2, Mr. J. Wheeler. Twelve Cape Heaths in twelve-inch pots (nurserymen): 1, Messrs. J. Jackson & Son. Pair of Tree Ferns: 1, Mr. G. Wheeler; 2, Mr. B. S. Williams. Six Palms: 1, Mr. B. S. Williams; 2, Mr. T. Godfrey; 3, Mr. W. Cutbush. Six exotic Ferns (amateurs): 1, Mr. T. Godfrey; 2, Mr. R. Ritchie, Hampstead; 3, Mr. G. Wheeler. Six exotic Ferns (nurserymen): 1, Mr. B. S. Williams. Six Roses in pots: 1, Mr. Terry, Youngsbury, Wilts. Nine Roses in pots: 1, Messrs. Paul & Son, Chesham; 2, Mr. C. Turner, Slough. Twenty roses in pots: 1, Mr. C. Turner. Six greenhouse Azaleas (amateurs): 1, Mr. G. Neighbour, Great Marlow; 2, Mr. J. Wheeler; 3, Mr. G. Wheeler. Six greenhouse Azaleas (nurserymen): 1, Mr. C. Turner. Twelve Azaleas in twelve-inch pots (nurserymen): 1, Mr. C. Turner; 2, Messrs. Lane & Son; 3, Messrs. Jackson & Son. Three greenhouse Azaleas, without artificial support: 1, Mr. C. Turner; 2, Messrs. Lucombe, Pince, & Co.; 3, Mr. J. Wheeler. Twelve Rhododendrons in twelve-inch pots: 1, Messrs. Lane & Son; 2, Messrs. Lucombe, Pince, & Co. Group of stove and greenhouse plants arranged for effect: 1, Mr. G. Morse. Group of bedding plants arranged for effect: 1, Messrs. E. G. Henderson & Sons. Group of Orchids, Ferns, &c., arranged for effect: 1, Mr. B. S. Williams; 2, Messrs. Lucombe, Pince, & Co.; 3, Messrs. Jackson & Son. Twelve hardy herbaceous plants: 1, Mr. R. Parker, Tooting; 2, Mr. T. S. Ware, Tottenham. Nine show Pelargoniums (amateurs): 1, Mr. Ward; 2, Mr. James; 3, Mr. Neighbour.

The following miscellaneous prizes were awarded:—

To a collection of plants, from Mr. B. S. Williams, a silver medal; to eight boxes of cut Roses, from Messrs. Paul & Son, Chesham, a silver medal; to a collection of cut blooms of *Pyrethrums* and *Pansies*, and a group of hardy

foliage plants, from Mr. Ware, a silver medal; to a collection of Carnations, from Mr. Turner, a bronze medal; to a collection of Calceolarias, from Messrs. Dobson & Son, a silver medal; to another group of the same, from Mr. James, a bronze medal; to a collection of hardy Ferns, from Mr. Smea, Finsbury Circus, a bronze medal; and to a collection of plants, from Mr. Wheeler, a silver medal. A certificate was awarded to a collection of cut blooms of Pansies, from Mr. James.

NATIONAL HORTICULTURAL EXHIBITION AT MANCHESTER.

ANOTHER noble show, and one in some respects a decided improvement on preceding ones, remarkable for merit as they have been. The more noteworthy features were the noble stove and greenhouse plants shown by Mr. Baines, of Southgate; the excellently grown roses of Mr. George Paul, of Cheshunt, and the many fine Orchids shown by various exhibitors. The herbaceous plants too were a feature of more than ordinary interest, Messrs. Rollisson, of Tooting, showing and winning with one hundred plants. The select Orchids and other hothouse and greenhouse plants were ranged in the exhibition house, and the Roses, Pelargoniums, and other hardier specimens in the tent *annexe*, which, set at right angles with the conservatory, is now regarded as an established feature of the show. The whole arrangement is much improved, and reflects great credit on Mr. Bruce Findlay, to whom these exhibitions owe so much.

The following prizes were awarded, many of them being on a very liberal scale, viz.:—

Stove and greenhouse plants: 1, Mr. H. L. Micholls; 2, Mrs. E. Cole & Sons; 3, Mr. J. Stevenson. Twelve Roses in pots: 1, Messrs. Paul; 2, Messrs. H. Lane. Miscellaneous plants: 1, Mr. Micholls; 2, Mr. T. M. Shuttleworth; 3, Mr. Dixon. Alpine and herbaceous plants: 1, Messrs. Rollisson; 2, Mr. Ware; 3, Messrs. Yates. Ten Roses in pots: 1, Mr. Wilkinson; 2, Mr. Fildes. Orchids: 1, Mrs. Callender; 2, Dr. Ainsworth; 3, Mr. Stevenson. Six Orchids: 1, Mr. Fernley; 2, Mr. Broome; 3, Mrs. Callender. Specimen Orchid: 1, Mr. Fernley; 2, Mr. Gottschalk; 3, Dr. Ainsworth. Sixteen Orchids: 1, Mr. B. S. Williams; 2, Messrs. J. Brooke. Six orchids: 1, Mr. Williams; 2, Mr. Yates; 3, Messrs. Rollisson. Greenhouse Azaleas: 1, Mrs. Cole; 2, Messrs. Lane. Ten Azaleas: Messrs. Lane and Mr. May divided the first and second prizes equally. Six stove and greenhouse plants: 1, Mr. Shuttleworth; 2, Mr. J. Bennett. Eight stove and greenhouse plants: 1, Mrs. Cole; 2, Messrs. Yates. Ten miscellaneous plants: 1, Mr. Williams; 2, Mrs. Cole; 3, Mr. Dixon. Thirty miscellaneous plants, arranged for effect: 1, Mr. Fernley; 2, Mr. Longshaw; 3, Mrs. Callender. Ten stove and greenhouse plants: 1, Mr. Stevenson; 2, Mrs. E. Cole & Son; 3, Messrs. Yates. Eight Heaths: 1, Mrs. E. Cole & Son; 2, Messrs. Rollisson & Son. Stove or greenhouse ferns: 1, Mr. Stevenson; 2, Mr. Shuttleworth. Hardy ferns: 1, Mr. Crowe; 2, Mr. Martin; 3, Mr. Shuttleworth. Tree ferns: 1, Messrs. Brooke; 2, Mr. Shaw. Eighteen hardy Ferns: 1, Mr. Ryland; 2, Mr. Dixon; 3, Messrs. Rollisson. Pelargoniums: 1, Mr. Bennett. Ten Pelargoniums: 1, Mr. Ryland. Eight Pelargoniums: 1, Mr. Ryland. Fuchsias: 1, Mr. Bennett. Twenty-five Roses in pots: 1, Messrs. Paul; 2, Messrs. Lane. Zonal Pelargoniums: 1, Mr. Bennett; 2, not awarded; 3, Mr. Shuttleworth. Variegated or tricoloured Pelargoniums: 1, Mr. Young; 2, Mr. J. Bennett; 3, Mrs. Howard. Group of Orchids, Ferns, Palms, and other plants, arranged for effect: 1, Mr. Yates; 2, Mr. Williams; 3, Messrs. Rollisson. Thirty Rhododendrons: 1, Mr. Yates; 2, Messrs. Lane. Hardy Conifers: 1, Mr. Shaw; 2, Mr. Caldwell; 3, Messrs. Yates. Hardy Evergreen trees and shrubs: 1, Mr. Shaw. Herbaceous Calceolarias: 1, Mr. Barnes; 2, Mr. Ryland; 3, Mrs. M'Laren. Cinerarias: 1, Mr. Wadluck; 2, Mr. Martin. Succulents: 1, Mr. Ware. Yuccas, Beaucarneas, Dasylirions: 1, Mr. Williams; 2, Mr. Stevenson; 3, Mr. Shaw. Dracenas or Cordylines: 1, Mr. Shuttleworth; 2, Mr. Broome. One pair of Palms: 1, Mr. Stevenson; 2, Mr. Broome; 3, Mr. Bennett. One pair of Palms: 1, Mr. Williams; 2, Mr. Dixon; 3, Mr. Shaw. New and rare plants: 1, Messrs. Rollisson; 2, Mr. Williams; 3, Mr. Dixon. Ivies: 1, Messrs. Lane; 2, Mr. Dixon; 3, Mr. Shaw. Six plants suitable for dinner-table decoration: 1, Mr. Yates; 2, Mr. Dixon; 3, Mr. Shuttleworth. Vase, Epergne, or Centrepiece for table: 1, Mr. Yates. Hand bouquet: 1, Mr. Turner; 2, Mr. C. Turner; 3, Mr. Yates; 4, Mr. Ryland. For the most meritorious plant in the exhibition: 1, Mrs. Cole; 2, Mr. Micholls. Cucumbers: 1, Mr. Heywood; 2, Mr. Cameron; 3, Mr. Hill.

MEETINGS OF SOCIETIES FOR THE ENSUING MONTH.

JUNE 3RD.—Coventry and Warwickshire Floral and Horticultural Society: exhibition of Flowers and Fruit; to be held in Coventry.

June 5th, 6th, and 7th.—Royal Horticultural Society, South Kensington: great Flower and Fruit show.

June 5th, 6th, and 7th.—Leeds Horticultural Society: ninth great show; to be held in the Royal Park.

June 12th, 13th, and 14th.—Floral Fete, York: Roses, and stove and greenhouse plants.

June 13th and 14th.—Lee and Blackheath Horticultural and Floricultural Society: summer exhibition of Flowers, Fruits, and Vegetables; to be held at "The Cedars," Lee.

June 19th.—Royal Horticultural Society, South Kensington: exhibition of Flowers.

June 19th and 20th.—Royal Botanic Society, Regent's Park: exhibition of stove, greenhouse, and hardy plants.

June 19th and 20th.—Brighton Horticultural Society: grand Rose, Fruit, and Pelargonium show.

June 25th, 26th, 27th, 28th, and 29th.—Royal Horticultural Society: great show of Plants, Fruits, cut Flowers, and Vegetables; to be held at the Lower Grounds, Aston, Birmingham.

June 26th.—Bishop Stortford and Hertfordshire Horticultural Society; held at Hallingbury Place: Flowers and Fruit.

June 27th.—Newcastle-under-Lyne Horticultural Society: exhibition of Flowers, Fruits, and Vegetables; to be held in the Stud's Walk.

NORTH OF IRELAND HORTICULTURAL SOCIETY'S SHOW.

THE spring exhibition in connection with this Society has taken place in the Royal Botanic Gardens, Belfast. The total number of entries was ninety-eight. The best class was the stove and greenhouse plants, of which there was a numerous assortment; and of those no particular set of plants could cope with the Azaleas. The first prize was a cup, presented by Messrs. Thynne, of Glasgow, and was awarded to Mr. William Bell, Lurgan. The second prize fell to Mr. Henry Hawkins, an amateur. The display of Rhododendrons was fine, the best being owned by Mr. J. B. Houston. There were numerous collections of different kinds of plants, prominent among which were some really fine specimens of Azaleas, Ferns, Coleus, &c. A quantity of magnificent Ethiopian Lilies attracted special attention; as did also a number of graceful Ferns, foliage plants, Heaths, and a collection of smaller plants. The finest of the single plants was a splendid Anthurium Scherzerianum, the property of Mr. Hawkins. A good specimen of Croton variegatum was also shown, beautifully shaped and well marked. The show was open for three days, but owing to the unpropitious state of the weather, the attendance was not so large as the merits of the show deserved. The amount awarded in prizes was nearly £200.

Leicester Square.—The riderless horse in Leicester Square that has so long withstood the shafts of ridicule, was sold the other day by auction for £16, the liberality of the bid being no doubt attributed to the fact that this neglected work of genius contained more than the ordinary proportion of lead. It will be remembered—for the facts are of recent date—that when the illustrious obscurity supposed to have been one of the Kings of Brentford sat astride this doleful charger, some daring wags made their way into the enclosure, then fenced with an iron railing, and painted the equestrian statue in a highly grotesque manner. Subsequently the monarch was tumbled out of his *selle*; the removal of the figure that had stuck there so long leaving a ghastly hole in the poor animal's back. Bit by bit the image of fallen greatness was broken up by young thieves, and carried off to the marine-store dealer whose reputation stood the highest for giving most money and asking fewest questions. Preparations have been made for the removal of that greater part of the ill-treated design which has been more legitimately disposed of; but up to a very recent date it remained on its pedestal. There is a talk of selling Leicester Square itself, and speculators are said to have their eyes on the bargain. The reserved price is said to be £30,000. In order to allow intending purchasers to examine minutely the freehold property before they bid for it, all the railings that formerly surrounded the square have been removed.

ANSWERS TO CORRESPONDENTS.

C. H. (Yes; rather remarkable. We may have something to say in reference to them hereafter).—GREAT MALVERN (Aponogeton distachyon).—F. M. (1. *Lithospermum purpureo cæruleum*; 2. next week; 3. apparently *Mertensia virginica*; 4. *Astrantia major*; 5. *Arabis lucida variegata*; 6. *Claytonia sibirica*).—R. (One of the many varieties of *Azalea pontica*).—Mrs. P. (Your Rhododendron is known in the Bagshot Nurseries as "Jackson's Seedling").

DIED, on the 17th inst., after a short illness, Mr. George Young, many years gardener to W. H. Stone, Esq., M.P., of Leigh Park, Havant, aged 56 years.

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"This is an art
Which does mend nature : change it rather : but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE SIX OF SPADES.

CHAPTER XV.

Mr. Oldacre's Story.—The Lady Alice (continued).

THE deer, said Mr. Oldacre, as he resumed his story, having scampered away from the carriage-road, alarmed at the unusual sound of Lord Evelyn's merry laugh, had turned, and were still gazing in astonishment at the phaeton going up the park, when another equipage reached the entrance gates, containing two occupants, almost as upright, and quite as cold, as the pillars through which they passed. These were our noble marquis and a friend of his ("The Viscount," as he was afterwards called by us; Lord Evelyn's friend being known as "The Captain"), very much resembling himself, both in the pallor of his countenance and in the haughty reserve of his demeanour. There they sat, straight and gloomy as a brace of Irish yews, which could not raise a berry—that is, a smile, between them.

I was reading the other day, in one of the books* belonging to our "village library," for which we are mainly indebted to his reverence in the corner, how that the demeanour of King Philip II. of Spain, which was almost sepulchral, was ascribed partly to a natural haughtiness, and partly to habitual pains in the stomach, occasioned by an inordinate love of pastry. If the marquis and his friend were similarly affected, they must have recently paid a visit to the confectioner's, and stayed there until they had cleared the counter.

This solemnity of expression had probably been increased by the fact, which I afterwards heard from the postillions, that Lord Evelyn, with his pair, had passed the marquis, with his four, in jubilant derision and a hand gallop not long before. If the latter had been drawn by four-and-twenty, the former would have gone by him just the same, for he always would be first. He had a sincere affection for his brother, but he delighted, as I have heard him say, "in cutting down old 'Quis,'" and when he had pounded him in a run, or bowled him in a match, he was happy. He was master in all sports, save one. The stern, imperturbable marquis was a dead shot. If all the pheasants, partridges, and wild ducks upon the estates to which he was heir, had risen simultaneously, whirring and quacking around him, he would have selected his bird, and slain him as calmly as though there were but one. And he was never so solemnly fatal, as when, after Lord Evelyn had fired hurriedly and harmlessly his right and left, he deliberately "wiped" the fraternal "eye." I used to load for my lord sometimes in covert shooting, when all available hands were pressed into the service; and I remember him saying to me on one occasion, as he handed me the smoking gun, "There's only one living thing in the world, Oldacre, which I thoroughly abhor and detest, and that's a beastly woodcock."

You begin to think, I fear, that I am "running to leaf," and, therefore, although we gardeners have naturally a taste for garnish, I must prune accordingly. After a short visit, the marquis and Lord Evelyn went away with their friends; and rumours reached us from the servants' hall, that the latter had left a brace of hearts behind them, in custody of my Lady Alice. The duke, it was said, regarded with complete approbation the suit of the viscount, who was heir to an ancient and wealthy earldom; but the daughter preferred the guardsman.

That there was some special attraction at the castle for

these young gentlemen was evident from the fact that they both revisited it a few months after their departure, together with a great number of other guests, who were invited to celebrate the coming of age of our marquis. And now comes a chief event in my story. A grand ball was to end the festivities, and all the resources of our immense establishment were to be taxed to the utmost, as they say at the circus, to make the entertainment a success. We gardeners were busily engaged, I can assure you, in collecting and preparing all our eligible plants from the houses, carrying them to the castle, and arranging them in the halls, ball-room, &c. The demand for cut flowers, upon the day of the ball, was (so my father, then the head gardener, pronounced it) murderous; flowers for the reception-rooms, flowers for the supper-table, flowers for the hair, flowers for the hand, and flowers for the gentlemen's coats.

As I was at that time head foreman in the plant department, the care of the great conservatory was entrusted to me during the night of the ball. I was to replace any of the low flowering plants, which formed an edging to the circular beds, and which might be disarranged by the trailing garments of the ladies; to supervise the fountains, which were at times eccentric in their behaviour; to keep an eye upon the coloured lamps, &c. When the guests came into the conservatory, I was to retire behind a stage for plants at the end of the building, where I should be effectively concealed within my leafy bower.

Here, without any attempt or desire to listen, I overheard from time to time the remarks of those who were passing near, and I was specially impressed by the floral instruction which I received for the first time on that occasion. One gentleman informed his partner that the berries of the Solanum were "a kind of Siberian crab;" another, that the Tulip, *Rex rubrorum*, was "a double poppy;" a third, that *Eucharis amazonica* was "one of those lovely orchids;" and a fourth (a lady) exclaimed in admiration, as she gazed upon a bush of *Cytisus*, "What a dear little duck of a young laburnum!" But there were other flowers that night, which, even in Flora's presence, were more admired than ours—heartsease and forget-me-nots in the blue eyes of Beauty, roses blushing and glowing on her cheeks, lilies and tulips upon her—

"Hands, lily-white,
Lips, crimson-red,"

much more fascinating than those which we showed in pots. In foliage we sustained a like defeat. They turned from our *Croton angustifolium* to the shining tresses of some Fair One with the Golden Locks, and they saw no charms in our *Adiantum Capillus-veneris*, when compared with the maiden-hair of Venus's self.

The ball was nearly over. The carriage-lamps of the departing guests were gleaming amid our ancient oaks, as though some of the planets had come down to earth, and my own special lamps, within their bright pictorial cases, were also beginning to take their departure, when, as I retired to my ambuscade, on hearing voices, the guardsman, with Lady Alice on his arm, approached, and stopped close in front of it. I saw them through the leaves, the handsomest man and the most beautiful woman of all who met there that night. It was not only that they were both tall and graceful in figure, with features regular and refined, the eyes bright, and the cheeks glowing with all the healthfulness and hopefulness of youth; but there was in both faces that which I would term heart-beauty; there was goodness, gentleness, and truth. And yet as "these two, a maiden and a youth, stood there, gazing," or seeming to gaze, upon an orange tree covered with its blossoms, I noticed upon both the expression of a strange and sad perplexity. For a while they were silent, and then the soldier said: "I am going in a few hours. I must speak to you. Would you—would you exchange *those*" (and he looked at the roses in her waving golden hair); "would you change them for *these*" (and he touched one of the orange-flowers)—for my sake—for me?"

I shall never forget that beseeching voice. It thrilled me through with the anxiety which it expressed, and I leaned forward to hear the answer: "I—I—I believe that I am engaged to the viscount." Then for a few awful seconds there might

* Motley's "History of the Dutch Republic," vol. I.

have been in that conservatory no living soul, for there was no sound save of distant music, faintly heard from the ball. At last he spoke with a great effort: "I have no right to ask you; but do you love him?" and she, in a tone which cut my heart like a knife, replied, "My father, the duke, wishes me to marry him." "Not," he said passionately, "if you do not love him!" and then there was another dreadful silence, broken by these hopeless, whispered words, "I cannot, I dare not, disobey the duke. Some one is coming; we must go."

I do not think that the guardsman knew quite what he was doing, but what he did do was this: he plucked a leaf from the orange tree, and gave it to her, and said, "If ever there is hope for me, or I can help you, send me this leaf."

Then others joined them, and they went their way. I stayed there, mute and motionless, thinking what cruel tyranny it was to crush those young loving hearts, until a footman came to say that the ball was over; and then I hurried home, weary and sorrowful; and I remember that before I went to bed that night I prayed that she might send him the leaf. But Mrs. Oldacre, from whom I never had a secret, declined to regard the circumstances as becoming subjects for doubt or petition. She sniffed at my solicitude with a grand disdain, "because I know," she said, "that he will have the leaf."

S. R. H.

(To be continued.)

PUBLIC GARDENS.

BIRMINGHAM BOTANIC GARDEN.

In extent, and in various other ways, this is as unlike the establishment a town like Birmingham should possess, as anything can be. Like many other botanic gardens, this was spoiled at the outset by being made too small. It is only twelve acres, and it does not look more than six. When people make a park their ideas seem to expand a little, but few of the originators of our provincial botanic gardens seem to have known that a worthy botanic garden cannot be made on a space little larger than a good cricket-ground. There are at the very least five hundred species of trees and shrubs in the country which no garden presuming to call itself "botanical" should be without; and if we would only just consider how much space it would take, not merely to preserve these in a living state, but to fully develop and show their beauties, there is every probability that we should rise higher than the old, narrow, feeble idea entertained with regard to a botanic garden. We shall never have botanic gardens worthy of the name, till it is seen that the highest office of a botanic garden in a cold or temperate country is to treasure the vegetation of cold and northern climes, and that even the noble hardy oaks alone require for their fair development a larger space than some provincial botanic gardens occupy.

Apart from the great difficulty of want of space, we were glad to see much improvement in the garden. There is, for example, a really fine warm conservatory, erected at a cost of £1,600, which is filled with noble tropical plants, and in every way highly creditable to the curator, Mr. Latham.

The water here is small and mean in the extreme. It should be drained off, and its site converted into a fernery, or something of the kind. Better do nothing than do anything meanly. And this, above all things, as regards water.

The garden is on the red sandstone; and a capital improvement has been effected in converting a kind of an old quarry into a large rock-garden and fernery. Much yet remains to be done with it; but it is, on the whole, a distinct step in advance, and very suggestive of what may be done in gardens lying over rock that comes near the surface. Properly adorned with suitable ornaments, and its surroundings perfectly in harmony, it may be made to form one of the finest rock-gardens to be found in any of our botanic gardens.

We were all the more pleased to see this desirable effort, from the woeful nature of the "rockwork" in the villa gardens round Birmingham. Horticulturally speaking it may be described as the City of Ridiculous Rock-gardens. The passion for the picturesque here finds vigorous expression in little and

nearly level surfaced walls and banks of the refuse of the furnace and the quarry. These may be seen in the greater number of the many suburban gardens of Birmingham. Occasionally the material of the rock-garden is beautifully variegated by what a person unacquainted with glass factories may perhaps be pardoned for describing as bottle-glass in a state of nature, and sundry other allied bodies, not the colour of any stone we have hitherto seen in rock-gardens, natural or artificial.

Seeing manifest improvement, and a desire to advance, one regrets to allude to one of the worst instances of vandalism that has ever been perpetrated in a botanic garden. Half a dozen years ago there was a fine collection of *Cratægi* here; they were a little too thickly planted perhaps, but very little care would have made the little grove something that any garden might be proud of. The trees were nearly forty years old, and consisted of unusually rare and valuable kinds. The collection was one of the finest, if not the finest, in the kingdom. Well, the trees have been cut down, burnt, and the site levelled for an archery ground! Yes, a collection, the growth of forty years, destroyed to make room for what is quite out of place in a botanic garden, now much too small, and which could be made with less trouble in any bare spot in the adjoining fields. Fancy the abolition of an acre of the cases in the British Museum for the sake of making a gallery for American bowls. Every kind of vandalism, however, is not tolerated, for, on a board on the lawn where this fine collection of exotic hawthorns once stood, it is written that any person seen taking or seeking for birds' nests, will be "expelled the gardens." Would that some similar caution had been exhibited on the fine hawthorns before their total destruction! A few more like clearances, and there would not be much occasion to placard warnings against bird-nesting.

ASTON PARK.

ASTON HALL is an old Elizabethan mansion, finely situated on a bold eminence near Birmingham. It is now used as a public museum. We will not enter beyond the hall, where there is written on brass:—

"Be it remembered that on the Twenty-second day of September, A.D. 1864, and in the Mayoralty of the Rt. Worshipful William Holliday, Esqre., this Hall and Forty-three acres of land surrounding it, having been purchased by the Corporation of the Borough of Birmingham, were formally dedicated to the use of the people for their recreation, as a Free Hall and Park for ever."

The state of the garden or park round this old mansion is such as every person taking an interest in public gardens must regret. I have never seen a more desirable site for a public garden, or small park, the ground rolling grandly down from the crest on which the hall is situated, and one end of the terrace garden having a view over the country to the north of Birmingham, as commanding in its way as that which is obtained from the turrets of Arundel or the terrace at St. Germain. Yet, in point of keeping, the place looked, on the 21st May last, in a state much worse than that of the roughest tea-garden. The turf in parts seemed as bare as if it had been the favourite ground of Aunt Sally exhibitions. Withering shrubs, broken bottles, and weedy flower beds, are the chief impressions left by a visit to the grounds. Dirty paper lay about so thickly that it was blown into small drifts by the breeze. Indescribable filth was in the corners of the terrace garden. One unhappy flower bed was traversed by small walls of ugly rockwork, radiating from a flagstaff in the centre.

As for the landscape features, they are utterly neglected, though, properly handled, they would make the place a gem in its way—the ground is so favourable. Whatever the financial circumstances of the town may be, there can be no excuse for leaving Aston Park in its present condition. If Birmingham is unable to maintain the few flower beds at Aston Park in a decent state, surely the right course is to turf them up and devote the labour now wasted upon them to putting the grass, the most indispensable part of the park, in order. In all public gardens the rule should be, "Do not at all, rather than do meanly." Then, again, in the matter of waste paper, are there not sundry individuals, who energetically, and with

money in their purses, besiege every newspaper office for "waste," who would gladly contract for its removal from Aston Park? Indeed, in this way, the revenues of the town might receive a not unwelcome accession.

We have rarely, if ever, seen a city or town so utterly devoid of cheerful open planted spaces as Birmingham. Nowhere is there more evident the usual crop of large cities—a wretched deteriorating race, famishing, for want of God-given air, in narrow dirty streets; nowhere more evidence of "rapidly increasing prosperity," if the addition of any number of new, smoky streets be a test of it. Yet it cannot afford to keep this one park—a mere garden in size compared with one of the London parks—half so neatly as the proprietor of the "Welsh Harp" or the "Rose and Crown" keeps his little flower-sprinkled domain!

HARDY PLANTS IN FLOWER ROUND LONDON.

(FROM MAY 23RD TO 29TH, INCLUSIVE.)

BY OUR OWN REPORTERS.

<i>Achillea</i>	<i>Crambe</i>	<i>Hesperis</i>	<i>Polemonium</i>
<i>egyptiaca</i>	<i>cordifolia</i>	<i>tristis</i>	<i>Richardsonii</i>
<i>aurea</i>	<i>Crepis</i>	<i>Horminum</i>	<i>Polygala</i>
<i>pectinata</i>	<i>aurea</i>	<i>pyrenaicum</i>	<i>vulgaris</i>
<i>Aconitum</i>	<i>Crucianella</i>	<i>Iris</i>	<i>Potentilla</i>
<i>lycoctonum</i>	<i>stylosa</i>	<i>neglecta</i>	<i>calabra</i>
<i>carpathicum</i>	<i>Cytisus</i>	<i>tingitana</i>	<i>tridentata</i>
<i>Æchionema</i>	<i>patens</i>	<i>variegata</i>	<i>Fyrus</i>
<i>coridifolium</i>	<i>Delphinium</i>	<i>versicolor</i>	<i>angustifolia</i>
<i>Agrostemma</i>	<i>intermedium</i>	<i>Isopyrum</i>	<i>baccata</i>
<i>coronaria</i>	<i>Dianthus</i>	<i>thalictroides</i>	<i>coronaria</i>
<i>Allium</i>	<i>arenarius</i>	<i>Lathyrus</i>	<i>Rhododendron</i>
<i>fragrans</i>	<i>barbatus</i>	<i>montanus</i>	<i>Govenianum</i>
<i>glomeratum</i>	<i>brachyanthus</i>	<i>Libertia</i>	<i>ponticum</i>
<i>Moly</i>	(Kew)	<i>grandiflora</i>	<i>Robinia</i>
<i>Victorale</i>	<i>capitatus</i>	<i>Ligusticum</i>	<i>hispidula</i> var.
<i>Amelanchier</i>	<i>corsicus</i>	<i>scoticum</i>	<i>Rosa</i>
<i>florida</i>	<i>cruentus</i>	<i>Lilium</i>	<i>spinosissima</i>
<i>Amsonia</i>	<i>fimbriatus</i>	<i>pomponium</i>	<i>grandiflora</i>
<i>salicifolia</i>	<i>monspessulanus</i>	<i>Linaria</i>	<i>Rubus</i>
<i>Andryala</i>	<i>nitidus</i>	<i>alpina</i>	<i>nutkanus</i>
<i>lanata</i>	<i>plumarius</i> and	<i>origanifolia</i>	<i>Ruta</i>
<i>Anemone</i>	vars.	<i>Linnaea</i>	<i>graveolens</i>
<i>coronaria</i> and	<i>punctatus</i>	<i>borealis</i>	<i>Sagina</i>
vars.	<i>Scheuchzeri</i>	<i>Liparis</i>	<i>glabra</i>
<i>dichotoma</i>	<i>serotinus</i>	<i>lilifolia</i>	<i>" corsica</i>
<i>Anthericum</i>	<i>suavis</i>	<i>Lotus</i>	<i>Salvia</i>
<i>Liliago</i>	<i>Digitalis</i>	<i>siliquosus</i>	<i>clandestina</i>
<i>Antirrhinum</i>	<i>purpurea</i> and	<i>Lupinus</i>	<i>lanceolata</i>
<i>maius</i>	vars.	<i>arbores</i>	<i>lyrata</i>
<i>Aquilegia</i>	<i>Draccephalum</i>	<i>Magnolia</i>	<i>Schizostylis</i>
<i>alpina</i>	<i>Ruschianum</i>	<i>acuminata</i>	<i>coccinea</i>
<i>Arenaria</i>	<i>Echinacea</i>	<i>auriculata</i> (Os-	<i>Sedum</i>
<i>nardifolia</i>	<i>intermedia</i>	<i>born</i>)	<i>acre</i>
<i>Armeria</i>	<i>Elaeagnus</i>	<i>Malcolmia</i>	<i>aizoides</i>
<i>mauritanica</i>	<i>parvifolia</i>	<i>maritima</i> & vars.	<i>Seseli</i>
<i>Arnica</i>	<i>Epilobium</i>	<i>Molopospermum</i>	<i>vulgaris</i>
<i>montana</i>	<i>angustifolium</i>	<i>cicutarium</i>	<i>Silene</i>
<i>Asphodelus</i>	<i>Erigeron</i>	<i>Nigritella</i>	<i>alpestris</i>
<i>capillaris</i>	<i>alpinus</i>	<i>angustifolia</i>	<i>nutans</i>
<i>Astragalus</i>	<i>Eriogonum</i>	<i>Enothera</i>	<i>Sisyrinchium</i>
<i>cymbtracarpus</i>	<i>flavum</i>	<i>pumila</i>	<i>anceps</i>
<i>falcatus</i>	<i>umbellatum</i>	<i>Ornithogalum</i>	<i>bermudianum</i>
<i>Hypoglottis</i>	<i>Erodium</i>	<i>atticum</i>	<i>striatum</i>
<i>Tragacantha</i>	<i>macradenum</i>	<i>Onobrychis</i>	<i>Spiraea</i>
<i>Athamanta</i>	<i>Erythraea</i>	<i>aquidentata</i>	<i>filipendula</i> and
<i>Matthioli</i>	<i>aggregata</i>	<i>sativa</i>	var. <i>plena</i>
<i>Bellium</i>	<i>Gaillardia</i>	<i>Orchis</i>	<i>Stachis</i>
<i>bellioides</i>	<i>Richardsonii</i>	<i>maculata</i>	<i>Fortanei</i>
<i>Berberis</i>	<i>Gaultheria</i>	<i>Orobis</i>	<i>Stenactis</i>
<i>Wallichiana</i>	<i>Shallon</i>	<i>niger</i>	<i>speciosa</i>
<i>Betonica</i>	<i>Genista</i>	<i>tuberosus</i>	<i>Symphytum</i>
<i>grandiflora</i>	<i>pilosa</i>	<i>Oxalis</i>	<i>caucasicum</i>
<i>Borago</i>	<i>radiata</i>	<i>cernua</i>	<i>tauricum</i>
<i>laxiflora</i>	<i>sagittalis</i>	<i>compressa</i>	<i>Syringa</i>
<i>Bupleurum</i>	<i>tinctoria plena</i>	<i>lasioptala</i>	<i>Josikana</i>
<i>fruticosum</i>	<i>triquetra</i>	<i>lobata</i>	<i>Tamarix</i>
<i>Campanula</i>	<i>Geranium</i>	<i>venusta</i>	<i>sinesis</i>
<i>elegans</i>	<i>argenteum</i>	<i>Papaver</i>	<i>Thalictrum</i>
<i>persicifolia</i>	<i>atlanticum</i>	<i>lateritia</i>	<i>adiantoides</i>
<i>Cardamine</i>	<i>cinerum</i>	<i>pilosa</i>	(Henderson)
<i>pratensis plena</i>	<i>macrochizum</i>	<i>Pavia</i>	<i>sibiricum</i>
<i>Caragana</i>	<i>maculatum</i>	<i>discolor</i>	<i>Thermopsis</i>
<i>altagana</i>	<i>nodosum</i>	<i>hybrida</i>	<i>caroliniana</i>
<i>pygmaea</i>	<i>Wallichii</i>	<i>Pentstemon</i>	<i>Thymus</i>
<i>trigancanthoides</i>	<i>Glabolus</i>	<i>crassifolius</i>	<i>lunuginosus</i>
<i>Cineraria</i>	<i>communis</i>	<i>pubescens</i>	<i>Trichonema</i>
<i>alpina</i>	<i>Gymnopsis</i>	<i>Phaca</i>	<i>Celsii</i>
<i>Cistus</i>	<i>uniseriatis</i>	<i>abbreviata</i>	<i>Valeriana</i>
<i>canus</i>	<i>Gypsophila</i>	<i>Phillyrea</i>	<i>macrophylla</i>
<i>formosus</i>	<i>repens</i>	<i>angustifolia</i>	<i>Veronica</i>
<i>Cacorum</i>	<i>Halesia</i>	<i>obliqua</i>	<i>maritima</i>
<i>triccocum</i>	<i>tetraptera</i>	<i>oleafolia</i>	<i>rupestris</i>
<i>Coronilla</i>	<i>Helianthemum</i>	<i>Phyteuma</i>	<i>taurica</i>
<i>Fordii</i>	<i>Libanotis</i>	<i>corosum</i>	<i>Viola</i>
<i>virginialis</i>	<i>piloselloides</i>	<i>orbiculare</i>	<i>canadensis</i>
<i>Cotoneaster</i>	<i>Hemerocallis</i>	<i>Pinguicula</i>	<i>Weigela</i>
<i>frigida</i>	<i>flava</i>	<i>vulgaris</i>	<i>amabilis</i>

NOTES OF THE WEEK.

—THIRTY-SEVEN THOUSAND persons are reported to have visited the Royal Botanic gardens and pleasure grounds at Kew on Whit Monday.

—A GOOD specimen of the somewhat rare *Magnolia auriculata* is now in flower at Messrs. Osborn's nursery, Fulham, and there are also good examples of *Pavia flava*, *P. discolor*, and *Berberis Wallichiana*, likewise all in blossom at the present time in the same establishment.

—At a meeting of the British Anti-Tobacco Society the other evening, it was stated that £18,000,000 per annum are squandered on tobacco. The report deplored the increase in the consumption of tobacco in this country.

—Once a Week, speaking of an Eucalyptus, says: "The hollow trunk was sufficiently large to admit of three riders, with an additional pack-horse, entering and turning around in it without dismounting." This tree is reported to have been four hundred feet in height.

—THE poorest flora in the world, says *Nature*, is probably that of the Island of St. Paul, in the Indian Ocean. It consists, as far as flowering plants are concerned, of six grasses, a sedge, a *Plantago*, and a *Sagina*. Of these the two latter only are undescribed species, and all the remainder have probably been introduced.

—WE rejoice to hear that the great national exhibition of plants and flowers recently held at the Botanic Gardens, Manchester, originally suggested by Mr. Bruce Findlay, the carator, and admirably realised through the liberality and energy of the council, has been a most gratifying success. The receipts are no less than £2,040, and the net profit will exceed £800.

—THE results obtained from the cultivation of gardens by boys at two schools, those of Eyemouth and Paxton, in the county of Berwick, are, says the *Farmer*, something wonderful. At Eyemouth the produce realised reached, in ratio, a value of £51. 8s. 6d. per acre; and at Paxton the boys obtained from their little plots a sum equal to £40. 1s. 4d. per acre.

—THE beautiful Tangier Iris (*I. tingitana*), found by Dr. Hooker and Mr. George Maw in North Africa, has recently flowered at Kew and Benthall Hall. It may be described as in colour not unlike the richly-hued Iris *reticulata*, but with a flower as large as the German Iris. It is a marked acquisition to our cultivated Irises, unsurpassed for beauty as many of them are.

—THE amount of timber land in British Columbia is estimated to cover about 100,000 square miles. In Alaska, it is said that 150,000 square miles are occupied with wood, and in Washington territory, Oregon, and California, about 105,000 square miles. Fires occasionally make sad havoc, but with such a space devoted to timber, little apprehension need be entertained respecting scarcity of wood.

—THE herbarium of Columbia College, New York, says *Hearth and Home*, is to have added to it the immense collection of Dr. Meissner, of the University of Basle. This herbarium contains 63,000 species, and is purchased for the college through the liberality of J. J. Crook, Esq. The present herbarium of the college is founded on the invaluable one of Dr. John Torrey, and is especially rich in typical specimens. With the proposed addition it will be the largest herbarium in the country.

—At a meeting held in Edinburgh the other day, a sub-committee was appointed to take steps for raising subscriptions to secure a granite pedestal for the monument to the late Prince Consort, and to lay out the garden, in which it is to be erected, in an appropriate manner. The Duke of Buccleuch has guaranteed the sum of £2,000 to the fund, which has already enabled the committee to commence the work. Princess Louise has subscribed £300 to the pedestal fund.

—AMONG fibre-yielding plants, the best is said to be New Zealand flax, which is reported to be stronger than any fibre used except silk. Silk will bear a strain of 34lbs.; New Zealand flax, 23½lbs.; Russian hemp, 16½lbs.; common flax, 11½lbs.; and *Agave americana*, 7lbs. But in spite of these facts the export trade, as regards New Zealand flax, has dwindled down to almost nothing. In 1855 the quantity exported was valued at £2,020; and in 1861 it was only £162.

—THE opening of the People's Gardens, at Willesden, for the season took place on Saturday last, when about five hundred persons, all members, or visitors specially invited, were present. These gardens, the property of an association of working men, are about fifty acres in extent, situated on Old Oak Common, about five minutes' walk from Willesden Junction Station. They have been much improved since last year, and are now laid out with flower-beds, terraces, gravelled walks, cricket-grounds, and croquet-lawns. They will remain open every day, Sunday included, up to the end of September.

— ATTENTION is being directed, says *Public Opinion*, to the sanitary advantages of the cultivation of the sunflower in malarious districts. Many facts have been adduced to show that the sunflower has the property of purifying air laden with marsh miasm, absorbing a great quantity of moist and noxious gases, and exhaling an ozonised oxygen. Moreover, the French Sanitary Commission has lately pointed out that the sunflower is a most useful plant; it yields about forty per cent. of good oil, the leaves furnish an excellent fodder, and the stem, being rich in saltpetre and potash, makes a good fuel.

— MR. GEORGE MAW'S fine collection of Saxifrages at Benthall Hall, near Broseley, is now very attractive, on account of the number of kinds that are in full bloom. There are in all about one hundred and thirty species, a good many of which have been introduced by Mr. Maw himself; and a good many of these are new kinds, discovered by that gentleman in his travels on the Continent and in North Africa. Among the most beautiful of the new Saxifrages now in flower are *Maweana*, a distinct and remarkable kind, with a profusion of large white waxy flowers, and *Wilkomeana*, allied to the meadow Saxifrage, but larger and with a profusion of fine white flowers, in tufts from eighteen inches to two feet high.

— FEW spots are more attractive than Hampstead Heath, which was crowded during the Whitsuntide holidays. The improvement of the heath has already been commenced. The greater part of the area, as we have formerly mentioned, will be left in its wild state, but some of the sand and gravel pits will be filled up, especially where the removal of the soil has endangered the firs and other trees. With the object of saving some of these trees from decay, a small space has been fenced in round the firs near "The Spaniards," the "fantastic roots" of which will no longer be left bare; two small spots near "Jack Straw's Castle," about an acre in all, have also been enclosed and planted with evergreens and other shrubs.

— A COLLECTION of specimen orchids sold by Mr. Stevens the other day, contained some fine plants of *Dendrobium densiflorum*, one of which realised £9. 10s., a second £8. 10s., and a third six guineas. *Cælogyne cristata* fetched, in more than one instance, five guineas, and the lovely *Saccolabium præmorsum*, £5. At the same sale were also two new species of *Disa*; one, *D. Barelli*, is stated to have flowers as large as those of *D. grandiflora*, and of a bright orange ground colour, instead of pink as in that kind; the other, *D. Herschelli*, is reported to be a large-blossomed blue kind. The total amount of the sale, including some forty lots of the charming *Aërides maculosum* from the Bombay Presidency, was £380.

— It is stated in the *Bath and Cheltenham Gazette* that Mr. Webb, of Reading, grows his filberts on the French system, and with excellent results. He often gets upwards of a ton of filberts per acre. The difference between his mode of cultivation and that usually adopted in Kent, is that Mr. Webb does not train or cut the bushes, which are allowed to grow as they please within the limits allotted to them. They are planted eight feet apart, and until they cover the ground vegetables are grown between them. He estimates seven years as the period required to bring them to profitable bearing, after which he realises on an average £100 per acre. The labour involved consists only in picking up the nuts as they fall, and no manure is required. Filberts will grow on almost any soil.

— NEARLY forty tons of new potatoes have now left the Scilly Islands, principally for London, and the same vegetable is being sent away from Penzance at the rate of five to six tons per day, but vegetables in Cornwall have not been so scarce and dear for many years. Cold winds and heavy showers of sleet and hail continue, and scores of acres of potatoes in the Penzance district, which, with an ordinary season, would have been in the market a fortnight or three weeks ago, are nothing like ready to take up. A large breadth of potato ground in West Cornwall will be very unprofitable this year; several acres have been ploughed up, so hopeless had the crops become through cold, and rain, and frost. Early cabbages are also a failure in most localities.

— OREGON, says the *Co-operative News*, is the healthiest State in the Union. The Willamette Valley has gained the appellation of the "Orchard of the World." Apples grow in such abundance that the limbs have to be propped up to prevent them from breaking under the weight of their burden long before the fruit ripens. *Gloria Mundi* often measures twenty-three inches in circumference, being larger than some men's heads. Luscious pears, that melt in your mouth, and sweet, juicy plums, are too plentiful to be a luxury. Among pears, single specimens of *Uvedales St. Germain* often weigh as much as four pounds each, and grapes from four to fourteen pounds per bunch. At this time of the year (middle of March) the orchards are in full bloom; the grass is a foot high; the delicious wild strawberries are ripening, and by the last of April will be in perfection. Currants, raspberries, gooseberries, blackberries, and huckleberries grow in profusion.

— It appears that the recent great storm at Madras has been most disastrous in its effects. Trees have been blown down, and the city itself, has not presented such a scene of desolation since the great cyclone in 1865. The river and islands were flooded, and some of the principal thoroughfares were almost impassable, owing to the number of trees and branches blown down. Mighty trees, indeed, that had battled with the storms of other years have at last been conquered, and lie, torn up by their roots, across the roads. The Park has suffered considerably, and the avenues on public roads cannot boast of a single tree that has not been dreadfully injured.

— A CORRESPONDENT of one of the morning papers thus describes a recent aspect of nature's flower garden in one part of Spain:—The country is bright with flowers, and the space along by the railway, of considerable width, is actually aglow with them. To the railway traveller who loves colour and brightness they are a source of infinite pleasure. Never did I see such an unbroken blaze of colour, sometimes running only in a band some ten yards wide by the railway, sometimes spreading out into the fallow beyond. First in brilliancy come the poppies, growing so thickly in places as to look like a scarlet flame as we rushed past them. These, with the exception of a little red star common in our own hedges were almost the only reds. In pinks there were masses of the little wild convolvulus, growing larger here, however, than at home, and there were clumps of madder varying from white to deep mauve. In blue there were great masses of borage, the lighter blue of the cornflower, and in places a carpet of our garden minor convolvulus. In yellow there were the pale primrose of the kind which grows in our own cornfields, and the bright orange of countless flowers of a species of dandelion. In white there were masses of a small chamomile. The blaze of these colours was for miles unintercepted, at times in masses of some particular sort, then a mixture of varieties and hue; but in all brilliant in the extreme.

THE FLOWER GARDEN.

SPRING FLOWERS.

THE season for clearing flower beds of their winter occupants has once more returned; and those who are anxious to have a display of beautiful flowers next spring, must now make active preparations so as to ensure a well-matured growth, as well-established plants will bear exposure best. Now, too, is the time to propagate a stock for next season; and happily the plants that are best adapted for that purpose are, with but few exceptions, within the reach of all. The gaiety of the flower garden in spring may be attained at a very trivial expense, as only plants of the easiest possible cultivation need be employed to produce it. Early flowers have charms unequalled by those of summer, over which so much labour, care, and expense are lavished. True, as regards early display, we have had, in some instances, extensive plantations of Dutch bulbs, such as Hyacinths, Tulips, &c., which, when used alone, are never very satisfactory; but if interspersed or associated with hardy annuals or evergreen perennial plants, and used in moderation, the result is effective and pleasing. Many are deterred from employing these hardy denizens in the decoration of our spring gardens from a labour point of view; but one man with half an acre of ground will produce a vast quantity of plants, and that too from the most simple and easily comeatable material. Be that as it may, it would be better to cut down the expense of summer bedding to one-half than dispense with spring flowers. We would thus be gainers both in point of effect and utility.

It requires a certain amount of judgment to part and prepare plants for the spring garden. To preserve uniformity of growth, the plants should be selected as nearly of a size as possible. Wall-flowers may be had from seed; and in the case of double and other choice varieties, which it may be desirable to propagate from cuttings, no time should be lost in having them inserted, so as to insure an early and consequently well-matured growth. In the majority of instances, a spare frame or hand-glass may now be commanded, which will greatly facilitate the operation. The best situation for them is a north border, and they should be inserted in finely-sifted soil and sand, previously rendered solid. The lateral shoots from the main stems should alone be chosen, and stripped off with a heel. They are not benefited by being trimmed with a knife; but may be dibbled firmly into the soil as they are separated from the plant, and well watered. Do not shade at all, but give an abundance of air during the night, to prevent drawing; and as soon as they will stand full exposure during the day, remove the lights. When well rooted, re-plant into the reserve garden, choosing a fully exposed situation; preserve compactness by stopping back strong shoots; bearing in mind that what stopping is done should be

immediately after the plants are established in the nursery lines, and that no after-pinching should be practised, as it has a tendency to retard the blooming period. The same treatment holds good in respect to Alyssums and the perennial Candytufts or Iberis, &c. It may be added that in shady situations these plants will root without glass or other covering; but the process is much slower.

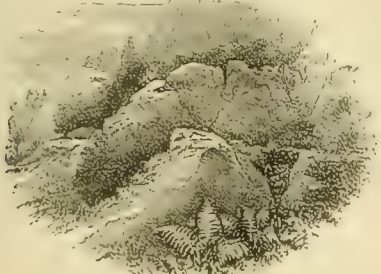
The Oxlip is one of the most useful of spring flowers, and at the same time one of the easiest to cultivate. Being, as everybody knows, indigenous to Britain, it is readily procurable in most districts, and should now be collected and divided into as many pieces as there are good crowns, and planted in a shaded situation, in a rich, heavy, retentive soil. Single white and purple Primroses are also effective, more particularly the purple one; as a rule, indeed, the single varieties are better for spring decoration than the double sorts, as they stand longer in flower, lift better, and are in every respect more manageable. *Ajuga reptans rubra*, a purple-leaved kind, which flowers in the greatest profusion in spring, is not at all a despicable plant, and should now be divided and replanted into nursery lines.

Amongst the most useful of spring flowers is the Pansy, a sufficient stock of which may be procured from those that are now being removed from the flower beds. Divide them into the smallest portions possible, retaining a root to each, and planting upon a north border in richly prepared soil. In the case of scarce or new varieties, propagate under a hand-glass, and shade from sun, selecting young growth void of pith, which roots best. These remarks also apply to the treatment to be carried out with the majority of plants now being lifted from the spring garden. GEORGE WESTLAND.

THE ALPINE GARDEN.

(Continued from p. 548).

We will now enter into particulars as to the various ways in which alpine plants may be grown, beginning with the best type of rock-garden—that in which, in addition to the low-lying, stony, and rocky banks and slopes, where numbers of hardy and vigorous species may be grown, there are miniature peaks, cliffs, and ravines, with perhaps bog and water. The



Right.

most usual and deplorable of the faults in making rockwork is that of so arranging the stones that they seem to have as little connection with the soil of the spot as if thrown out of a cart, indeed less so. Instead of allowing what may be termed the foundations, or apparent foundations, of the rock-garden to barely show their upper ridges above the earth, and thereby



Wrong.

suggesting much more endurable ideas of "rock" than those arising from the contemplation of the bold and unnatural-looking masses usually seen, the stones are often placed on the ground with much the same idea that animates a bricklayer in setting bricks. The two accompanying cuts will explain

exactly what we mean; both are accurately engraved from photographs, both represent small portions of artificial rock-work; the ugliest of the two was much the most difficult and expensive to make. One well-selected stone allowed to peep from some gently rising isolated mound or open sunny spot,



and arranged as shown in the accompanying little cut, would produce a better effect than several tons placed as in the preceding one.

In dealing with the construction of the bolder masses of rockwork, we cannot have a better guide than Mr. James Backhouse. If we merely want a certain surface of rock disposed in a picturesque way, such details as these may not be worthy of attention, but if we wish our rock-gardens to be faithful miniatures of those wild ones which are admitted to be the most exquisite of nature's gardens, then they are of much importance.



Lychnis and Silene in fissures.

Comparatively few alpine plants prefer or succeed well in horizontal fissures. Those, however, which, like *Lychnis Viscaria* and *Silene acaulis*, form long tap roots, thrive well in such fissures, provided the earth in the fissure is continuous, and leads backward to a sufficient body of soil. Where the horizontal fissures are very narrow, owing to the main rocks being in contact in places, and leaving only irregular and interrupted fissures, such plants as the charming *Lychnis Lagasceæ*, *Lychnis pyrenaica*, and others, bearing and preferring hot sunny exposures, do well. But many plants that would bear the heat and drought, if they could get their roots far enough back, would quickly die if placed in such fissures, from the paucity of soil and moisture near the front; therefore it is usually better, in building rockwork with these fissures, to keep the main rocks slightly apart by means of pieces of very hard stone (basalt, close-grained "flag," &c.), so as to leave room for a good intermediate layer of rich loam, stones, or grit, mingled with a little peat. The



Horizontal Fissure.

front view of such a structure would be as above—the dark spaces being firmly filled with the appropriate mixture of soil before the upper course of large rocks is placed.

As a rule, oblique and vertical fissures are both preferable to horizontal ones; but care should be taken with oblique fissures that the upper rock does not overhang. A plant placed at



Wrong.



Right.

J will often die, when the same placed at H will live, because the rain falling on the sloping face of rock at I will drop off at J, and miss the fissure J altogether, while that falling on the sloping face of rock at K will all run into the fissure H. There are, however, some plants, like the rare *Nothochlæna Marantæ* and *Androsace lanuginosa*, which so much prefer positions dry in winter that a fissure like J would suit them better than one like H. Such are rare exceptions to a general rule.

The best and worst general forms of steep rockwork we have tried are those indicated in the following figures. By making each rock slightly recede from the one below it, the rain runs consecutively into every fissure. Where the main fissures reverse this order, almost everything dies or languishes. Care should be taken to have the top made of mixed earth and

stones—not of rock, unless use is intentionally sacrificed to scenic effect. Vertical fissures (which suit many rare alpine best of all) should always, as far as possible, be made narrower at the bottom than at the top. If otherwise, the intervening



Right.



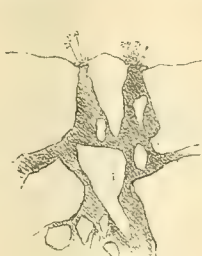
Wrong.

earth, &c., leaves the sides of the rock as it “settles,” instead of becoming tighter.

In the next figure, as the total mass of soil sinks, it becomes compressed against the sides of the rock; while in the other the soil *leaves* the sides of the fissures more and more as the mass sinks, and almost invariably forms distinct “cracks” (separations between the soil and rock) sooner or later. The same principle applies to small stones and fissures. To prevent undue evaporation in the case of such fissures, stones, larger or smaller, may be laid on the *top* of the soil, care being taken not to cover too much of it, to the exclusion of rain.



Right.



Wrong.



A properly formed large fissure.

Where a large fissure exists, the smaller pieces of stone in it are on this account best placed with the narrowest edge or point upwards—not downwards. It will easily be seen that the tendency of the mixed soil, both as a whole and in each of its subdivided parts, is to become more and more compressed by its own weight and by the action of rain.

(To be continued.)

BOCCONIA CORDATA.

THIS is a fine plant in free soil, but comparatively poor in that which is stiff and cold. It forms handsome erect tufts from five feet to over eight feet high. The stems grow rather closely together and are thickly set with large, deeply veined, oval-cordate leaves, the margins of which are somewhat lobed or sinuated. The flowers, which are rosy-white and very numerous, are borne in very large terminal panicles. They are not in themselves pretty, but the inflorescence, when the plant is well grown, has a distinct and pleasing appearance. The plant is seen to best effect when isolated, and does well in ordinary garden soil or free sandy loam. It attains its greatest size when placed in the angle of two walls which shelter it from the north and east, which seems to indicate that it does not like sudden changes of temperature and light. It should not be moved too often. It will prove a good thing for associating with other fine hardy plants in bold groups, and is also worthy of a place among the taller plants in the herbaceous border. It is easily increased by seed or by means of careful division. It is a native of China.



Bocconia cordata.

BAMBUSA AUREA.

A VERY hardy and graceful Chinese species, differing but slightly from *Bambusa viridi-glaucens* in size and habit, and forming elegant tufts with its slender much branched stems, which attain a height of from 6½ feet to 10 feet, and are of a light-green colour when young, changing into a yellowish hue, and finally becoming of a straw-yellow when fully grown. The leaves are lance-shaped, acute, light green, and are distinguished from those of *B. viridi-glaucens* by having their under surface less glaucous, and the sheath always



Bambusa aurea.

devoid of the long silky hairs. This, as yet uncommon bamboo, is one of those hardy species that may be tried with confidence in our southern and mild districts where *Bambusa falcata* succeeds so well.

THE HOLLYHOCK.

THE hollyhock is one of the noblest of hardy plants, but fashion, ever variable, combined with the rapid improvement of late years in *Pelargoniums* and other dwarf bedding plants, has driven it out of the parterre or geometric flower garden. But still there are many positions in almost all gardens where a few hollyhocks would add immensely to the general effect. For breaking up ugly lines of shrubs or walls and for forming backgrounds, their tall, column-like growth is eminently fitted. Twenty-five years ago they were common in nearly every cottage garden, their stately stems towering up half as high as the cottage itself. Cottage bee-keepers would do well to grow a few hollyhocks, for bees are fond of working amongst their flowers, and they yield them a rich harvest of honey when the honey from other flowers has been gathered. The bark of their stems produces a strong fibre that might perhaps be utilised by the manufacturer if obtainable in sufficient quantities. It is also said to yield a blue dye, equal to indigo. If the seeds of hollyhocks are sown in autumn as soon as they are ripe in a box or pan in heat, and potted off and grown on in a pot through the winter and planted out the following April, they will flower the same summer and autumn. To obtain fine flowers it is necessary to treat them liberally. Deep cultivation, a liberal supply of manure, frequent waterings in dry weather, with occasional soakings of liquid manure, will alone secure fine spikes and well developed flowers. If grown for exhibition, the flowers must be thinned to give room for individual development, and the spike shortened so as to have all the

flowers open at the same time, and they must be shaded from bright sunshine.

I have hitherto only spoken of seedlings, but all the choice named varieties are propagated by cuttings. There are various ways of doing this, but the following plan is, as far as my experience goes, the most successful:—In July or August, when the shoots on the sides of the main stems begin to feel firm, prepare a frame for the cuttings in the following manner: Almost any position will do for it; place on the bottom a layer of coal ashes to keep down worms, then about two inches of thoroughly decayed manure, next two or three inches of fine-sifted soil, with a good sprinkling of sharp sand on the top, and make all rather firm with the back of the spade, give a gentle watering, and leave it to settle for an hour or two. In taking off the cuttings select the moderately firm side-shoots, label each kind, and tie it up separately to avoid mistakes. Each joint with a dormant bud in the axil of the leaf will make a cutting; leave about half an inch of the wood above the bud, and about an inch and a half below it; cut off the leaf, but leave on the stalk, it will help to support the bud for a few days; plant the cuttings in lines across the frame by pressing them into the bed up to, but not burying, the bud. After all are planted give a gentle sprinkling, to settle the sand round them; shade from bright sunshine, and keep close. Whenever the sand looks dry dew them over with a fine rose about ten or eleven o'clock in the forenoons of bright days. In July and August they may be struck with the greatest ease in this way. If only a few plants are wanted, hand-lights may be used. A two-light frame will hold about a thousand cuttings. After August it is best to put the cuttings into pots, as it may be necessary to give them a little bottom heat. They may also be propagated in the spring by potting up strong, old plants in the autumn. When placed in a gentle heat in February they will throw up lots of young shoots, which, when far enough advanced, may be taken off, put into small pots, and plunged in a gentle hotbed. They may also be increased by root grafting—that is, by grafting pieces of choice kinds on to roots of strong young seedlings. This is an expeditious way of making nice young plants. It is always a safe plan to strike a few cuttings every year, as strong young plants planted early in April in well-prepared ground will generally make the finest spikes. If fine spikes and fine flowers are wanted, only one spike should be left on each plant.—*E. Hobday, Ramsey Abbey, in "Field."*

THE IVY AND ITS USES.

APART from the fact that the Ivy is the best of all evergreen climbers, it is the best of all plants for softening the aspect of town and suburban gardens in winter, not to say all gardens.

To rob the monotonous garden railings of their nakedness and openness, the French use it most extensively, so that even in the dead of winter it is refreshing to walk along by these. And if it



Garden Railings densely covered with Ivy.

does so much for the street, how much more for the garden? Instead of the inmates of the house gazing from the windows into the street swarming with dust, or splashing with mud, a wall of verdure encloses the garden; privacy is perfectly secured; the effect of any flowers contained in the garden is much heightened; and lastly, the heavier rushes of dust are kept out in summer, for so admirably

are the railings covered by planting the Ivy rather thickly, and giving it some rich light soil to grow in, that a perfectly dense screen is formed. Railings that spring from a wall of some height around the larger houses are covered as well as those that almost start from the ground. Frequently the tops of the rails are exposed, and often these are gilt, while wire netting on the inner side supports the Ivy firmly.

If there are tall naked walls near a Parisian house, they are quickly covered with a close carpet of Ivy. Does the margin of the grass around some clump of shrubs or flower beds look a little angular or blotchy? If so, the gardener will get a quantity of nice young plants of Ivy, and make a wide margin with them, which margin he will manage to make look well at all times of the year—in the middle of winter when of a dark hue, or in early summer when shining with the young green leaves.

When the Ivy is planted pretty thickly and kept neatly to a breadth of, say, from twelve to twenty inches, it forms a dense mass



Section of Circular Bower formed of a single plant of the Irish Ivy grown in a tub.

of the freshest verdure, especially in early summer, and of course all through the winter, in a darker state. The effect of Ivy bands outside masses of gay flowers is excellent. They form a capital setting, so to speak, for the flower borders—the best, indeed, that could be obtained; while in themselves they possess qualities sufficient to make it worth one's while to grow them for their own sakes. In some geometrical gardens we have panels edged with white stone. These Ivy edgings associate well with the stone edgings, while they may be used with advantage in any style of garden. A garden pleases in direct proportion to the variety and the life that are in it; and all bands and circles of stone, all unchangeable geometrical patterns, are as much improved by being fringed here and there with Ivy and the like, as are the rocks of a river's bank.

It should be observed that an Ivy edging of the breadth of an ordinary edging is not at all so desirable as when its sheet of green is allowed to spread out to a breadth of from fifteen to eighteen inches. Then its rich verdure may be seen to full advantage. It



Varietated Ivy in Suspended Basket.

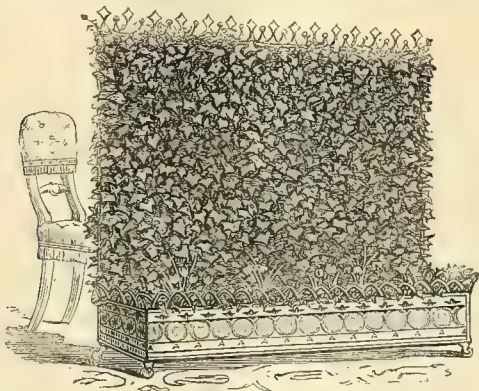
must of course be kept within straight lines if the garden be symmetrical: if it be a natural kind of garden, you may let it have its own wild way to some extent. I do not think I ever saw the scarlet Pelargonium to so great advantage as in deep long boxes placed against the wall of a courtyard densely covered with Ivy, and with Ivy planted also along their front edge, so as to hang down and cover the face of the boxes.

The Ivy may be readily grown and tastefully used in a dwelling.

house. I once saw it growing inside the window of a wine-shop in an obscure part of Paris, and on going in found it planted in a rough box against the wall, up which it had crept, and was going about apparently as carelessly as if in a wood. If you happen to be in the great court at Versailles, and, requiring guidance, chance to ask a question at a porter's little lodge seen to the left as you go to the gardens, you will be much interested to see the sumptuous sheet of Ivy which hangs over from high above the mantelpiece. It is planted in a box in a deep recess, and tumbles out its abundant tresses almost as richly as if depending from a Kerry rock.

The Ivy is also used to a great extent to make living screens for drawing-rooms and saloons, and often with a very tasteful result. This is usually done by planting it in narrow boxes and training it up wirework trellises, so that with a few of such a living screen may be formed in any desired part of a room in a few minutes. Sometimes it is permanently planted; and in one instance I saw it beautifully used to embellish crystal partitions between large apartments.

To make the Ivy edgings which are so abundantly employed in and around Paris, plants are easily procured in pots, and at a very cheap rate, at the markets on the quays, or of the nurserymen at Fontenay aux Roses, who every year grow it in large quantities. It is planted thickly in borders, and trailed along in strips from twelve to sixteen inches in width, according to the size of the beds. It is laid down with wooden pegs, a layer of earth being placed over the



Ivy Screen for the Drawing-room with Flowers at its base.

stems. When once planted, it only needs to be kept clear of weeds, and to be moderately watered. Under this treatment, it forms healthy borders the year after it is planted. In preparing the Ivy for growing against railings and trellis-work that enclose the various parks and gardens, it is trained carefully during the first one or two years, so that all empty spaces may be filled up. At the end of the second year, the railings will be completely covered, and for the future it is only necessary to keep it properly pruned.

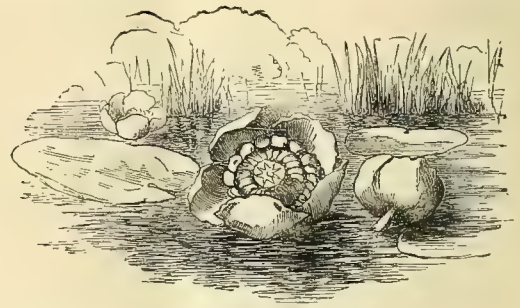
Towards the end of the summer the propagation of the Ivy by means of cuttings is carried on. Three or four leaves are left on each cutting, and they are planted very thickly in lines in a half-shady position. When they have taken root sufficiently, which generally takes place in the following spring, they are transplanted into pots of four or five inches in diameter. Afterwards stakes are fixed along the lines of pots, from which are stretched lines of thin galvanized wire, and to this slender but firm trellis from three to five feet high the plants are trained several times during the growing season. At the end of the second or third year the plants are strong enough to be employed to cover railings, and for many similar purposes. The nurserymen in the suburbs of Paris generally propagate them by layers. For this purpose old plants are placed at a certain distance from each other, and are allowed to grow long. Pots from four to six inches in diameter are then plunged in the ground around, the Ivy being fixed in them by means of small pegs, one shoot in each pot. Afterwards stakes are placed in the pots, and the Ivy trained against them as it grows. When the layers are sufficiently rooted, they are separated from the old plants, and towards the end of the second or third year they are ready for use. If a wide belt of Ivy is desired, the young plants may be put in in two or three rows, as the French do when making such excellent Ivy edgings as are here described. In any case, after the plants are inserted the shoots must be neatly pegged down all in one direction. The French keep them the desired size by pinching or cutting the little shoots well in, two or even three times every summer, after the edging has once attained size and health. The abundant supply of established plants in small pots enables the French to lay down these edgings so as to look well almost from the first day. Ivy edgings and Ivy screens are making way in this country. Mr. Marnock has lately

tried a large Ivy screen at Montagu House. The fact that Mr. Miller has succeeded in making very fine Ivy edgings at Combe Abbey of the common English Ivy gathered in the woods, suggests that many others among the numerous green forms of Ivies might be tried with advantage. W.

HARDY AQUATIC PLANTS.

THE YELLOW WATER LILY.

AFTER the white water lily this is our most important native aquatic plant. It is worthy of a place in all artificial waters, grouped with the water lily, *Villarsia*, and the great yellow water lily, *Nuphar advena*, which is a native of America. The yellow water lily (*Nuphar lutea*) is a native of many parts of Europe and Britain, chiefly in slow streams and pools. The



The Yellow Water Lily.

flowers appear nearly throughout the summer; they are much smaller than those of the white water lily, and rise a little above the surface of the water. The dwarf yellow water lily (*N. advena pumila*) is a variety smaller in all its parts, and found in a few localities in Scotland. The yellow water lilies, like the white ones, are not seen to advantage when allowed to become crowded in the water.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Adonis pyrenaica.—A correspondent writes to me to say that the flowers of this plant, when true, are twice as large as those of *A. vernalis*. Have any of your correspondents the two plants in cultivation, and what do they say to this statement?—H. C.

The Californian Columbine.—This, the *Aquilegia californica* of our gardens and *A. truncata* of some authors, is one of the noblest herbaceous plants we have, and one that is but very little grown. I find it thrives best on very sandy loam, attaining a yard in height thereon. It is perfectly hardy. When the flower is turned upwards it presents a lovely combination of scarlet, orange, and yellow, gradually blending one into the other.—J. C. NIVEN, *Botanic Gardens, Hull*.

The Rosy Canterbury Bell.—Those not already familiar with this variety of Canterbury Bell can scarcely imagine how beautiful it is. Not unfrequently the slightest variation from the usual colour of the species suffices to give a seedsman or nurseryman an opportunity to misname colours. But this is really of a distinct and beautiful roseate hue, and it deserves to have a place in every spring garden or herbaceous border. It is also a capital subject for naturalisation on chalky and warm soils.—H. V.

Aljuga alpina.—I am surprised this plant is not more grown. The true species is by far the finest of the genus. The flowers have the rich, pure blue of *Salvia patens*, and continue in perfection for a considerable time. It comes somewhat near, in character and merit, to *Dracocephalum grandiflorum*, and it succeeds best in boggy soil, and where its roots have plenty of room. Under such circumstances it spreads and increases rapidly.—J. C. NIVEN, *Botanic Gardens, Hull*.

Alyssum olympicum.—I do not find this little gem so well known or so much written about as it deserves to be. It is the dwarfiest of all the Alyssums, and though not so conspicuous in blossom as some kinds, is withal really ornamental, while it is certainly the most delicate and graceful in habit. It loves a narrow sunny ledge in the rock-garden, and thrives best in a sandy, well-drained soil. Neither its delicate blossoms or frail, silvery branchlets being very conspicuous at any time, it should have a position near the eye in the alpine garden.—J. C.

Banksian Roses.—What lovely subjects these are for the embellishment of house and every other kind of high walls, and yet how seldom do we see them taken advantage of! The other day at Whitley Abbey, near Coventry, I saw the wall of the abbey covered with two flakes of the white Banksia, reaching to the eaves. This was in full-matured bloom when many of the hawthorns hesitated to open their pearl-like buds under the fierce sleety rains and showers of hail, and when only the coiest cottage-garden kindness had induced the monthly and other early roses to open their earliest flowers.—W. R.

The Plumy Dicentra (Dicentra eximia).—I have long known this graceful plant, but never saw it to such advantage as very recently in the Birmingham Botanic Garden, growing on a bank just a shade above the level of the eye. The effect was so much superior to what it usually is on the level ground, that I was quite surprised at it. The graceful bend and toss of both foliage and leaves were seen better thus than when below the eye. We have a good deal to learn as regards the position with reference to the eye best suited for many small plants.—W.

THE FRUIT GARDEN.

A NEW FRUIT—DIOSPYROS KAKI.

A NEW specimen of fruit tree, and one which will thrive in the open air, is a rare piece of good fortune for cultivators in the temperate and western regions of Europe. It is, however, true. The Kaki, the fruit so much esteemed in Japan, Cochín China, and China—in fact, throughout nearly the whole of Eastern Asia—is introduced. We have seen it flower and fructify; we have tasted it. The fruit resembles a large apricot, and has also something of its flavour, with a little difference, however. The plant exists in the nursery of the Paris Museum, where we have watched it in its vegetation and fructification for the last three years. It was introduced into France some years since by M. E. Simon, consul in China, whose name is well known as an importer of plants and of animals, principally to the Jardin d'Acclimatation of Paris. The first fructification of the Kaki in the Museum took place in 1869. An interesting but impassioned discussion, of which we should speak with as much impartiality, consideration, and deference for the two adversaries as possible, took place on this occasion between M. Decaisne and M. Carrière. When the tree sent to the Museum by M. Simon fructified in 1869, M. Carrière, head of the nurseries, believed it to be the *Diospyros Kaki*, and spoke of it under this name. The exactitude of this determination was contested by M. Decaisne, who argued that the specimen in the Museum, native of Mongolia and the north of China, was the *Diospyros Schi-tse*, described by Bunge in his "Enumeration of the Plants of the North of China," and not the *Diospyros Kaki*, a southern kind, which could not even ripen its fruit at Pekin, consequently with far less probability in Paris. Meantime the fruit of the *Diospyros* in the Museum had ripened; they presented a maliform profile, and M. Carrière, without ceasing to recognise in it a form of *Diospyros Kaki*, named the plant *Diospyros costata*.

Species or variety, it only remains for us to describe the plant we have seen in the Museum—*D. Kaki costata*, a shrub or small tree. The younger parts are of a greyish white, covered by a short and silky kind of tomentum, which almost completely disappears on the adult branches. The leaves are alternate, oval, suddenly rounded at the top, of from $6\frac{1}{2}$ inches to 10 inches long, and $2\frac{1}{2}$ inches to $5\frac{1}{2}$ inches wide, thick, of a dark green colour, smooth, and shining as if polished on the top, of a paler colour underneath. The flowers are single axillary ones, on a strong stalk of about half an inch long; they open towards the beginning of June. The fruit ripens in October or November, remaining on the tree until long after the leaves have fallen. It takes a fine red, almost orange colour, when it reaches maturity. It is covered with a transparent bloom, such as is seen on the grape. The fruit is pulpy, and reminds one of apricot marmalade, first of all very astringent, then sweet, of an agreeable flavour, not unlike the apricot, and which changes successively until it becomes in taste like a medlar. In its last state the pulp becomes of a reddish brown, and has but little taste. It has no seed—that is to say, we have found none in the different ones we have cut; in the interior are cells in the form of a star. The easy multiplication of the tree which has been obtained by layering or grafting on other *Diospyros* will soon cause the spread of this tree in gardens, where it will be of great value, on account of its fine port, its foliage, which resembles the *Magnolia Soulangiana*, and its beautiful and good fruit, which is of the size of an ordinary apple or a large apricot.—Ed. André, in "Illustration Horticole."

PEACH CULTURE ON THE ANTI-MUTILATION SYSTEM.

THE *beau-idéal* of a model-trained peach tree, according to the rules and regulations laid down by most writers with the utmost exactness, is a fan, perfectly exact in all its members; and in almost every standard work on fruit culture instructions are laid down to the very letter how to hew the living subject into shape—a kind of teaching which, we believe, has done more to lead the half-experienced astray in the culture of stone fruits than anything else. The extension system of training the peach consists in leaving the whole, or nearly the whole summer's growth of the tree, instead of cutting from one to two-thirds of it away at the winter pruning. Last summer, in walking through the peach houses in a large garden, and noticing some unusually vigorous young peach trees with shoots about four feet long as thick as one's finger, and which had been sedulously watched and pinched of all side shoots, we inquired what would be done with them in winter. "Cut each shoot back to about

eighteen inches, perhaps," was the reply; and this represents the general practice. In the extension system, on the other hand, a reciprocal action between the roots and branches is encouraged by allowing both to extend themselves freely, thus utilising the natural vigour of the tree, and getting trees and crops in about half the usual time.

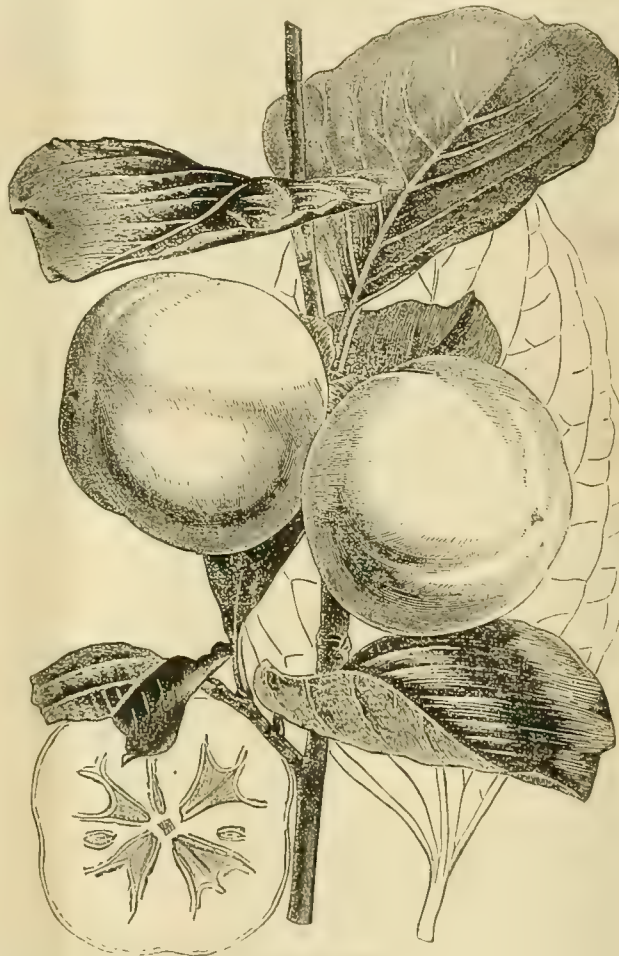
THE BORDER.

In a question chiefly relating to the branches and their training, some may wonder what we have got to say on this point, but we think it needful to say a few words. In the first place, as root pruning does not form such an important or indispensable part of the culture under the extension system, a wider border, say twenty feet should be allowed; and as the thorough maturation of the wood is a matter affecting the extension of all the branches, the texture of the soil is a consideration of some importance. We therefore recommend a border of the above width, $2\frac{1}{2}$ feet deep, with a dip from the wall, and a hard or firm soil. The peach will grow, and even thrive, in any ordinary garden soil that is not too stiff and retentive, nor, on the other hand, too light. If the soil is not naturally calcareous, well-broken-up lime scraps may be added, and it is always safe and advisable to add as much good, fresh, turfy loam as can be procured, if indeed the border cannot be formed altogether of such material. Whether the border be only partially or altogether renewed, the soil should not be moved about until it is in good working order—I mean in that condition in which it is quite safe to tread it with the feet

without any fear of its "baking." There is no doubt that the peach delights in a hard and firm soil, and makes the best-matured wood and bears the best fruit under such conditions. We therefore recommend the soil to be trodden pretty hard in making up the border, layer after layer. We have done this ourselves on every occasion, and speak from experience; but we were very careful to see that the soil was dry—just in that state in which gardeners prefer it for potting purposes. Had we to make a border when the soil was at all wet, we should probably not attempt to tread it at all; but when it is dry, soil is elastic, and there is then no danger in treading it firm. The bottom of the border should be beaten hardest, and the topmost layer need not be trodden at all.

PLANTING AND TRAINING.

October is the best time to plant, whether indoors or out. If the trees are procured from the nursery, an effort should be made to get them with from four to six perfectly ripened shoots upon them, of about equal length, and trained in the fan form. If the shoots are not ripe to the extremities, they may be shortened back as far



Diospyros Kaki.

as the wood is green, or if any of them are much longer than the others, they may be cut in for the sake of balance. With these exceptions, as much of the season's growth as possible should be left. In planting a peach case or wall, the old plan of planting a dwarf and a rider alternately cannot be mended. Twelve feet is a proper distance between the trees, and when the riders come away eventually, to make room for the dwarfs or permanent trees, each of the latter, allowing the wall to be eighteen or twenty feet high, will have an area of about 480 feet to itself, which is not too much for any peach tree; better have a high wall than a long and low one, necessitating the cutting off of the best growths of the tree every year. "Give the trees room" should be the motto of every peach-grower. Of course, in houses of limited extent, when it is desired to have a peach and a nectarine, or more than one variety of peach, the trees must be planted closer; but it is preferable to have a house with only two trees than double that number if they have not ample room to extend themselves. In planting, make a semi-circular hole against the wall, about nine inches deep at the outside, and rising towards the wall, where the bole of the tree will be, to a depth of six inches from the surface. Place the tree in an upright position against the wall, taking care that the stem does not touch or come within about two inches of the wall at the surface of the ground; spread the roots out regularly in the fan form, cover them over carefully with the soil, and the operation is complete. After planting, nail or tie the shoots in as follows:—Supposing the tree to have six shoots, bring the two side ones down until they are nearly, but not quite, horizontal, and tie them; then divide the central space equally amongst the four remaining shoots, and you will have a rudimentary fan, from three feet to four feet in diameter, as a basis of future operations. In spring each limb will break evenly along its whole length, and they should be disbudded gradually until two or three shoots only, not including the leader, are left on the *upper* side of each limb; one at the base, and one or two between this and the point. These shoots will fill the spaces between the original limbs, and they are to be encouraged to grow as much as they will, and as the radius of the tree increases the earliest laterals of these summer shoots are to be laid in in their turn, on the same principle; and no stopping must be resorted to, unless it is seen that any particular member is getting too decided a lead, when the top may be pinched. In this way the energies of the tree will be expended in a proper manner, and large well-furnished trees, such as cannot be secured by any other mode of training, will be the result at the end of the season. It will, of course, be found that the bearing wood increases in quantity towards the extremities of the branches; but, as the peach never refuses to break abundantly even on the two and three year old wood if the trees are exposed to a good light, it will be found an easy matter to originate as many shoots as desired at the base of the tree the following season, and this must be attended to in disbudding, so as always to keep any space or bare limb covered with bearing wood. Winter pruning consists in thinning out the wood where too thick, but which should not be necessary if the disbudding has been properly performed, and shortening in any shoot that has been allowed to get greatly in advance of its neighbours.

RESULTS OF PRACTICE.

Were we not in a position to support our advocacy of the extension system by experience and success, we should not feel justified in undertaking the task; but we can point to examples. One of several peach trees—all of unusual size for their age—in a peach house here, is sixteen feet high and seventeen feet across, and is bearing fruit over that area. It would have been twenty-six feet across by this time had it been allowed to grow, or rather had there been room for it to do so; but a peach and nectarine were wanted in each division, and so much room could not be afforded. This tree, and the others, were planted, small trees with four or five moderate shoots upon them, in the spring of 1866. We have Cherry trees about the same age, and trained in the same way, of the same size and larger, and which have always borne a famous crop of fruit, equally distributed over their whole surface, showing the fallacy of the idea that the extension system of training leaves the bottom of the tree scant of bearing wood.—J. S., in "*Field*."

THE BLACKBERRY.

THE blackberry bush—what a cad it is because it happens to be common in the vegetable world! If it were an exotic, growing here and there, and only growing at all when you nursed it, made much of it, manured it, and all the rest, then we should have it in our gardens, should write monographs about it, and call it after some tremendous botanical personage—nay, blackberry jam might be admitted to the awful society of Mayfair. And by-and-by it would be found out what education and good treatment would do for the

blackberry. The Swan's-egg plum was only a sloe once, and the Ribston Pippin no better than a crab apple. There would be blackberries, perhaps, bigger than the biggest mulberries, and they might even come to be worn upon ducal coronets in place of the strawberry leaf. But the poor plebeian blackberry is like the honesty and the patience and the simple courage that God has scattered so lavishly among what we call, and leave, "lower orders." It grows everywhere, in spite of contempt, neglect, and contumely; nobody ever gave it a lift, or sowed it, or propagated it; but when the hedge comes the blackberry vine shoots out its long stems, and sets to work to bear a banquet for the poor, who resemble itself. All over the Continent it flourishes; the hedges in Greece and Palestine are tangled with it; the plant twines about the ruins of Baalbec; it climbs the Indian hills; it went to America with the Pilgrim Fathers. To us it is in the botanical world what the sparrow is among the birds, and the house-fly among insects—our very humble friend, and so, of course, we snub it. It is condescension enough to mention it at all in a serious journal. What would be said if we desecrated upon the lovely purple flush of its modest blossoms, or the emerald of its swinging shoots in May, or the berries of scarlet and jet that come in the autumn, to make the birds fat and the boys and girls late for school?

We use the above as a preface to a recommendation to our readers to try some of the noble varieties of American blackberries in our gardens. They are as superior to our common kind as the apple to the crab. The best kinds are the following:—Lawton or New Rochelle, a very large juicy berry, of a capital flavour when fully ripe; Wilson's Early, said to be harder than the Lawton, a very large, oblong, oval, firm, sweet berry, ripening earlier than the other varieties; and Kittatinny, reported to be very hardy; fruit very large, sweet and firm, a good grower. We are not aware if these are in our fruit nurseries, but if not they ought to be. The improved varieties of American blackberries are grown in America to an extent of which we have no conception. The American blackberries are varieties of native species, and have nothing to do with our kinds.

NEGLECTED WALL TREES.

THERE is an old orchard of five acres, surrounded by a wall eight feet high, near where I live. The trees on this wall are each very like that represented in the accompanying woodcut. Nails and shreds have long ago proved useless for such rampant giants as these; their strong arms are held to the wall by great wooden pegs. The curious thing is that the owner thinks he is deriving some benefit from having his trees against walls thus, and is often busy pegging them in, and otherwise attending to them.

He, of course, might as well not have them against walls at all. Though my orcharding friend's is an extreme case, there are too many gardens where great long spurs so abound on the trees that the owners get but little benefit from having them against walls. Need it be pointed out that trees are placed against walls for the purpose of giving them the benefit of the heat resulting from radiation from the wall's surface, and that all walls on which the shoots are allowed to stray an inch more from the wall than may be necessary, are badly managed? W. T.



IMPROVED FOREIGN PINES.

OF recent years some very fine imported Pines may have been noticed in Covent Garden windows, looking as fine as many of our best home-grown fruits. Recently Africa and South America have added to our stores of this fruit, the Pines from Brazil being generally of large size, three to five pounds weight, well matured, and brought over in good condition, some which we have tasted being really excellent in every respect. The Azores has put in a claim to our custom, and certainly with a prospect of deserving it, inasmuch as the fruit is not only large and of excellent quality, but is conveyed in a fresh and perfect state. The first batch, which was brought into Liverpool, conveyed in the pots in which the plants had been grown, was so fine, that the lot, upwards of fifty, was sold wholesale to one purchaser, at thirty shillings each. Since then many batches have been imported, and good prices realized for the fruit.

Connected with these Azorean fruit we may give a little history.

Nearly twenty years ago, when Mr. Peter Wallace went out to take charge of the gardens of Signor Jose de Canto, Ponta del Gardo, St. Michael's, he took with him from Chatsworth a few dozen of small suckers of different kinds of Pines. These, under glass, with dung for bottom heat, thrived with great luxuriance, and in due time Mr. Wallace sent home an account of twelve of the Pines he had cut from the little suckers, the smallest Queen weighing 5 lb. 2 oz. the largest 8 lb. 4 oz., with Jamaicas and Montseratts of proportionate size, and Cayennes and Providences of twelve to fourteen pounds each. The other day we saw a smooth Havannah Pine from St. Michael's upwards of four pounds in weight, swelled perfectly flat and bright, and of that peculiar golden amber colour for which this Pine is remarkable when thoroughly matured. Four pounds is, however, a remarkable size for this variety of Pine, which here, in this country, is so small as not to be considered worth cultivation. It must be remarked that the Pines we have just spoken of were grown under the protection of glass, but Mr. Wallace stated that the glass was used more as a means of protection from the heavy storms to which the country is liable, than to secure additional warmth. Indeed, to use his own words, "the lights were pulled off in the morning, and on fine days were not returned until the evening, so that the Pines were in reality in the open air." He, however, attributed much of his success to the nice bottom heat and the ammonia-laden atmosphere with which he was enabled to surround his plants at night, and the moist, almost tropical atmosphere, and bright, uninterrupted light to which they were exposed throughout the day. One could not covet more suitable conditions, and therefore we need not be surprised at the splendid fruit which is now being sent over. Do what we may, we cannot command Pines of really first-class quality between October and May. We have not light enough to give flavour—and what is more insipid than a badly-grown Pine?—while our most perfectly matured summer Pines are not superior to these winter fruit from the little islands of the Azores. There are of course many other countries not more distant where the culture of fine Pines will prove easy; and as improved means of transit will no doubt help us, we may soon look for a regular supply of foreign pines in Covent Garden Market as fine in winter and early spring as the best summer products of our pineries.

Z.

Girdling Trees to Produce Fruitfulness.—I think it is not generally known that girdling apple trees will cause fruitfulness. In the spring of 1869, a young one in the orchard of a friend of mine was full of bloom and promised a rich harvest. A gentleman, who happened to be stopping with him at the time, told him that if he would have a crop of apples he must girdle his trees. The idea seemed preposterous, and the owner urged that to girdle them would kill the trees. But the gentleman insisted that that was the only way by which he could get a crop, and that he would pay for all the trees that were injured by the operation. But my friend being a cautious man, and not daring to venture far on untried ground, simply girdled a branch or two here and there, which he thought might be cut away in case the girdling proved fatal. But to his surprise the girdled limbs immediately commenced forming a new bark where the old one had been removed. The blossoms on those branches set fruit, and in the autumn bent under the weight of luscious apples, while those trees and branches not girdled scarcely produced enough fruit to pay for picking.—*American Paper.*

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Duration of Pears on the Quince.—Can you give me any information as to the time pears will live on the Quince stock? Some of mine, aged about ten years, seem inclined to perish.—*GIRLHOPE.*—There is, we believe, good evidence to show that pears will live nearly, or quite, half a century on the Quince stock; on suitable soils, of course.]

Summer Pruning of Fruit Trees.—I am, as advised by my fruit book, pinching my trees to three leaves; a very small portion of the young wood is left by this means. I send you a specimen. Am I pinching too short?—*AN AMATEUR.*—[Yes, much. No fruit-tree shoot should be pinched at less than five or six leaves from the base of the current year's wood.]

Heating Vine Borders.—I shall be much obliged if you or any of your readers can give me a little advice in this matter. I am advised to heat and ventilate my new border; but some of my neighbours get very good grapes without doing so.—*EDGE.*—It is a vexed question. Mr. Fowler and other good grape-growers hold it necessary to warm the borders artificially. Mr. Miller, of Combe Abbey, not only does not heat or ventilate, but does not cover his borders in the winter. We should say, if you are an amateur, and only growing grapes on a small scale, make as good a border as you can, but neither heat nor ventilate it.]

Orcharding.—The present fleckle spring confirms an opinion which I have for some time entertained as to the value of two comparatively little known varieties of apple—i.e., Lodgemore Nonpareil and Bess Pool—for planting in exposed situations. Not only are these excellent in the quality of their fruit, but they have a peculiarity which enables them to set their fruit under most unfavourable circumstances. They do not commence to germinate until nearly a month after other varieties planted in the same rows with them are fully in blossom. Their blossoms (May 16th) have not yet begun to open, and have in consequence escaped the blighting north-easters experienced lately. The Lodgemore Nonpareil is the highest flavoured dessert apple with which I am acquainted, and as handsome as it is good. Bess Pool, a larger fruit, something like a Ribston Pippin in appearance and flavour, but with more of the Russet on the skin, keeps till April, and has the same useful propensity to retain its buds under cover till winter is nearly past. Any person not familiar with these kinds, coming into an orchard in April, would imagine the trees of each kind to be dead, so backward are they.—*E. T., in Field.*

THE KITCHEN GARDEN.

THE CUCUMBER—ITS CULTIVATION AND USES.

(Continued from page 591.)

PLANTING THE CUCUMBER.

We have now, we think, said sufficient to enable everyone to prepare the material and make a hot bed, and, therefore, considering that task completed, and the turf placed under the centre of each sash to receive the soil, we will proceed with the work of planting. For this purpose it will be necessary to place in the centre of each light about a bushel of the selected compost, drawing it up into a cone about a foot wide at the top and the same distance from the glass. Then presuming it to have attained the required temperature, 75° to 85°, take your plants and, turning them out of the pots, plant them in the centre of each hill, drawing the soil up to within an inch or so of the cotyledons or seed leaves. If the plants are strong, which they will be if raised as directed in a subsequent page, the roots in the course of a week or so will be showing through the soil, and then it will be necessary to top or stop the plants. Some do this at the first leaf, but we prefer to stop at the third or fourth leaf, so that when the plants break there may be three or four branches to furnish the frame at once. If the variety is a moderate growing one, two plants may be planted to each sash, but if a strong-growing kind then one plant will be sufficient. The second stopping need not take place until each shoot has made six to eight leaves, and then when the next breaks, fruit is sure to be shown. Train the branches regularly, thinly pegging them down as you proceed, but take care to have no more branches than there is room for the leaves to develop themselves in a proper manner. When the plants show fruit, the branches in the early part of the season up to April may be stopped one leaf before the fruit, but later they may be pinched backed to the fruit.

While, however, the branches are progressing the root will progress also, and, therefore, it will be necessary to have a supply of warmed soil ready to apply to the roots of the plants. This may be heated outside, but a very good plan is to keep some soil around the sides of the frame or pit, so that it may be in a fit state at all times to place upon the roots; this may be done twice or thrice a week; indeed some fastidious cultivators make it a rule to examine the plants every morning, and if a root is showing through they place a little soil upon it. Hamilton, a most successful grower, squeezes the soil between the hands into little compact balls and places them upon the roots, and then fills up the interstices with fine soil. This may be a good plan, but certainly it is not a necessary one. The earthing of the roots will continue until such time as the frame is full of soil. Here, however, we may take occasion to remark that the Cucumber will flourish in a much smaller quantity of soil than most people consider necessary. We have had in mid-winter plants in as fine a condition as possible, ten to fifteen feet long and strong in proportion, and still all they had to grow in was contained in a pot fifteen inches in diameter, and about the same in depth. Therefore, in earthing the Cucumbers, it will not be necessary that the soil exceed a foot in depth at the centre of the frame, sloping off to six or nine inches at the sides. The watering of the plants will require to be regularly attended to, but the quantity necessary will depend upon the weather. If clear and bright, three times a week may not be too frequently to water at the root; but if dull, once a week may be sufficient. At any rate, take care to sprinkle the plants and bed early in the morning, and also again at the time of shutting up for the night—say two o'clock in the afternoon, until March, and then just before the sun leaves the frame. The water for this work must be clean and warm, not less than 80°, and the quantity used for sprinkling should be sufficient to damp, not to dash the plants and soil. Water at the root may be given in tolerable quantity—say sufficient once a week to wet the soil to its whole depth—and at other times, after a bright sunny day, sufficient to wet the soil two or three inches deep. The great point of success is water of the proper temperature and of good quality. Of course, rain water is the best, but if that cannot be obtained, then soften the spring water by adding an ounce of guano to each three-gallon can. As a rule,

ever, we do not recommend manure water for frame-grown Cucumbers. Generally they suffer more from the richness of the bed than from any necessity for manurial assistance; and, therefore, manure water, if used at all, will certainly not be required until such time as the plants begin to fail by heavy fruiting, then a soaking of weak guano water may be permissible, and not bad practice.

The temperature of the Cucumber frame or pit should not fall much below 65°, with air by night, and may rise to 75° or 80° by day; and even to a higher temperature when the frame is shut up, after sprinkling in the afternoon. This is the time when rapid growth takes place, a brisk and moist temperature with a gentle circulation of air being necessary to promote the best growth in this class of plants. A.

(To be continued.)

FORMATION OF GARDEN WALKS.

In the formation of the kitchen garden it is always desirable to have the outline as nearly square as possible, and if it is not square, make as much of it as you can into that form, and use the outer portion for miscellaneous perennial crops, such as asparagus, seakale, horseradish, strawberries, rhubarb, herbs, and fruit trees. Then if the garden is not of a very small size—an acre, or more—divide the square into four equal portions, not only because it will look better, but also as it affords the best means for systematic cultivation and cropping. These quarters should be intersected by gravel walks ranging in width from three feet, which should be the minimum, to six or seven feet, according to the size of the garden. Nothing looks so “pimping” and commonplace as narrow, uneven, or ill-formed walks. However well formed a garden may be in other respects, bad walks always spoil it.

In forming walks it is by no means necessary to go to the usual extravagance of making them a foot or more in depth. If rough material of any kind—gravel, brick rubbish, stone, clinkers, or even large cinders—can be procured, break it to the size of walnuts and then make it into lime concrete. The best way to do this is to first lay down upon a hard surface a three or four inch layer of the broken material, say three barrow loads; then, in the middle, put a barrowful of fresh lime and cover it with three more barrowfuls of stone. Proceed in this manner until the necessary quantity of material is provided, then pour sufficient water upon the first heap to slack the lime, and as soon as it begins to steam mix the lime, taking care to break the lumps, and stir together to the consistency of thick mortar. As fast as it is thus prepared lay it down to the thickness of three or four inches, making it quite firm and smooth as you proceed. Lay over this a coat of gravel half an inch thick, make it quite level, and leave it rough until it has had a good shower of rain, then roll, and you will have as good and cheap a walk as it is possible to form—and a walk, too, that cannot wash away, however heavy the storm may pelt. Before, however, the walk is formed it will be necessary that proper edgings should be provided. In point of appearance nothing can exceed box; but it is liable to be scorched, as thousands of yards frequently are upon sandy soils; it requires frequent relaying to keep it neat, and forms, moreover, a snug retreat for snails and other garden pests. We, therefore, prefer stone or earthenware tiles of some kind, and though they may be a little more expensive at the first, their permanency, if of good quality, renders them the cheapest in the end. These, of course, must be laid with perfect accuracy; that is, the ground must not only be perfectly solid and even from end to end and from side to side, but the tiles must be kept in perfect line in regard to height as well as to straightness. The tiles should be properly fixed prior to laying the walk, and then the concrete will keep them firm.

If the garden is level it may be necessary to form a drain or two at the lowest points, in order to take away the surface water speedily from the walks; but whether it will be necessary to connect these drains with the main drain will depend upon the nature of the subsoil. If the latter is porous or sandy, a cesspool to each grating, a foot or eighteen inches square and two or three feet deep, will be ample to take the water away, but if the ground is heavy, then it may be necessary

to connect the cesspool with the drains of the garden. In such an event take care that the cesspool catches the silt and soil, and that the water does not flow into the drain except by an overflow from the cesspool. If this provision be not made, the drains may soon be silted up, and rendered useless. There is yet another advantage of edging garden walks with some indestructible material, and that is, that for the purpose of destroying weeds, they may be salted or scalded, without either remedy doing any injury to the adjoining plants; indeed, in the course of a few months the walks may become so thoroughly impregnated with salt that no weeds can grow upon them—a great point gained. P.

RAILWAY EMBANKMENT CULTURE.

I HAVE often thought that the slopes of the railway embankments in this country, especially in some counties, might be turned to good account by cottagers residing near them. Found, as they often are, in some of our richest valleys, they would, without much trouble in regard to preparation of soil, afford a capital situation for the culture of choice fruits. The aspect of many of them is everything one could wish, combining at the same time shelter with plenty of sun, and they are so curved and otherwise screened as to enclose a temperature scarcely found in any other position out of doors. I believe, therefore, that there are some places in this county (Cornwall) where an apparatus might be erected for forcing fruits for the London markets, and prove a profitable investment. It would certainly be so as regards grapes. The cottager, with the help of the “ground vinery,” could, with very little trouble, grow grapes for local markets. With a little expense, in the shape of trellises, peaches, nectarines, plums, pears, and cherries could be grown in perfection. Figs, too, could scarcely be planted in a better situation out of doors than in some of these places. Perhaps, however, they should be planted, say six feet up the embankment, where they would probably fruit better than in richer soil. The embankment would serve the purpose of a wall, while the roots of the trees would flourish in the rich soil beneath. Peas and scarlet runners could also be trained up these banks. Cucumbers could be grown by the million in the summer months by making little beds of good compost. Here and there over the slope vegetable marrows might be grown in the same way, and would be productive. Herbs of all kinds would answer. What an aspect some of those slopes would give for growing tomatoes! Digging out pits sixteen inches square, and filling them with stable dung and loam well rotted together, would be all the preparation required. The plants would grow down those slopes, and a few pegs and a little pruning now and then, would be all the after trouble. In the growth of cucumbers, vegetable marrows, and tomatoes, a frame and a hot-bed would be required to raise the plants in spring; many cottagers, however, already possess these essentials, and also the amount of skill and care to use them. Besides rendering the appearance of the slopes more pleasant, and increasing the pecuniary advantages of the cottager, the encouragement given by local exhibitions all over the country would be met by finer displays of fruit, if not a greater variety, than is at present seen at those shows.—H. M., Enys, in “Gardeners’ Chronicle.”

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Summer Spinach.—Will any of your clever kitchen gardeners tell me how to secure a regular supply of good spinach during the heat of summer? I want a large and a constant supply, and have hitherto generally failed. My soil is a dark rich loam.—D. S.

Marquis of Lorne Cucumber.—This gained the first prize the other day at Reading. The specimens shown were particularly handsome, and though only eight days old, measured over two feet in length. They were grown by Mr. Higgs, gardener to Miss Crawshaw, Caversham Park. This variety was also much admired at the meeting of the Bavarian Horticultural Society, held at Munich, on the 22nd ult.

Watercress.—Can you inform me how I can grow watercress in a small garden?—H.—[For a small garden your best plan is to conduct a little stream of water through a small, level, puddled trench, so as to get an inch or two of gently flowing water over the roots of the cress. The watercress, like Uncle Sam’s gunboats, will crawl about anywhere where there is a little dew. We have grown it in slightly excavated beds, with stiff clay puddled at the bottom to retain the water in dry weather. It would grow well in any soil which could be kept well moistened, though by no means so well as when placed directly in the water.]

Moss and other Weeds on Walks.—If your correspondent, “T. N.” (p. 598), who asks what will destroy moss and weeds on walks in the best and cheapest way, will try the following, he will have his desire accomplished:—Mix in a large three-gallon watering can, containing twenty pints of water, one pound of oil of vitriol, stir it well, and water the middle of the walks, so that twelve yards may be covered by it. If the edging is approached at all, it should only be by what runs from the walks. The best way to use it economically is to water from the centre to the side, literally along the walk. In two or three days moss and grass will have disappeared.—R. B., Leamington.

THE GARDENS OF ENGLAND.

HIGHCLERE CASTLE—THE PARK AND GROUNDS.

THE RHODODENDRON SEASON.

THE Rhododendron has assumed a degree of prominent importance among our ornamental shrubs which its splendid and profuse bloom and its fine evergreen foliage fully justify. The introduction of new species, and the successful practice of hybridization, have imparted to this handsome shrub its present great attractiveness and horticultural interest. It is indeed difficult to believe that many of our most enthusiastic horticulturists—both amateurs and professional gardeners—recollect the time when the old Rhododendron ponticum, with its pale lilac blossoms and sombre foliage, was the only plant of the genus to be found in our gardens. Then came the introduction of the Indian tree Rhododendron, with its magnificent blossoms of deep sanguineous scarlet, to which our botanists gave the name of Rhododendron arboreum. What a priceless addition to our shrubberies would this glorious plant have been if its constitution had but proved sufficiently robust to bear our climate!

and most profusely bloomed plants are allowed to appear; still, the canvas covering of the fairy-like scene is not, after all, the blue spring sky; and notwithstanding all the ingenuity of art lavished upon the variations of level and on the undulating walks, and in the temporary turf carpeting, from which the flower-weighted shrubs seem to be naturally growing, a wish creeps over the mind, in the shape of a longing to witness such a scene in the open air, and such groups of glorious shrubs clothing natural hills and vales with just such an avalanche of floral beauty—but the vain wish is dismissed with a sigh, as an unsubstantial dream.

I have often so dismissed it as one of the beautiful impossibilities of the imagination, and yet, the other morning (May 25th), I found it realised—even more than realised—in the woods and valleys of Highclere. It is true that the present is not a fine Rhododendron season, nevertheless, the vast extent of the plantations, and the profusion of bloom, though inferior in lavishness, as I was informed, to that of previous years, was perhaps in its less overpowering prevalence of bright tones of purple, crimson, rose, cream, and violet, more favourable to really artistic effects in the horticultural landscape than denser masses of floral colour would have been, where no subduing and interblending green would have been visible, to sober down



Highclere.

Unfortunately it was not "hardy," and when admiring crowds went to see the fine specimens of it in Mr. Knight's conservatory, with trunks like those of young forest trees, the general admiration was sadly tempered with regret. Fortunately, the system of hybridization had successfully set in, and the joint offspring of the old hardy species and the glorious new introduction proved more or less able to bear our treacherous climate; while many new and brilliant shades of colour in the flowers also resulted from the new alliance. These crossings with the Rhododendron arboreum, and also with an American species, *R. catawbiense*, marked an entirely new phase in Rhododendron culture; and the subsequent exhibitions, by Messrs. Waterer, of the magnificent new varieties, in vast numbers, each plant rivalling its neighbour in brilliancy of colour and profuseness of bloom, will remain on the records of horticultural progress as one of its most brilliant epochs.

The Rhododendron shows in the gardens at South Kensington and Regent's Park have long been kinds of floral festivals each successive spring, not only among true flower lovers, but among the general public, who never fail to hail these displays of floral luxuriance, with their gorgeous colours of a thousand shades and gradations, as among the impatiently-expected treats of the early part of the London season. Yet, beautiful as are these annual displays, composed entirely of selected specimens, in which none but the finest grown

the over-gorgeous colouring of the flowers. At all events, the effect was ravishingly beautiful, without more profuse bloom, especially round the lake, in the waters of which the forms and colours of the Rhododendron woods were reflected as in a mirror. The roads through the four thousand acres of wood and park are, indeed, bordered in many parts with Rhododendrons for long distances, and in the congenial soil of the place they have attained a height of from twelve to fifteen feet; many of the more freely blooming varieties forming dense masses of crimson, violet, or white. Highclere is, in fact, one of the places where the new kinds were first thoroughly appreciated, and planted out in great abundance; several of the most favourite of the varieties having been raised there, as *R. altaclerense*, *Victoria*, and several others. The azaleas are this season flowering far more lavishly than the Rhododendrons, and their yellow, orange, and flame-hued tones, add wonderful richness and variety to the scale of colour of the true Rhododendron. The hardy azaleas have received much attention, and many beautiful varieties have been raised at Highclere. Their effect, when seen mingling with the cooler hues of the Rhododendrons on the islands in the lake, is truly enchanting.

Art has done much for this lovely park scenery, but it must be admitted that nature had done very much before art began its work; for the natural undulations are exceedingly beautiful, and on a grand

scale: the Beacon Hill, which rises to close the view beyond the castle, being, at its upper ridge, more than a thousand feet above the level of the sea.

The finer and more carefully tended of the Rhododendrons and azaleas are those which form the great clumps of shrubbery that are picturesquely massed about the far-stretching lawns; among which the intensely dark violet tone of the variety named after Sir Isaac Newton never fails to attract the eye, and the richness of the deep tones contrasts strikingly with the light pale pink of the Tree Peony, of which there are great clumps on the green sward, between the masses of Rhododendron.

Both on the lawn, and in the woods about the lake, there are scenes which, in the Rhododendron season, would have exercised an extraordinary fascination over the great painter, John Martin, whose intense love of colour could have found in them true models for those glimpses of the first Paradise, which are among the most successful of his imaginative pictures.

Not only do the rich masses of Rhododendrons and azaleas lead an artistic spectator to fancy they belong to some primeval paradise of flowers, but the noble cedars, of which magnificent trees there are so many at Highclere, complete the wonderful beauty of the scene so grandly, that the brush of the painter, in order to realise his favourite subject, would have need only to transfer to canvas precisely what he saw, without altering a single feature of the scene.

A visit to Highclere in the Rhododendron season is a delightful privilege not easily forgotten; the only drawback being, that while there are so many other things to be seen, the gorgeous attraction of the azaleas and Rhododendrons occupies too exclusively the whole of the visitor's attention. There are, for instance, finer specimens than I have seen elsewhere both of *Abies Douglasii* and *A. cephalonica*; the beautiful drooping growth of the one, and the healthy, robust habit of the other, being very remarkable; but I had not a spare moment to bestow on them. The orchard house, too, in which Mr. Ross, the energetic gardener, has been so successful with abundant crops of peaches and nectarines by the judicious use of a little heat at a critical moment, and many other things of interest have to be passed over with scarcely a glance of appreciation. Even the castle itself, one of the best designs of the late Sir C. Barry, and the noble Vandyck's and Sir Joshua's in the principal apartments, can claim but a passing glance at this season, although one would desire to give a whole day to the pictures alone. There is an ancient yew, too, the trunk of which is nearly thirty feet in circumference, and which must have been standing, in its prime, on the spot where its ruin is now a noble wreck, when Roman and Saxon and Dane successively battled for the possession of these fair Hampshire hills. The church, which stood by the ancient yew, and which appears in the right of our illustration (for which we are indebted to "The Life of Sir Charles Barry"), is now in process of demolition, another church having been erected at a greater distance from the castle.

H. N. H.

LEVENS HALL GARDEN.

LOVERS of scenery are often narrow-minded, and we have heard some sticklers for "nature" object to Chatsworth and its gardens as an offence against "the Derbyshire country." Still, every visitor to the Lakes who cares at all about the history of gardening ought to make a point of seeing Levens. The grey old mansion, with its tower and gables, its simple green terrace and long flight of steps up to the unornamented doorway, harmonizes perfectly with scenery—magnificent trees grouped about a wild mountain stream, and every here and there peeps of the background of fells—such as is seldom found except near the English lakes. Plenty of culture, plenty of richness; those limes and sycamores, those avenues of oak and beech, and those huge pines and very tall birch trees, speak of solid peace at bottom; while the brawling Kent and the bare scarp of Whitbarrow take us back to the Moss-trooping days when, if safely out of the way itself, Levens was often called on to help less fortunate neighbours. The house, with its mixture of comfort and strength, tells the same tale as the grounds: You are on the edge of the Border-land, where every cultivator had his "peel," and was often glad enough to use it. Inside, the most noticeable feature is the perfection of the "keeping up;" the rich oak panelling, the leather-work (on dining-room as well as bedroom walls), the tapestry, the plaster ceilings—all are trim and in order. How few old houses there are of which this can be said! Look at South Wraxhall; far the finest manor-house near Bath; there is a historic place; once much grander in every way than Levens, as fine as Haddon, which it much resembles, and (after having

been everything—even a boarding school!) it is empty, and fast falling to ruin. The wood-carving at Levens is very good; the principal fireplace, with its "five senses, four seasons, and four elements," and,—

"Samson supporting one side, as in rage;
The other, Hercules, in like equipage,"

probably suggested to Coleridge those lines in "Christabel" about,—

"The chamber carved so curiously,—
Carved with figures strange and sweet,
All made out of the carver's brain;"

just as his walk on Duddon sands taught him (he tell us) to say of the Ancient Mariner,—

"Thou art long, and lank, and brown,
As is the ribbed sea-sand."

But there is a similar Samson and Hercules fireplace at South Wraxhall (almost like the rest of the house) too far gone for preservation, while Levens is kept up, as such a place should be.

And the garden, with which we are chiefly concerned, looks as if it was still under the care of "M. Beaumont, Professor of the Topiary Art to James II.," who laid out Hampton Court gardens. It is even better than Elvaston, as a sample of what can be done with yew, and box, and holly. Here in the sheltered angle of the house are rows of pyramids with balls at top and bastionettes fashioned in their angles; peacocks, a poodle-dog wrought with Chinese fidelity, decanters, wine-glasses, foaming beer-jugs of yellow box, arbours impenetrable to sun or rain or peering eyes, tall mushrooms on slender stalks, a *judge's wig*, and other quaint devices. Use, too, is mingled with "ornament;" all round the frames and hotbeds is an embattled wall, just so high that you can't tell what it conceals, and relieved with embrasures, &c. Among these yew and box trees are flower beds of most intricate patterns with wonderfully neat box edgings. Behind, dividing the main garden, is an alley of beech, with arches every here and there, and a central circular space beech-walled all round, which, if it had a few statues and vases, would speak even more than it does of Versailles and Watteau. As it is, you look for the dent of high-heeled shoes in that soft, daisied turf, and for the rustling of hoops, and the glory of plum-coloured coats and laced waistcoats amid the tender green of the young beech leaves. It is all so exactly as it was, that, sitting in the rustic seat at the far end, you almost think you hear whisperings round the bowling-green, and a bough which has not yet put out leaf, does duty for a dress-sword projecting between the skirts of some periwigged beau.

It is not exactly the garden into which you would summon a romantically-minded young lady like Maud, though both the yew arbours and the high, thick green-walled beech alleys offer splendid flirting nooks; but it is as good a sample as we know of what is wrongly called the Old French style, but which, of course, comes direct from the Romans, Pliny for one giving elaborate instructions as to how the *topiarius* is to improve on nature.

Such a garden is worth reproducing here and there; it harmonises with a particular kind of house—better even with the Caroline style or the red brick of Anne, than with grey old Levens. Anyhow, it is worth seeing, especially when it has such an interesting house, and such a glorious park along with it.

And Levens is easy to get at; it is five short miles from Kendal, down the Kent, which a little below it broadens out into a sandy estuary. You may walk to it in less than two miles either from Milnthorpe or Oxenholme stations, and in much less, if you happen to strike the "bit of a back loan," to which any passer-by will direct you. Either walk is, like all the walks thereabouts, lovely; and whichever way you choose you must remember also to see Sizergh Castle, about a mile from Levens. This, the old place of the Stricklands, is a sad contrast to the other; it is scarcely kept up at all, yet historically and otherwise, it is far the most interesting of the two. In its gardens are plenty of yews in a strangely intermediate state between trimness and wildness; the *topiarius* has not been there for years. But the terraces and moat-garden are thoroughly English.

There are in the Lake country plenty of grand "places," besides the well-known Muncaster Castle; but Levens and Sizergh, though not at all grand "places," are both well worth

seeing, just because they are thoroughly characteristic. They can be seen, too, without interfering more than to the extent of, say three hours with the tourist's programme.

Levens garden is something which few have seen, just because there are very few perfect samples of it remaining. M. Beaumont may feel consoled by its present trimness, for the banishment of his portrait from among those of the Howards and their peers to an out-of-the-way passage on the way to the kitchen.

F.

THE INDOOR GARDEN.

MARECHAL NIEL AS A GREENHOUSE CLIMBER.

I WONDER why it is one so seldom sees this rose used as a greenhouse or conservatory climber. Nothing looks handsomer when in flower or yields a more delicious perfume. It should be grown in a cool house; at least I have found it do well in such a situation. I have two plants of it, which I intend to train over the roof of a small span-roofed house. They are young, last season being their first for flowering, but during the summer I cut a very large number of blooms off them. This year they began to flower in February, and I have been cutting blooms off them ever since. At present they are covered with buds, and will keep on blooming until very late in the season. They are not in pots; I have them turned out into the ground under the stage, where I have a nice border made of proper materials to suit them, and I water them now and then with weak liquid manure. The stages in this house are flat all round, so I have the stems of the roses brought up through the stage and trained on the wires strained along the roof at a sufficient distance from the glass to prevent the frost affecting them. They require in the growing season to be well syringed, and if green fly makes its appearance, syringe them with a little tobacco or quassia water. They do much better turned out in the border than in pots, and they are not so subject to green fly. For a small cool house there is no creeper that so well repays one for the little trouble it may take in growing it as a *Marechal Niel* rose; for what is more charming when in flower, or more useful for cutting for bouquets or button-holes?

A. H., Upper Norwood.

CULTURE OF CLERODENDRONS.

THE different species of this noble genus bloom at various seasons; some during summer, others late in autumn. They are principally natives of warm climates, but fortunately, though most of them require a high temperature during the season of their growth, they will bloom from May until October in a warm greenhouse. Many imagine, probably from seeing large specimens at exhibitions, that these plants require a great deal of room; but several of the finest species, as *C. fallax* and its finer variety *superbum*, *squamatum*, *splendens*, and even *paniculatum*, may be bloomed with considerable success, in even six and eight inch pots, and if they are not started too early, will continue to enliven the greenhouse from June to November, or even later, if they are kept in a growing temperature; and at the latter season, their flowers come in very acceptable for bouquets.

In addition to species that have been introduced, some very beautiful varieties have been raised in this country. *C. fallax superbum* was, I believe, raised by the late Mr. Wm. Barnes. It is remarkable for producing, in addition to a fine terminal or central panicle of bloom, a number of smaller side panicles, varying in number from ten to thirty, which, under good management, generally furnish flowers from the pot upwards, forming a compact and beautiful specimen. Those who are about commencing the cultivation of *Clerodendrons*, will do best to procure the following kinds:—*C. fallax superbum*, *speciosissimum*, *paniculatum*, and *Kempferi*; to which, if they can be procured, may be added *C. fragrans* and its double variety, with the white *fortunatum*, and most certainly the trailing species, *C. splendens*, of which there are two varieties, one with much darker flowers than the other, and more profuse in its habit of blooming. Nor must on any account the lovely *C. Balfourii* be omitted. It also belongs to the trailing section, and bears clusters of white and scarlet flowers in such profusion as to make it a universal favourite. Supposing these kinds to have been procured, and that they are nice dwarf plants in small pots, we will make provision to commence their growth; and for this purpose a pit or frame must be prepared, in precisely the same manner that it would be made up for cucumbers or melons. Over the bed, after the frame is put on, place cinder ashes two or three inches thick; and as soon as these are warm, all will be ready to commence operations. Those who cultivate by the more fashionable method of hot

water will do well to take a hint from the preceding; for, after all has been said, there is no atmosphere in which all soft-wooded stove plants, and many of the hard-wooded ones also, will grow so well as in that produced by the decomposition of fermenting materials; and hence, if hot water for bottom heat is used, it will be advisable to take advantage of some well-prepared dung, to improve your atmosphere a little. In the opinion of some first-rate practitioners, and after trying all the various plans recommended, the perfection of heating, for vigorous and expeditious plant-growing, is a good system of hot water, combined with a well-managed dung lining.

All being in readiness, provide a compost of the following materials:—Three parts well-prepared fibrous turfy loam, one part turfy peat, one rotten cow-dung, with a handful of charcoal, broken to the size of horse beans, and sufficient white sand to keep the mixture free and open. Then take some eight-inch pots, and drain them with charcoal; turn the plants out of their pots; and if the roots are at all matted, open them out a little with a fine-pointed stick, and pot them into the prepared pots, using the compost as rough as possible, and be careful not to consolidate the soil too much; give them a little warm water, place them in the pit or frame, and draw some of the ashes round the bottoms of the pots, to give a little additional bottom-heat; but take care that the bottom-heat does not become too strong. Keep the frame at a temperature of 70° during the day, with plenty of air, and endeavour to keep a little air on also during the night, so that the heat does not fall below 60°. The plants will require shading for a few days during bright sunshine, and indeed it will not be a bad plan to throw a thin shade over every day for a few hours, as the leaves, being large, are liable to burn under an unclouded sun. Cold draughts must also be guarded against, as they too are liable to injure the tender foliage. In the management of the pit or frame, shut up early in the afternoon, so as to command a good growing temperature of 80° or 90°, but give a little air at the time of leaving for the night, so that the thermometer may fall to 60° or 65° before the following morning. Follow this treatment daily, taking care to secure sufficient head room for the plants in the frame, and keep a sharp watch upon red spider, which is very partial to these plants.

In a fortnight or three weeks from the first potting, they will require a second shift, at which time eleven-inch or larger pots may be used, draining them with oyster shells and lumps of charcoal, and using the compost as rough as possible. Return them to the pit, pursuing the same treatment as before, until the pots are again well stocked with roots, after which time it will be advisable to stimulate them a little by some liquid manure. The best way to prepare this, is to take two pecks of sheep or deer's dung, one peck of soot, and one-fourth of a peck of guano; place these in a large tub and mix them into a paste with ten or twelve gallons of boiling water, then fill the tub up with sixty or seventy gallons of rain-water, and stir the water repeatedly for several days; at the end of that time take the scum off and throw in three or four lumps of lime, and you will have a fine clean manure as clear as old ale. In using this, dilute it with half its quantity of clean water, and use it of the same temperature as the place the plants are growing in. This water is used for watering twice or thrice a week in clear weather.

Suppose the plants to have been procured in March, if they have made proper progress, they will be fit to shift into their looming pots by the middle or end of April, and of course the size of the pot for this final shift must be governed by the kind and size of the plants and convenience of house-room. I generally bloom one specimen in thirteen, fifteen, or eighteen inch pots, but I have had nice compact plants in eleven-inch, and even smaller, pots. After the plants show bloom, care must be taken that they sustain no check, or the panicle of flowers may be deformed or much checked in its progress, but if they are kept regularly and vigorously growing, a panicle upwards of two and a half feet long may be insured from *C. paniculatum*, and with its large and wide-spreading foliage I know no finer object. Remove the plants into the greenhouse as soon as they are fairly in bloom, and they will continue to flower until the end of the season. After the blooms begin to fade the plants must be gradually dried off, so that they may remain dry during the winter. In the spring cut them down to two or three eyes, remove the old soil, reduce the roots, repot into fresh compost, and start them as in the preceding spring. *Clerodendrons* may be propagated by cuttings of the old and young wood, planted in very sandy soil, and plunged in a brisk bottom heat of dung. They may also be increased by means of seed, which some of the kinds produce freely; it may be sown either in the autumn as soon as gathered, or any time during the spring months. *C. splendens* may be increased either by cuttings or by budding, or by grafting on the roots of the stronger-growing kinds. This and *C. Balfourii* require to be trained to a fancy trellis, or they may be planted out and trained up the rafter of the plant

stove, where they will produce a profusion of flowers for many months. These should not be cut in so close as the shrubby kinds. As *Clerodendrons* are plants which delight in a moist atmosphere, care must be taken to syringe them as frequently as possible during the time they are in a growing state. P.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Echinopsis Duvalii.—This charming garden hybrid has flowered beautifully this season in Mr. Peacock's collection at Hammersmith, under the skilful care of Mr. Croucher. The flower tube measured ten inches in length and six inches in width at top, the colour being a delicate rose. The spines are black and short, and the plant altogether does not exceed two feet in height. It is easily cultivated, and is certainly one of the best of the section to which it belongs.

A Neat and Inconspicuous Label for Pots.—I saw in the houses of M. Demoulin, of Mons, a useful label for all who object to conspicuous ones. It consisted of a piece of glass tube, one-sixth of an inch in diameter; the name or number was written on paper, rolled up so as to let the name appear, and put inside the tube. The ends were then sealed by a spirit lamp, so as to render the tube perfectly air-tight, and thus situated the name will last for ever, if the tube is not broken. Of course, larger tubes may be used when required.—J. CROUCHER.

The Pumpkin Passion Flower (*Passiflora macrocarpa*).—I have a plant of this which fails to fruit; it is growing in a large pot in a warm house. I shall be glad if you will tell me how to manage it.—JANE K.—[The plant may be grown in a moist warm stove, with the same facility as the granadilla; but it should be planted in a bed of rich, light earth, rather than in pot or tub, so as to permit of the fruits attaining their full size. Probably, like the granadilla, it may require artificial fertilisation. Perhaps some of our readers, who have grown the plant, will kindly state their experiences as to its fruiting.]

Astilbe japonica.—This graceful hardy herbaceous plant, now everywhere becoming a favourite for forcing and for spring and early summer bloom in the conservatory, is usually imported for growing in pots. This is by no means necessary. By dividing old plants, and replanting them in April they will form good plants if planted on a fair sandy loam. They may be taken up and repotted in October, and forced or brought into bloom as circumstances may direct. This system is extensively pursued by Mr. Vertegans at Edgbaston, who finds the plants as good as imported ones.

THE GARDEN IN THE HOUSE.

CULTURE OF PLANTS IN ROOMS.

(Continued from p. 524.)

WHEN AND HOW TO WATER.

ONE of the first and most important rules in watering is this: When the plants are to be watered do it thoroughly, so that the soil may be fully penetrated. This will be known by the water running through into the saucer, which should be at least $1\frac{1}{2}$ inches broader than the bottom of the pot, to provide against an overflow into the room. As it often happens, when light soil is used, that from the dry air of the room some parts of the ball become so dry that the water will pass through into the saucer without wetting them, it is recommended that the water be allowed to stand for some hours in the saucer. This is the best method of securing the perfect penetration of the soil with water, and avoiding that dry condition of certain parts of the ball which proves the death of many plants. Whoever wishes to be careful of his plants will, after the lapse of from four to six hours, pour out the water which has flowed into the saucer. This is especially recommended to beginners, who, not knowing the proper time when to water, prefer giving too much rather than too little. But he, who from experience knows how not to water before the ball has become sufficiently dry to allow the air to percolate through it, need not pour out the water in the saucer, but will allow it to remain and be absorbed by the plant.

The assertion has often been made that the saucers which must be used in room culture are injurious, inasmuch as they produce a stagnant moisture. Others, on the contrary, advise not to water from above, but merely to fill the saucers. There is some truth on both sides. Where too much water is given, and the saucer is allowed to remain always full, it must be hurtful. But where water is given carefully the saucer is most useful, as we have just shown, in completing the moistening of the dry ball. This is the reason why beginners, who do not know the proper quantity of water to be given, find it advantageous to pour the water into the saucer, and allow it to be absorbed by the ball, the dry saucer indicating when water is again required by the plant.

The marks by which it may be known when the ball of a pot plant has become so dry as to require fresh watering, are

the colour of the soil, its feel to the touch, the weight of the pot, and the appearance of the foliage, &c., of the plant. Most kinds of soil when watered look much darker than when dry. There are some, however, whose nature it is to be dark when dry, and others to be light-coloured when wet. Of the former class are heath soil, leaf mould, &c. Of the latter, we may mention sandy soils, and those impregnated with oxide of iron. The various colours of the soils in a wet and a dry state must therefore be observed and borne in mind. The next way is that of feeling with the finger whether the soil is moist underneath; but this is a thing which requires considerable experience, the best way to acquire which is to have some dry earth at hand, by feeling which first, and then the ball of the plant, after some time the difference will be impressed on the sense of touch. An excellent plan is to compare the weight of the pot with another pot of the same size filled with soil which is known to be dry, or to strike the pot on the side with the knuckle; if dry, the sound will be very different from that of the same pot when wet. Lastly, the appearance of the plant affords a means of judging whether it is in want of water or not. When well supplied, its twigs and leaves present an aspect of fulness and stiffness; but, as the ball becomes dry and less able to supply the waste of evaporation, the foliage becomes relaxed and drooping, and if unrelieved, begins to dry and wither. In plants with soft tender leaves, when in full vegetation, this appearance is very striking; but, in those with thick leathery leaves it requires some experience to note the change. If the latter, on being bent together, present some resistance, it is a sign of dryness in the ball; but the extent must be learned by practice.

SOIL.

As regards the soil, the lighter and looser it is, the sooner does it become dry; and the stiffer it is, the longer it retains moisture. To this we may add that, the richer the soil is, the more cautiously should it be watered. It scarcely requires an explanation, that the looser the soil is, the more readily it parts with its moisture to the atmosphere. Loose soils are those which are largely mixed with sand or fully decayed vegetable matter. Light soils, as peat, leaf mould, &c., contain little mineral matter. Heavy soils are largely mixed with mineral substances, and without the admixture of sand are stiff. Rich soils are those composed of a mixture of animal excrement, or of decayed vegetable matter and stiff soil. In soil suitably rich, a plant makes a strong, stout growth, with thick rather than long branches, and with firm leaves, and exhales only a moderate amount of moisture. In poor, loose soils, the plants produce thinner branches and more tender leaves, which exhale a large quantity of moisture; and when grown in a room in dry air present a drooping appearance, even when the dryness of the ball is far from being as great as that of a plant growing in good rich soil. This is because the former were accustomed to take up a much greater quantity of water for sustenance, and so, in dry hot weather, exhibit signs of dryness before it has actually set in. As an illustration, we may state that we have seen gardens in which a loose, poor soil was used in the culture of all the New Holland plants, and where large specimens were grown in small pots. In hot, dry weather, these were watered morning and evening, and yet during the day the young shoots often hung faded; whereas if a strong mixture of loamy soil had been employed, a single daily watering would have been sufficient in the hottest weather to prevent any such signs of dryness. Whoever has made a long journey on foot in hot weather, will have made similar observations with regard to himself, to those we are now making on plants. The more one drinks at such a time, the more he perspires and the greater grows his thirst.

The pots and their sizes also exercise a very great influence on the dryness of the soil, and their construction must be especially attended to in room culture, where an ornamental shape is considered a requisite. The qualities of a proper flower-pot are,—a means of thorough drainage, porosity of the sides in the greatest degree that such solid material will allow, and, lastly, such a shape as will permit the ball to be taken out without injury.—*Dr. Regel.*

(To be continued.)

GARDEN DESIGN.

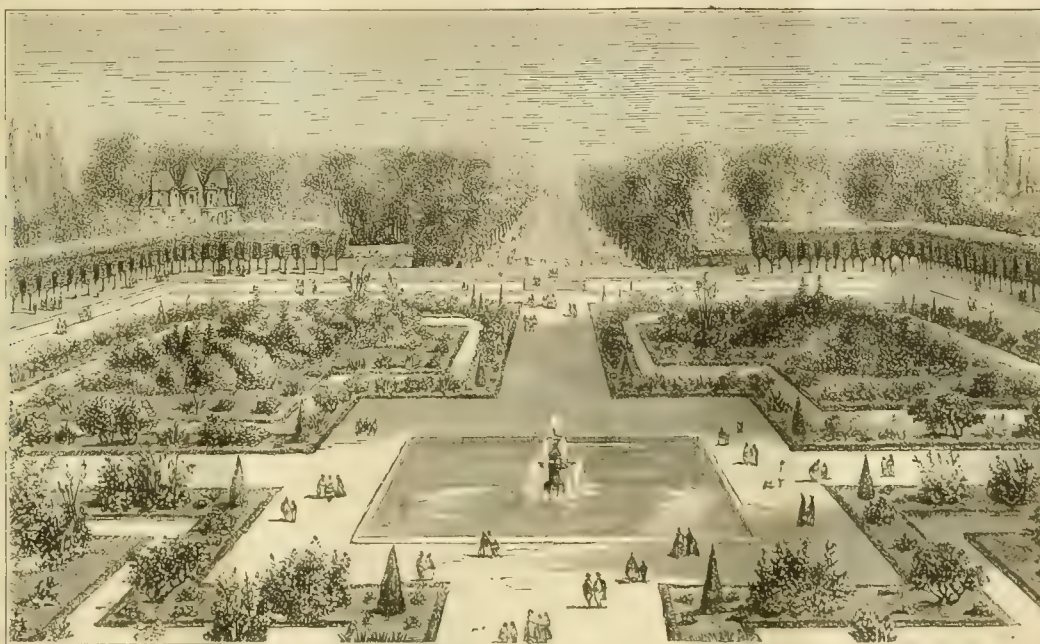
GEOMETRICAL FLOWER GARDENS.

FONTAINEBLEAU.

WHENEVER the geometric principle is resorted to in the planning of flower gardens, the design should be a work of art, in the true sense of the term. The leading lines should be so boldly conceived as to render the intention of the designer strikingly intelligible at the first glance. It is quite as difficult a matter to devise a geometric garden really worthy of the name, as it is to imagine and carry out, with *unseen* art, the irregular curves of a garden landscape. In a geometric garden, the plan should be so self-evident as to enable the eye to grasp the intended effects very quickly, while a certain amount of intricacy is at the same time necessarily required as an evidence of care and of skill in the creation of the device. This intricacy must not be obtained by means of obscurity of plan, nor by means of infinitesimal divisions of parts, nor by endless varyings of unmeaning forms. The spotty, patchwork effect produced by

to be unworthy of notice, unless for the purpose of critical condemnation. At the same time, I have had the good fortune to meet with one or two brilliant exceptions, which do the highest credit to the architectural designers.

Among the most successful of the celebrated geometric gardens designed by the great French masters of the art, the flower garden attached to the Palace of Fontainebleau is one of the most successful. It will be seen by our illustration that the character and intention of the device are, as they ought to be, plainly obvious, and the forms made use of can be appreciated at the first glance. A square basin, in the centre of which are seen the moving waters of a handsome fountain, forms the keynote of the design, and it should be carefully noted that the square form, as a centre, gives much nerve and crispness to the entire composition, necessitating as it does the well defined forms of the beds which surround it. The simplicity of these divisions is enriched by the reduplication of the lines, by means of an enclosing border, which is separated from the bed it surrounds by a narrow walk. The quadruple repetition of this device produces a remarkably fine and pleasing effect, and the outlying borders which flank it, to the right and left, serve to bind it together and give completeness and cohesion



Geometrical Flower Gardens at Fontainebleau.

the last-named kind of helpless struggle to produce an elaborate design for a geometric garden being, of all the unfortunate mistakes usually committed, the most vulgar and the most objectionable.

It is not sufficiently taken into consideration that the designing of a fine geometric garden is a work requiring much thought and much artistic knowledge. Is is, in fact, as difficult as the designing of the façade of an important mansion or palace; and it is well known that the best examples are undoubtedly those produced by great French and Italian artists, who were at once architects, sculptors, and the designers of the framework of garden scenery by which their architectural elevations were to be surrounded. The art education required for the successful performance of the work in question is now almost entirely ignored; any person, even when entirely untutored in art, being deemed fully competent to undertake the planning of a so-called geometric flower garden. Even among our architects, few would be found able to furnish a decent design, so entirely has that branch of the architectural profession been neglected at the present day. I have myself recently seen two specimens of geometric gardens devised by architects, which are so utterly ridiculous and childish as

to the general composition, which combines simplicity with intricacy in an extremely felicitous manner.

Even the cropped limes, seen from a central point in this geometrical garden, are not unpleasing in aspect, though a shrubby enclosure in which the action of the shears had been confined to much less conspicuous operations would certainly, according to the highest canons of modern horticultural criticism, have been much more acceptable. On the whole, however, and taking for granted that a geometrically-planned garden may, in certain circumstances, be an admissible, and even a desirable, feature in immediate proximity to a country mansion, it must be admitted that the Fontainebleau design is a very successful one. There is, also, an extraneous feature in close connection with it, which greatly adds to its pleasing effect, by allowing the eye to escape from the rigorous geometrical forms along the far-stretching vista of an avenue of limes or elms. Deprived of that outlet, the effect would be something like that of a painted landscape filling up the whole canvas, without a peep of sky, and without the streak of indefinite blue distance, which, while it is always charming in itself, imparts additional attraction to the strongly-defined features of the foreground.

H. N. H.

THE ARBORETUM.

THE PLANES.

BY GEORGE GORDON, A.L.S.

V.—THE WEDGE-LEAVED PLANE (*PLATANUS CUNEATA*—WILLDENOW).

This forms a stunted low tree or bush, with a short stem and tortuose branches, somewhat ascending. It is seldom seen above twelve or fifteen feet in height, and often retains its leaves half the winter. It is a native of the Levant, and was first introduced in 1739.

The leaves are palmately wedge-shaped and smaller than those of any of the Planes, being seldom more than four inches and a half in length and three and a half inches broad. They, however, vary very much, both in size and shape, according to circumstances. Those on young and vigorous plants are deeply divided into five open lobes, the principal ones of which, are more or less wavy, and sometimes furnished with a pair of small lateral blunt lobelets, and a few frequently hardly evident serratures, terminated by hard points, while on old



Leaf of the Wedge-leaved Plane.—Natural size, $4\frac{1}{2}$ inches long, including footstalk, and $3\frac{1}{2}$ inches broad.

or stunted plants the leaves are very much smaller and frequently but three lobed, with the lobes more or less angular, not much divided, and furnished on the edges with a few small teeth. All the leaves, however, of this Plane taper very much to the base, and in some cases, so much so, as to leave but a very short footstalk. Like those of other Planes they are quite glabrous in the adult state, but densely coated all over with a woolly substance when quite young. It has not yet produced balls or seed-heads in England, nor have they been described by any botanist.

This Plane is sometimes called *Platanus undulata*, and is considered by most writers, as only a stunted variety of *P. orientalis*. Be that as it may, however, it is a very distinct kind.

OAK OF LEBANON (*QUERCUS LIBANI*).

In the accompanying figure we have given an illustration of the fruit and leaf of the species which M. Carrière considers to be the "type" of the Lebanon Oaks, and which he thus describes in the *Revue Horticole*:—

"A vigorous tapering tree of handsome appearance, with spreading and distantly-set branches; the bark of the smaller branches of a

brownish grey colour, and covered with a slight pubescence. Leaves deciduous, comparatively distant, leathery, of a lively glistening green on the upper surface, from three to nearly five inches long (including the stalk, which is yellowish and about half an inch long) from one inch to nearly one and a half inches broad, the limb being a little larger on one side at the base, which is concave, and then rounded; the margin of the leaf is dentate with distant, stiff spine-like teeth. The male flowers are disposed in very small, few, and slender catkins, and appear in April, when the fruits (now in their second year) are about the size of green peas. The female flowers (which bear the acorns) make their appearance in summer, a long time after the male flowers have disappeared, and are solitary, or more frequently in pairs, on thick and woody stalks about quarter of an inch long. The cup covers about one-half of the acorn, and is surrounded by numerous fringed and imbricated scales, the upper ones being smaller and closer together, and forming a well marked prominence round the top of the cup. The acorns are from one and a quarter inches to one and a half inches long, and somewhat less in diameter, broadly truncate at the base, and abruptly rounded at the apex, where there is a very short blunt point. The hilum is broad and bears some very small point-like prominences.

"In the climate of Paris the fruit ripens from the 1st to the 15th of October, and is of a dark, nearly black, chestnut colour. As this



Oak of Lebanon Acorns.

species varies as much when raised from seed as almost all our European species, it will be necessary in order to have it true to name, to graft it upon stocks of the common kinds. It thrives well in warm and light calcareous clays."

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Old Yew Tree.—About fourteen years ago I saw in Gresford Churchyard, near Wrexham, a remarkably fine Yew tree, the dimensions of which I took, but I have since lost them; perhaps some reader of THE GARDEN in that neighbourhood will furnish us with its present size, which I do not think will quite equal the one mentioned by Mr. Berry at page 436, but which is nevertheless well worth recording; I, who have been an observer of trees all my life, have never seen a yew tree in all respects so fine.—J. E.

Cedar of Lebanon Killed by Frost.—A remarkable occurrence took place during the severe frosts of the month of September last. A large Cedar of Lebanon, of more than two yards in circumference, on the property of M. Doisan, at Villepinte, Canton de Gonesse, in the department of the Seine et Oise, was completely killed by frost. At how many degrees below zero the thermometer stood to produce such an effect has not been stated. That which is certainly past all doubt is, that the cold must have been excessive—greater perhaps than in the different places where so many thousand evergreens have been destroyed about Paris.—*Revue Horticole*.

Salix babylonica Salamonii.—This is a tree of extraordinary vigour, acquiring large dimensions, which renders it advantageous for burning, particularly in bakehouses. It can also be recommended for its ornamental character. It is well adapted for an avenue; and possesses the advantage of thriving in nearly any kind of soil, and accommodates itself perfectly to calcareous and dry soils. As an isolated tree it recommends itself particularly for the beauty of its bearing, its abundant branches, and the thickness of its foliage. Another quality of which we must speak is the length of time this willow retains its leaves, which greatly increases its ornamental merit; whereas the greater number of trees which have frail leaves, are stripped in September or October, those of the *S. b. Salamonii* only fall after the frosts commence.—E. Carrière, in "*Revue Horticole*."

GARDENING FOR JUNE.

THE INDOOR GARDEN.

BY T. BAINES, SOUTHGATE.

Conservatory.—Where conservatories are attached to the mansion, the destruction of aphides and other insects is always a difficulty; fumigation is always objectionable, inasmuch as it not only leaves for days an unpleasant smell in the conservatories, but also communicates it to the adjoining apartments. A good deal, however, may be done to obviate the necessity for using tobacco smoke; closely examine, for example, all plants before introducing them, and never by any means admit any infected plant until it has been subjected to a thorough cleansing. Nevertheless, this in itself will not suffice, as clean plants are just as liable to become infected in conservatories as elsewhere. The best remedy, therefore, for such matters is the old, somewhat neglected application of tobacco water. It is well always to keep a few gallons of this ready for use, and as soon as a plant is discovered affected, to at once remove it, and give it a thorough washing before it communicates the evil to all around it; by this means it is possible to reduce the necessity for fumigation to a minimum, and thereby avoid its disagreeable consequence. Plants permanently put out in borders, or others in pots for permanent decoration, frequently become exhausted; in such a case when not convenient to repot or change the soil, liquid manure is generally given, and is often applied; this is as objectionable on account of the bad odours it gives off, as the means usually employed in the destruction of insects. This, in a great measure, may be neutralized by a liberal admixture of powdered charcoal and soot with the liquid for a week before it is used, keeping it well stirred up for a few days, and then allowing it to settle, so as to employ it in a clarified state. Keep a good look-out for red spider on roof-climbers, a favourite resort for it, and one where it gives a great deal of trouble, by infecting every plant placed under it on which that pest will live. A thorough washing with the garden engine early in the morning once or twice a week as a preventive, will be found good practice. During this and the next two months there is generally a paucity of flowering plants. The most should therefore be made of such as are available, by paying them all possible attention, never allowing them to suffer from want of water. In very hot weather every plant should be looked over twice a day. *Lilium auratum* and *L. eximium* should be largely grown for decoration at this season. The former is objectionable in large quantities at a time on account of its overpowerful smell; but in moderate numbers it is indispensable, and by a little foresight in selecting such as show a tendency to late flowering, and placing them in a position to favour this habit, their blooming season may be much prolonged. This Lily will be found to associate well with foliage plants, that may with advantage now be introduced into conservatories, such as *Theophrasta imperialis*, *Rhopalas*, *Dracenas*, and ferns that have matured their early growth. If a portion of the earliest flowered *Fuchsias* were, towards the end of the month, turned out of doors for a fortnight, kept a little short of water, so as to harden them, and then cut back and repotted into pots two or three inches larger than those they have occupied, and removed to a house or pit where they can be liberally treated, they will amply repay for the labour, as they will break out afresh, and bloom freely until autumn. Plants of *Bougainvillea glabra*, growing in the stove, may now be removed to the conservatory, where they will form striking objects for six or eight weeks, if placed where they will not be suddenly checked by draughts, in which case they are liable to throw off their blooms. By the middle of the month, plants of *Ixora coccinea* may be placed in the warmest and most sheltered end of the conservatory, where they will stand good for six weeks without injury, provided they are kept as dry at the root as is safe without endangering the health of the foliage. When it is necessary to give water, let it be applied in a tepid state.

Stove.—Look well to forwarding all plants that will be required for autumn and winter flowering. *Euphorbias*, *Poinsettias*, *Aphelandras*, *Justicias*, and *Gesneras*, should never be allowed to suffer for want of potting on; the best practice with all such things is to get them on to the size they are required as early in the season as can be done, so that they may have the benefit of being well matured before the days get short. Plants that are so managed and get in such condition as to stand a comparatively cool airy house during August and September, will flower much more satisfactorily than such as are kept growing on late in the season. Whatever shade is required during this month—and some things will require it, if the weather becomes seasonably bright—should always be drawn down sufficiently early in the day to prevent scorching. Span-roofed stoves that stand north and south require shading on the sunny side much earlier than those that are built

the opposite way; but on no account allow plants to remain shaded later in the day than is absolutely required. All insect pests that affect stove plants will now thrive apace; and unless continually sought for and destroyed, they soon multiply to such an extent as to destroy that healthy, vigorous appearance which constitutes the principal charm of a well-managed plant stove. *Dipladenias* will now be fast coming into flower and should be well attended to in order to encourage them to keep on through the season; this cannot be done unless they are liberally supplied with manure water. *Stephanotis floribunda* is a universal favourite, and is indispensable at this season for cut flowers. Plants grown in pots, if run up to the roof of the stove, ought to be trained in such a manner that they can be wound round a trellis, and the plants removed to a cooler temperature where their flowers will keep fresh much longer than if allowed to remain in the stove. *Gardenias* that have done flowering, if as large as required, should be cut back and placed in a growing temperature; when they have pushed fresh growth, they should have a portion of their old soil removed, and be repotted in the same sized pots as those they came out of, using good peat with plenty of sand in it; as they are fond of water, it is essential that the soil should be of such a character as to let the water pass freely through it.

Fern House.—Any scarce varieties which it may be desirable to increase from spores, should have their fertile fronds closely watched to see that they do not get too old, before the spores are placed under conditions favourable to their germination. The pots that are to receive them may be filled with two-thirds drainage, over which use two or three inches of fine sifted peat, liberally mixed with bits of charcoal, broken sandstone and silver sand; give the whole a good soaking with water so as to solidify the surface; otherwise the spores will be washed too deep to germinate. Sow them thickly on the surface of the soil, do not cover with anything, but give a gentle watering with a fine rose, and never allow the soil to become dry. Plants suspended in baskets, or those like *Platyterium grande* that may be on blocks, ought to be well attended with water, or they never do well. Attend to such plants as are grown specially for cutting during the winter months, particularly *Adiantum cuneatum*. These are best grown in six-inch pots, and not kept too warm; when they have made as much growth as is required, let them be removed to a cool house, where they will not be excited to make late growth, but be gradually hardened off. With such treatment they will stand much longer than if kept growing on in a close temperature.

Orchids.—*Cattleyas*, *Dendrobiums*, or any plants that were not potted when the general stock was gone through, on account of their being advanced in bloom, should be potted as soon as they have flowered, before they begin to make active growth, otherwise if their roots are in full activity they will suffer. If the winter flowering *Calanthes* are growing fast give them sufficient room. To keep their leaves short and robust, give them also plenty of light, but keep them from the direct action of the sun's rays, otherwise they will suffer. These plants do better in an ordinary stove, or in a muscat house, where a fair amount of fire heat is used, and more air given than in the confined atmosphere of the orchid houses. The East Indian plants now will require their maximum amount of heat and moisture, viz., from 65° to 70° night temperature, with from 75° to 85° during the day-time with sun heat, giving sufficient air to dry up the house moderately; closing early with a moist atmosphere, and never allowing the blinds down for an hour longer than is absolutely necessary. *Odontoglossums*, and similar plants, should if possible, be accommodated with a house that can be kept comparatively cool, with a thoroughly moist atmosphere, and plenty of water at the roots; never on any account subject them to drying currents of air.

Hard-wooded Plants.—Those in active growth will now require close attention in regard to water, even such as are most impatient of any excess will now require more than at any other season. In very bright weather keep plenty of water thrown about the house and under the stages, to counteract in some measure the drying effect of the sun. Place such sun-loving plants as *Aphelaxis*, *Phenocomas*, and *Epacris* at one end of the house, these, unless after fresh potting, will be benefited by full exposure to the shining sun. Such plants as *Boronias*, *Acrophyllums*, *Hedromas*, *Dracophyllums*, and *Roellas*, will be benefited in very bright weather by being placed where they could be slightly shaded for two or three hours during the hottest part of the day. Remove all flowers and seed-pods as soon as they become unsightly. Young plants attend closely to, and examine them towards the end of the month, to see if any are likely to require more root-room before autumn. Any that are likely to require it should be repotted towards the end of the month, unless the weather happens to be very hot and dry, in which case it will be better to wait a short time for duller weather. Heaths encourage to make all necessary growth, so that

they can be got out of doors to ripen their wood well before too late in the autumn. In this respect they will be much assisted by plenty of water around their pots, under the stages, floors, &c., but they must not on account be subject to anything approaching a close atmosphere. Stop the shoots of such as are too vigorous.

THE FLOWER GARDEN FOR JUNE.

BY GEORGE WESTLAND, WITLEY COURT.

THE unusual inclemency of the weather during May and a low ground temperature have considerably retarded the operation of bedding-out half-hardy plants; and we would particularly impress upon cultivators of sub-tropical plants the necessity of having them well hardened-off prior to planting out, for upon this they must in a great measure depend for immediate effect, as any sudden check at this stage often mars their appearance for the season. As a rule, therefore, we would defer planting out until the second or third week in June, or, at all events, until such time as the ground shall have become sufficiently warmed to promote active growth.

As regards the disposition of plants in the flower garden, the selection of kinds suitable for particular positions as respects associations and surroundings, is of paramount importance. Much as we may cherish sub-tropical plants and others of picturesque aspect, these are not admissible in geometrical and other formal designs, where perfect proportions and symmetry must be strictly adhered to.

The larger foliaged plants are better disposed in isolated beds, upon grass, or as single specimens, where they give a fresh charm and relief to the more formal system of beds. With the exception of Cannas, few of them are adapted to dense grouping. Indeed, they are far more effective when so disposed that each plant clearly exhibits its proportions, and an appropriate groundwork of low plants lightens up and sets off their graceful outlines to advantage.

In preparing beds for such plants as *Alternantheras*, *Coleuses*, *Iresines*, &c., it is important that the soil is free; and, where fresh peat is an object, we have found nothing to answer better than the refuse from under the potting-bench, passed through an inch mesh riddle, adding leaf soil or rotten dung as required, to insure richness. In planting *Alternantheras*, more particularly *amœna*, which is somewhat delicate, but by far the highest coloured, it is necessary to plant sufficiently thick, to give immediate effect.

Watering will soon become an important operation; but be it remembered that if the plants are properly secured in the ground, the surface frequently stirred and pulverised, and afterwards mulched, they are seldom benefited by watering during their present stage of growth, especially as the ground temperature is so low and the nights so cold. Water, therefore, only when absolutely necessary. And so long as the nights are cold, this operation should be done early in the afternoon. Recently-planted trees and shrubs must be well attended to; if they require watering it should be done thoroughly; and after the surface has become partially dried, remove an inch or two of the soil over the roots; apply a mulching, and cover this with the soil, so as to give to the whole a neat appearance, and save watering and labour hereafter. Unremitting attention should now be paid to the training of climbers, so as to prevent their becoming entangled, and to the staking of everything that may require support. Proceed, too, with the pegging down of all plants that may require that attention as they advance in growth, and make good any failures that may occur. Make successional sowings of some of the choicest hardy annuals for autumn flowering, and thin out such as may require it; bearing in mind that annuals when properly thinned out and cared for are far more effective than if left to flower without being regulated. Brompton and intermediate stocks should now be sown, as should also seeds of the variegated Winter Cress (*Barbarea vulgaris variegata*), upon a shaded border. It is one of the most striking plants for spring bedding which we possess. Take advantage of showery weather to plant out annuals. Top-dress Carnation and Pink beds with rotten dung, to which has been added a dash of fresh loam. Hoe and otherwise keep in check weeds upon walks and borders. Clip grass edgings, and everywhere maintain a neat, cheerful appearance.

Pits and Frames.—These will now be at liberty, as the majority of plants reared in them will have been turned out. They may, therefore, be useful for such things as Capsicums, Cucumbers, Tomatoes, &c., and for the rearing of young greenhouse stock, as well as for the propagation of choice biennials and perennials. Cineraria seed sow for late flowering, and plant out old stools cut over upon a shaded border in rich soil to induce offsets. Primulas, such as were sown and pricked off early, may now be potted off into small pots, and placed in a shaded situation near the glass. Propagate show Pelargoniums by cuttings; and continue to pot off and stake tender annuals to be grown in pots.

THE FRUIT GARDEN FOR JUNE.

BY WILLIAM TILLERY, WELBECK.

Outdoor Fruits.—This has been a most disastrous season as far as tender vegetables and fruits are concerned, for in this district on the mornings of the 19th and 20th ultimo, the thermometer registered 4° and 6° of frost respectively. This has given the finishing touch to the young fruit of Gooseberries, Currants, and Raspberries, for all on the tops of the bushes, and unprotected by the foliage, are destroyed. All the earliest flowers of Strawberries are likewise quite black in the centre, and of course the germ of the fruit is injured. So much for mild, wet winters, and cold, frosty springs; and it will generally be found that weather in season is always best for our hardy fruits and vegetables. During these last few days there has been a rise in the barometer, and a higher temperature, and the chances are that we may have a dry warm June to put vegetation in a somewhat better position. Where Pears and Apples have set too thickly, thinning the fruit will well repay for the operation, as the specimens will be individually finer, and the trees will have a better chance of bearing well year after year. The stopping, thinning, and regulating the young shoots of all kinds of fruit trees on walls, will now want attention. The foresight shoots on Plums, Peaches, Apricots, and Cherries, should be shortened back, and the other shoots nailed or tied in as they advance in growth; great attention will now be required in keeping down insects, for if grubs and aphides are not taken in time they will do much injury this month to the foliage. To add to the misfortunes inflicted by frost on Gooseberry bushes, I see that the caterpillar has commenced its ravages on the foliage, but I find that a dusting of powdered white hellebore on the shoots infected, generally clears them. Thinning out the strong shoots from the interior of Gooseberry and Currant bushes should now be done. The black aphid often infests cherry shoots, especially the Morello, and the best way to keep it in check is to pinch the ends of the shoots off, and then syringe the trees with tobacco water. All kinds of fruit trees on walls, after the shoots have been thinned and regulated, will be much benefited by a good syringing from the garden engine, to cleanse them from insects and abortive fruits. Suckers and spray from the roots and base of Nut and Filbert bushes will now want removing. There was a great paucity of catkins on Filbert bushes this year, and I am afraid that the crop will be scanty in general. On some rows of young bushes I placed branches of wild Nuts from the woods, with catkins on them, which have fertilized the Filberts, and I expect a fair crop, if grubs keep off.

Vineries.—Houses containing ripe fruit will now want keeping dry, with abundance of air in fine weather. Continue to thin the berries at timely periods, to keep laterals stopped, and to avoid over-cropping. In the very latest houses, the Grapes intended for bottling when they are ripe, should be well thinned, so as to get fine, large, well-swelled berries; and as Lady Downe's Seedling generally forms a shoulder as large as the main bunch, it ought to be clipped off, as the bunch will keep longer and plumper without it. Young Vines planted in spring will now want every encouragement; water them with liquid manure in dry warm weather, and stop them once or twice on their journey to the top of the rafters, so as to get strong and well-ripened wood and fine foliage. Young Vines growing in pots, and intended for fruiting early next year, should likewise be stopped once or twice, and, if possible, the wood should be well-ripened off by the end of July, when they may be placed out of doors to mature the wood till pruning time.

Peach House.—When the fruit begins to ripen, a drier atmosphere must be maintained, with plenty of air; and if some is left on at night, the flavour of the fruit will be much improved, as well as its colour. Attention to stopping and tying down the shoots in succession houses, and syringing once or twice a day to keep the foliage healthy and clear from insects, will now be the routine for June. In thinning the fruit of Peaches and Nectarines grown on trellises, that facing the sun should be left, so as to be of the finest colour when it gets ripe.

Figs.—When the first crop is all gathered, the trees must be well watered at the roots to encourage a second crop, and the foliage should be syringed daily to keep down red spider.

Cucumbers.—A steady bottom heat will still be required from linings of hot dung, to Cucumber plants grown in frames. Fumigate with tobacco if thrips or green fly make their appearance, and it is good practice to repeat this operation two or three times after the lapse of a week or two, in order to eradicate these pests. I find that the *ne plus ultra* of Cucumber growing, where great quantities are required, is to grow them in a pit heated with hot water. A pit of this kind here has furnished a supply of from twenty to thirty brace per week for the last three months, and it is yet in full bearing.

Some of the best known varieties have been grown and proved in this pit this year, but one known here as 'Holah's Seedling,' has taken the lead of all the sorts for productiveness in the winter and early spring months. It is, I believe, a cross between Telegraph and Sion House; it is of a useful size, fine shape, and would suit market gardeners well for their winter supply for market.

Melons.—The earliest planted out in pits or houses will now be ripening fruit, and a drier atmosphere and less water to the roots will be required, to secure flavour. When the fruit is all out, a second crop may be successfully secured by watering the borders well with tepid water, and cutting the plants down to some healthy young shoots. If the plants are grown in frames, a bottom heat of from 65° to 70° must be maintained, and mats still used as coverings at night in cold weather. Thrips and red spider are more difficult to keep down in plants grown in frames than in pits, on account of the undersides of the foliage not being reached by the syringe. Fumigations and moist air must therefore be resorted to should they appear, and a little water dashed frequently on the leaves; if it is mixed with soot and soft soap it will be all the more effectual.

Strawberries.—The last batches of Strawberries for forcing will now want bringing in, and if their fruit has been set in pits or frames they will now ripen in succession without much forcing, until the outdoor fruits come in. In the midland districts the outdoor Strawberries in flower have been much injured by frost, and the crops will be later in ripening in consequence.

THE PINERY FOR JUNE.

BY JAMES BARNES.

THE season has now arrived when many of the early summer fruiting Pines have attained maturity, and some of the most forward have been cut. When a clearance has been made by the removal of those plants that have yielded their produce, in order to obtain well-swelled, handsome, and finely-flavoured fruit, no time should be lost in clearing out the pits, washing, repairing, and painting the lights, and also thoroughly washing and painting the walls. For the last operation should be used a mixture of fresh lime slacked with boiling water, sulphur vivum or black sulphur, and as much fresh chimney soot as will give the whole a dark greyish colour. This is a splendid mixture for sweetening and cleaning all foul walls both indoors and out. Remove some of the old worn-out fermenting material and replace it with fresh material sweet and healthy, incorporating all well together by turning the whole mass two or three times. No time should then be lost in plunging in this renewed bed the earliest and most forward of the early autumn and winter fruiting plants. Maintain a high and steady temperature; give air night and day, being guided by discretion and the state of the weather; apply kindly waterings to the roots of liquid manure, and keep up a strong humid atmosphere in the case of all swelling fruits. Attend to previous directions as regards approaching maturity and beginning to colour.

Succession plants in all stages must, according to their necessities, be shifted, and supplied with more growing room. Keep them near the glass, let them have the full summer heat, atmospheric humidity, frequent applications of tepid manure water, and syringings from the engines or otherwise early in the afternoon. Remove all suckers as they appear, repot without delay, and place them in front of the succession plants. Syringe the growing plants once or twice a week with clear tepid soot water.

THE KITCHEN GARDEN FOR JUNE.

BY JAMES BARNES.

Asparagus.—Desist entirely cutting from young plantations after the first week of this month, and cut only moderately from old established ones, till about midsummer, when cutting should be entirely suspended. Apply a little salt frequently to the surfaces of the beds; evenings of dull, cloudy, or, preferably, rainy weather, are the best times for this operation. Apply salt also in dry, bright weather, only to kill weeds, which it will readily do, and nothing is better for clearing weeds from walks, and keeping them clean and of a good colour. When the Asparagus-cutting season is over, and the shoots are allowed to grow, cut off the weak ones, and allow only the robust and strong ones to grow, which will strengthen the crown buds for next year's produce. For seed, only the strongest, best coloured, and earliest "grass" should be selected, and securely staked. Never save the seed by hap-hazard, as no improvement would then be obtained; by careless culture a tendency to degenerate is also induced. Maintain a clean and healthy surface by constant hoeing and scarifying the ground. It is too often observed, especially in the case of seedling-beds, that as soon as the plants come up and

cover the surface, weeds are allowed to grow and luxuriate amongst them, and they prove exceedingly pernicious to the plants, which consequently become weak and spindly. It is much better to thin the plants, and keep the ground open and particularly clean, for then we obtain strong healthy plants, instead of the miserable, starved subjects that would otherwise be produced.

Beet.—Keep clean, thin moderately and methodically, but not too much, for large, overgrown roots are never sought for; moderate size and fine colour should be aimed at. Fill up gaps by transplanting. **Burnet and Borage.**—Make another sowing; make vacancies good in rows, by transplanting while young. **Cardoons.**—Thin and fill up vacancies; also encourage their growth by occasional applications of manure water. Keep a sharp look-out for mildew amongst seed-beds, &c., and apply dressings of dry wood-ashes on dewy or damp evenings, or the surface may be damped with a watering-pot or syringe. **Borecole, and other Kales.**—Plant out a full crop as fast as ground becomes vacant, or between lines of widely-sown peas; also Broccoli, Brussels Sprouts, Savoys, and Cauliflowers. Of the last mark a few first-class flower-heads for seed. Prick out in succession all small plants. **Beans.**—Of late garden varieties, where they are in request, still plant a few on cold, stiff land, as long as they can be produced, timely pinching out the tops of those just coming into bloom. **French and Runner Beans.**—Plant liberally throughout this month, and keep free-growing kinds pretty often stopped. **Coleworts.**—Sow twice or three times this month. The London Green and Atkin's Matchless are nice, small, and compact kinds; the small York and Nonpareil are also good varieties for autumn and early winter use. **Cauliflowers.**—Sow freely, both early and late kinds, about the middle of the month, for autumn and winter use. **Capsicums and Chillies.**—Plant out on warm borders; give those intended to remain in pots under glass the last shift; they should take the place now occupied by forced strawberries.

Celery.—Continue to plant out in succession established plants in their permanent quarters, and prick out young plants in narrow lines. Keep a clear, open surface soil, and never allow a check in growth for lack of water; and keep the growing plants free from suckers. **Chervil, Chicory, Corn salad, and Cress** sow in succession. Sow American Cress for the next six weeks under north walls or in shady aspects for autumn and winter use. **Cucumber ridges** keep clean, mulch and peg out the vines uniformly, and methodically stop their points. **Endive, both curled and new Batavian, sow twice this month, always thinly, to obtain short, healthy plants; and continue to plant out in succession, between celery or in rows a foot apart each way on borders or quarters. Tie or cover with tiles or slate such plants as are fit, on dry afternoons, to bleach ready for use.**

Lettuce.—Sow in succession, thinly in drills. Thin out if the weather is dry; if moist and cloudy, the plants can be drawn for transplanting. Of Parsley sow another full crop; also Radishes in variety, on cold situations or north borders. **Rampion** sow fully for autumn use. **Spinach** sow often, and encourage the growth of the New Zealand variety for summer use. **Peas.**—Continue through this month to sow late varieties in succession. **Turnips.**—Make small but frequent sowings of the small, quick-growing kinds, such as the American Stone, Snowball, Dutch, Early Strap, Red Globe, &c., in succession. **Vegetable Marrows.**—Mulch, train, stop, and peg down a portion of their shoots in order to prevent wind from driving them about. **Herbs.**—Make the last sowing out of doors of Sweet Basil and Marjoram; plant out full crops of well hardened-off plants on well-prepared borders or quarters. **Leeks.**—Plant out in rows two feet apart, and a foot between the plants in the row, or in trenches deep enough to afford sufficient earth being applied for blanching. **Seakale.**—Do not forget to remove all spurious and weak shoots, leaving only two or three strong crowns to each root; keep clean, and apply dredgings of salt in showery weather. Keep an open, loose surface amongst all growing crops, never allowing a weed a chance of putting in an appearance; and thus prevent yourself being robbed of the best produce. Apply, moderately, sprinklings of air-slacked lime to all rows of Peas and French Beans, and seedlings of all kinds at an early stage.

THE ARBORETUM FOR JUNE.

BY JAMES BARNES.

SEE that newly-planted trees and shrubs have their stakes and ties all right. Upright-growing trees should have all contending leaders removed, leaving only one; balance all dwarf-growing trees and shrubs by stopping back wild-growing, luxuriant shoots. Maintain a clean surface amongst all new plantations, and encourage a rapid, healthy growth, till the trees are able to take care of themselves. Prick off into small pots all young, choice conifers, as soon as they can be well handled. Place the pots in shallow frames or pits, and

shade moderately until they begin freely to form fresh roots. If the stock is too numerous for placing in pots, shallow turf or wooden pits (or even those formed by placing a tier of bricks two or three deep around, so as to afford a little shelter and shade if necessary) should be prepared, and filled with some kindly preparation, into which the seedlings should be pricked from three to four inches apart. Mildew sometimes proves very destructive to young conifers, and nothing is better as a preventive than a dressing of dry wood-ashes when the plants are a little damp. Besides being the best eradicator of this disease, wood-ashes are always safe to use, and are a powerful fertilizer. They should be stored, when quite dry, in boxes or tubs, and placed under cover to keep them dry. There is always a great deal of refuse about an estate fit for no other purpose than ash-making or charring, and, considering the great value of such material as a manure and deodorizer, it is of immense importance.

MARKET GARDENING.

BY H. EVERSHED.

THE quantity of vegetables eaten by all classes of society was largely increased during the last century, and a greater and more general advance in this direction has been made by the present and the last generations. The actual increase of population has also enlarged the demand for vegetables, and hence a new branch of agricultural industry has been created. Fuller shows us the beginnings of market gardening two hundred years ago; he wrote in 1662, "Since gardening hath crept out of Holland to Sandwich, in Kent, and thence into this county (Surrey), where though they have given six pounds an acre and upwards, they have made their rent, lived comfortably, and set many people on work." In the same Thames-side district, lying between Battersea and Kew, this Flemish industry still flourishes on the light soil that suits it, and the Flemish implement of tillage or its substitute, the American fork, is used in cultivating the gardens. But it is only articles of limited consumption, such as cauliflowers, radishes, asparagus, forced vegetables, &c., that are produced on this original site. The more common and necessary vegetables are consumed in such enormous quantities that more space, as well as implements of more power, are needed for their production. London, too, has encroached on the former scene of spade-labour, and the old market gardens of Surrey have been devoted to a large extent to other purposes. East and west of London the soil is of very similar character, consisting of light land on gravel, equally suitable for vegetables; but in the east the subsoil is without veins of clay, and the district, therefore, is without fruit trees. The extension of garden farming in Essex, with horse tillage and steam cultivation, in one instance, has been rapid. A wealthy grower of vegetables is only lately deceased who was among the first to emigrate from the older site in Bedfordshire. He arrived in the new colony without capital, and without the skill to read or write a market-tally, and lived to occupy a farm where more than five hundred acres of vegetables were grown every year.

THE ESSEX DISTRICT.

The Essex district extends from Stratford, bricks and mortar permitting, to West Ham, and thence through East Ham, to Barking, Rainham, Dagenham, Hornchurch, and Romford. The parishes of Aveley and Purfleet are at present, but may not long be, beyond the boundary of vegetable growing. They are now famous for early peas, and on June 19th last year large gangs of women were picking the first crop. At Rainham strawberries were begun on the same day, and potato digging had commenced a few days earlier. The crops are all seven or eight days earlier than they would be under ordinary farming, without the warm coat of manure. The subsoil of the Thames Valley is a drift of sharp small flint, or gravel; it is generally covered with good light loam, which is in many cases several feet in depth, and is continually enriched by heavy dressings of dung. This light soil being peculiarly absorbent of air, heat, and moisture, and admitting of the rapid decomposition of organic matter, is naturally suitable for vegetables, and produces good crops of corn when, after a heavy green crop, it is not in too high condition. Elms are the native timber trees of the district, growing in rows to a great height with leafy trunks, trimmed to resemble monstrous specimens of Jersey cabbage-stems or Brussels sprouts, with a cabbage on the top. Near Rainham, however, there are several noble avenues of unmitigated trees, which ornament as well as shelter the country. The water-level is generally at from four feet to ten feet from the surface. This district takes most of the manure produced in the eastern part of London, and it supplies a large portion of the fresh, bulky vegetables consumed in the metropolis between spring and autumn. The whole of the produce is sent by road, and,

except near a river wharf, or close to a station, the manure is brought by the waggons on their return from market. The outlay on the farms, as will presently be shown, generally exceeds £20 an acre, and requires such a return as is yielded only by garden crops and garden-farming. The growth of corn has been almost abandoned. In this district of large garden farms the fields are seldom less than ten acres in extent, and are generally from twenty to forty acres.

In garden farming there are no strict rules with regard to the succession of crops; the land is kept constantly under crop by sowing, or by replanting from seed-beds as fast as the fields are cleared. Cabbages may follow cabbages; and the loading of the market-waggon proceeds in one part of the field while the plough-teams and planters are busily employed close by. On ordinary farms the necessity for a regular distribution of the labour of the farm throughout each period of the year, and for alternating the crops which produce manure with those which expend it, renders a tolerably regular rotation of crops desirable; but, as garden farms employ five or six times as much labour in proportion to their acreage, their reserve force is larger. Moreover, they are generally situated in the neighbourhood of large floating populations, and extra hands and extra horses, at certain seasons of the year, can easily be obtained. The rest is accomplished by the purchase of dung. An approach to a systematic rotation arises from the necessity of keeping delicate subjects—such as onions and potatoes—at a distance of several years apart. Having already given examples of such successions, a few remarks on double crops, and the periods of planting and removing them, will suffice to show what can be done in reference to economy of time and ground.

In the London district potatoes are followed by a second crop. The earliest may be followed by cabbages, the later by savoys, and the latest by "collards," for bunching during the winter months, when cabbages are out of season. Cabbages should not be planted much later than the third week in June; they will then be sent to market in November. Savoys are next pricked out from the seed-bed; and collards, which are planted almost at any time when there is a piece of ground to spare, follow up to the end of August. On the 29th June and 6th July last I was in fields where digging potatoes, manuring the land, ploughing, and planting cabbages, collards, and mangold, were proceeding without any delay. It was a little late for cabbages, but the frequent showers would, it was believed, enable the plants to start at once and rapidly. The land was dunged well and ploughed once with two horses, and the furrow was tender and crumbling. In dry seasons the transplanted crops require watering; and although irrigation generally is neglected, it is sometimes very beneficial to garden crops. A fifty-acre gardener, who grows celery, cauliflowers, and other crops, showed me a little rivulet running through his ground. It costs him £60 a year; but, "when other grounds are scorched," he said, "my garden is as green as a leek!" Last year I am afraid he had to "eat the leek," in consequence of the general abundance. It will give some idea of speed in gardens if I mention that cabbages planted in the second week in April afforded a first cutting last year on the 28th June. Another example of double crops is in the case of early cabbages, which are sent to market in April and May. A month before cutting them, the land being in good tilth, holes are made in the rows with a spade, one hole between each cabbage; a boy follows and plants potatoes, which are covered with the earth taken from the next row. This plan obviates the treading which occurs when the sets are planted between the rows.

On the 19th June a large farm was shown to me where all the cabbages had been marketed, and a considerable breadth was in potatoes, planted in the manner described, and looking well. The cabbages had been planted two feet apart, and the potatoes were of course at the same distance. They were Regents, to be followed by some spring-sown crop. Other examples of two and even three crops in a year occur in the gardens near London, where certain vegetables of limited consumption are produced under spade cultivation, when there is no room for a plough. Peculiar virtues have been attributed to the spade as an instrument of cultivation, but the secret of the great fertility which follows the spade lies in the heavy dressings usually applied to the gardens. As an example of this kind of cultivation, I visited a large garden of forty or fifty acres, in the parish of Bermondsey, flourishing in the midst of smoke and vile smells. The larger part of the garden is planted with radishes, cauliflowers, and celery, taken from the same ground every year; and the rotation is repeated every year, with the precaution of moving the site of the rows of celery. These are planted five feet apart, with two rows of cauliflowers between them. The ground is dug in the ordinary way, once a year, in winter, as soon as the celery is removed. One hundred tons of dung per acre are sometimes applied, at a cost of between £30 and £40. The radishes are sown in March; the cauliflowers having been sown in October in frames, and protected

from frost during the winter, are pricked out among the radishes; and the celery follows. Eight acres of rhubarb are cultivated with the five-tine steel fork. I was told "the more manure the more rhubarb." Asparagus is forced by frames and hot dung. Plants of three years' growth afford three weeks' cutting, and are then destroyed; and a less price than 7s. 6d. for a bundle of 105 does not pay the grower.

On the 11th July a large bed was planted with collards and Walcheren broccoli in alternate rows, at eighteen inches from row to row. The broccoli will be sent to market in November. There is a large fenced plot for cucumbers and vegetable marrows. The very deep cultivation which is frequently heard of, and occasionally practised in agriculture with more or less profit, has not been found desirable in market gardens. The cabbages, greens, cauliflowers, broccoli, onions, potatoes, cucumbers, &c., which fill the markets of London, are generally grown on a seven or eight inch furrow; and, as a rule, only one furrow is turned for each crop. In the case of subsoiling for late carrots and for parsnips, the object appears to be to give mechanical assistance to the root, to enable it to run down long and tapering. One of the most eminent growers of parsnips in the metropolitan district cultivates nine or ten inches deep by means of a common plough, followed by a subsoil plough. A six or seven inch furrow is enough for two horses, and three or four inches are as far as the subsoiler reaches in a gravel loam with three horses. Trenching, double-digging, bringing the bottom spit uppermost, and all those tricks of tillage described in gardening books, are repudiated by market gardeners, who do not pay much attention to the "mine of wealth" which does not exist in gravel subsoils; they seem to think that the sources of wealth lie in the dungcart, and in the judicious management of the upper spit.—*Royal Agricultural Society's Journal*.

(To be continued.)

THE HOUSEHOLD.

THE TRUE ST. GEORGE'S MUSHROOM.

(*AGARICUS GAMBOSUS*.)

THE St. George's mushroom cannot well be mistaken for any other. The fact of its appearance in spring, and growing so freely in rings, when so very few other funguses are to be found, is almost enough to distinguish it. It has, however,



St. George's Mushroom (*Agaricus gambosus*). Pastures, in the spring; colour, cream; diameter, 4 to 6 inches.

very distinctive characters in itself in the thickness of its pileus; the narrowness of its gills, which are very closely crowded together; and the solid bulging stem. The St. George's mushroom is not an uncommon agaric in this country, and where it does appear it is usually plentiful—a single ring affording generally a good basketful. It should be gathered when young, or it will be found grub-eaten, for no fungus is more speedily and more voraciously attacked by insects than this one. It grows in rings, has a strong smell, and appears about St. George's Day (April 23rd), after the rains, which usually fall about the third week in April. It continues to appear for three or four weeks, according to the peculiarities

of the season. It is usually to be found on hilly pastures in woodland districts.

Pileus thick and fleshy, convex at first, often lobed, becoming undulated and irregular, expanding unequally; the margin more or less involute, and at first flocculose; from three to four inches across; of a light yellow colour in the centre, fading to almost opaque white at the edges; it is soft to the touch; more or less tuberculated, and often presenting cracks. Gills yellowish-white, watery, narrow, emarginate, *i.e.* annexed to the stem with a little tooth (see section in illustration); they are very numerous and irregular, with many smaller ones interposed, "lying over each other like the plaits of a frill" says Vittadini. Stem firm, solid and white, swelling at the base in young specimens; but in older ones, though usually bulging they are frequently of even size, and when in long grass they occasionally even taper downwards. This agaric is usually nearly white, smooth, soft, and firm, like kid leather to the touch, and, as Berkeley has happily said, "in appearance it very closely resembles a cracknel biscuit."

Opinions on the Merits of Agaricus gambosus as an Edible Fungus.

"This rare and most delicious agaric, the *monocron* of Bulliard, and the *Agaricus prunulus* of other authors, abounds on the hills above the valley of Stafora, near Bobbio, where it is called *Spinaroli*, and is in great request; the country people eat it fresh in a variety of ways, or they dry and sell it at from twelve to sixteen francs a pound."—*Letter from Professor Balbi to Persoon*.

"The most savoury fungus with which I am acquainted . . . and which is justly considered over almost the whole Continent of Europe as the *ne plus ultra* of culinary friandise."

"The *prunulus* (*gambosus*) is much prized in the Roman market, where it easily fetches, when fresh, thirty baiocchi—*i.e.* fifteen pence per pound—a large sum for any luxury in Rome. It is sent in little baskets as presents to patrons, fees to medical men, and bribes to Roman lawyers."—*Dr. Badham*.

The *Agaricus gambosus* "is one that a person cannot well make any mistake about. It sometimes attains a large size, is excellent in flavour, and particularly wholesome."—*Rev. M. J. Berkeley*.

Mode of Cooking Agaricus gambosus.

"The best mode of cooking *Agaricus gambosus* is either to mince or fricassee it with any sort of meat, or in a *vol-au-vent*, the flavour of which it greatly improves; or simply prepared with salt, pepper, and a small piece of bacon, lard, or butter, to prevent burning, it constitutes of itself an excellent dish."—*Dr. Badham*.

"Served with white sauce, it is a capital appendage to roast veal."—*Edwin Lees*. It may be broiled, stewed, or baked.

Breakfast Agaric.—Place some fresh-made toast, nicely divided, on a dish, and put the agarics upon it; pepper, salt, and put a small piece of butter on each; then pour on each one a tea-spoonful of milk or cream, and add a single clove to the whole dish. Place a bell-glass, or inverted basin, over the whole; bake twenty minutes, and serve up without removing the glass until it comes to the table, so as to preserve the heat and the aroma, which, on lifting the cover will be diffused through the room. It dries very readily when divided into pieces, and retains most of its excellence. A few pieces added to soups, gravies, or made-dishes, give a delicious flavour.

THE "WHY" IN VEGETABLE COOKERY.

WHY should haricot beans never be put into cold water to soak, as is often recommended?—Because all the nutritious portion of the bean is extracted by the process. They should be washed in warm water, then in cold, be tied loosely in a cloth, be put into boiling water with a spoonful of dripping and a little salt in it, and be kept boiling for four hours. They are then excellent if served with gravy, and not with melted butter. They serve as garnish round roast mutton or beef, and are excellent eating served whole or as a *purée*. To make the latter, when the beans are done throw them instantly into cold water, when the skins will slip off. Rub the beans through a colander, and mix a lump of butter with them. A little stock, or milk, or cream is excellent mixed in.

When the flavour of vegetables, as celery-seed, carrots and turnips, is required, why should they be put into cold and not into boiling

water?—For the reason that if put into boiling water the whole flavour is retained in the vegetables, but if in cold water it is drawn out into the water, and is thus suitable for soups. The latter has a better flavour if the vegetables are put into it when it is boiling, and are served with the soup. Of course this will only do for excellent family soups.

Why should plenty of fast-boiling water be used in boiling vegetables, potatoes excepted? Because the greater the body of boiling water the greater the heat. If only a little water be used the whole affair soon cools, and the vegetables become tough, so much so that no length of time in boiling them will render them otherwise. Broccoli sprouts in April, if properly cooked, by boiling them for eight minutes in boiling water, will be tender as marrow; but if not properly done, hours will not cook them.

Why should onions be always cut in round and very thin rings?—Because the fibre is thus cut across, and in so cutting them, whether for frying or for making sauce, they are rendered very tender when cooked. Turnips and carrots just the same; neither of the three should be split or cut in any other way.

Why should parsley never be boiled with soda, only in boiling water and salt?—Because parsley, having no oil in it, would be spoiled with soda, and all flavour would be extracted. All parsley should be picked free from the stem, be put into plenty of boiling water with salt, and in summer be boiled only one minute, in winter two minutes, be then strained and chopped on the back of a plate. If only a little water is used in boiling it, the latter becomes brown and the parsley tough and ill-flavoured.

Why should vinegar for pickling with never be boiled?—Because boiling takes all strength from it. Whatever vegetables are to be pickled should first be made soft with boiling water, strong with salt, then be well drained, and the vinegar poured over.

Why should two ounces of salt and a bit of washing soda always be put in the water to boil greens in?—Because the salt crisps the greens and flavours them, and the soda extracts the oil, which is greatly injurious to the digestion.—*Treasury of Literature.*

COVENT GARDEN MARKET.—May 31st.

Flowers.—Amongst white blossoms for bouquet-making, Stephanotis is most abundant, so much so, that fully half of the nosegays consist of it. Gardenias, Tea and other Roses, especially buds of the Moss kinds, Pinks, and blue Centaureas, play prominent parts in such compositions. Plants in pots consist chiefly of Golden-rayed Lily, of which there are many nicely-bloomed plants; young Hydrangeas, with single stems crowned with unusually large heads of bloom; and Calceolarias, both beautifully-marked herbaceous kinds and common bedding yellow sorts; amongst the last we have noticed no dark-coloured bloomed ones for some time. Besides these there are various kinds of Heaths, Cacti, both white and red flowered; Gloxinias, in baskets and pots; Balsams in flower, and younger plants of the same, not yet in flower, in the boxes into which they have been pricked out; Petunias, both single and double; pots of Mignonette and Musk, some in full bloom, and others only advancing to that state; and single and double zonal and other Pelargoniums. In addition to plants in flower, there are various kinds remarkable for the beauty of their foliage, such as nice graceful young Pandanus, Palms, Marantas, Begonias, Caladiums, Dracenas, &c.; also many young plants in pots for outdoor decoration. These last consist of six-inch pots containing seedling Tropæolums, Convolvuluses, Sweet Peas, and Nasturtiums. There are likewise many seedling annuals, raised both in pots and boxes, and also several climbing and trailing plants.

PRICES OF FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples .....½ sieve	6	0 to 10	0	Lemons .....100	7 0 to 10 0
Cherries .....per box	2	0	3 6	Oranges .....100	6 0 12 0
Chestnuts .....bushel	8	0	15 0	Pine Apples .....lb.	8 0 12 0
Filberts .....lb.	0	6	1 0	Strawberries .....oz.	0 9 1 3
Cobs .....lb.	0	6	1 0	Walnuts .....bushel	10 0 25 0
Grapes, hothouse .....lb.	5	0 to 10	0	ditto .....per 100	1 0 2 0

PRICES OF VEGETABLES.

Artichokes .....per doz.	4	0 to 6	0	Mushrooms .....pottle	2	0 to 3	0		
Asparagus .....per 100	1	0	8	0	Mustard & Cress, punnet	0	2	0	0
Beans, Kidney .....per 100	1	6	2	6	Onions .....bushel	3	0	6	0
Beet, Red .....doz.	1	0	3	0	pickling .....quart	0	6	0	9
Broccoli .....bundle	0	9	1	6	Parsley, doz. bunches	3	0	4	0
Cabbage .....doz.	1	0	2	0	Parsnips .....doz.	0	9	1	0
Carrots .....bunch	0	6	0	0	Peas, Continental, quart	2	0	4	0
Cauliflower (hand-glass)					Do. English .....do.	3	6	5	0
doz.	8	0	12	0	Potatoes .....bushel	4	0	6	0
Celery .....bundle	1	6	2	0	Kidney .....do.	4	0	6	0
Chillies .....per 100	1	6	2	0	Radishes doz. bunches	0	6	1	6
Coleworts doz. bunches	2	6	4	0	Rhubarb .....bundle	0	6	1	0
Cucumbers .....each	0	6	1	6	Salsafy .....do.	1	0	1	6
Endive .....doz.	2	0	0	0	Savoy .....doz.	0	9	1	0
Fennel .....bunch	0	3	0	0	Scorzonera .....bundle	0	9	1	3
French Beans .....per 100	1	0	2	6	Shallots .....lb.	0	4	0	6
Garlic .....lb.	0	8	0	0	Spinach .....bushel	3	0	4	6
Herbs .....bunch	0	3	0	0	Tomatoes .....each	0	4	0	6
Horseradish .....bundle	3	0	4	0	Turnips .....bunch	0	6	1	0
Leeks .....bunch	0	2	0	6					

SOCIETIES, EXHIBITIONS, &c.

MR. WM. PAUL'S ROSE SHOW AT THE CRYSTAL PALACE.

THIS exhibition, which closes to-day, has been open since the 24th ultimo. It is nicely arranged, and, on the whole, very effective. In order to break up and relieve in some measure so striking a bank of brilliant colour, variegated Maples, golden-leaved Oaks, and several kinds of green and variegated Ivies, are introduced among the Roses, as are also here and there, baskets of Golden Feverfew, variegated Thyme, and stands of cut blooms. Besides Roses, there is also a large collection of Zonal Pelargoniums, some of which are grafted on clean stems, a foot or more in height. Among Roses, the finest seems to be Duke of Edinburgh, a hybrid perpetual kind, with large double dark-red blooms. In the same class are also some good examples of François Fontaine, Dr. Andry, Paul Verdier, Pierre Notting, Madame Charles Wood, and Maréchal Vaillant. Amongst Tea-scented kinds President, Rubens, Alba Rosea, Monsieur Furtado, Madame Celina Noirey, and Madame Villermoz, are conspicuous.

MEETINGS FOR THE ENSUING WEEK.

MONDAY, JUNE 3.	Leeds Horticultural Society.—Show in Royal Park.
Royal Botanic Society, Regent's Park.	THURSDAY, JUNE 6.
—Exhibition of American Plants, up to 15th instant, 9 a.m.	Royal Horticultural Society of Ireland.
Coventry and Warwick Floral and Horticultural Society.—Exhibition of Flowers and Fruit, Coventry.	—Second spring exhibition.
Entomological Society.—Meeting, 9 p.m.	Linnean Society.—Meeting.
TUESDAY, JUNE 4.	FRIDAY, JUNE 7.
Zoological Society, 9 p.m.	Royal Botanic Society.—Lecture in museum, 4 p.m.
WEDNESDAY, JUNE 5.	SATURDAY, JUNE 8.
Royal Botanic Society.—Promenade.	Royal Botanic Society.—Meeting for election of new Fellows and general business, 3. 45 p.m.
Royal Horticultural Society.—Great summer show (three days).	

OBITUARY.

MR. G. W. HOYLE died somewhat suddenly at his residence at Reading on Sunday last, aged 71. For many years Mr. Hoyle has been a most successful raiser of seedling pelargoniums, and to him we are indebted for many of our best named show varieties. Few exhibitions have taken place in Regent's Park during the last quarter of a century at which he has not been present, anxiously scrutinising either his own flowers or those of his rival breeders, Foster and Beck. His seedlings were to him not only a source of profit, but pleasure, and he was never weary in pointing out their merits, and even, now and then, their defects, to all who took an interest in such matters.

DR. WIGHT, Grazely Lodge, Reading, also died on the same day, aged 77. His name will be remembered in connection with cotton-growing in India, a subject to which he paid much attention while in the East India Company's service in that country.

ANSWERS TO CORRESPONDENTS.

K. IRELAND (Mr. W. Thompson, Ipswich).—J. R. N. (next week).—W. T. (very beautiful; we will inquire).—Essex (fumigating with tobacco, or tobacco-papier is the safest and most effectual mode of getting rid of green fly).—F. M. (a form of *Polemonium caruleum*).—A. B. W. (Asters, various, white, pink, or blue; *Tritonia Uvaria*, red and orange; *Chrysanthemums*, yellow, white, or red; *Pyrothrum uliginosum*, white; *Hibiscus moscheutos*, pink; *Liatris spicata*, purplish; *Anemone japonica*, red; A. J. Honnore Jobert, white; and *Coreopsis lanceolata*, yellow, are all late-flowering perennials. Many of the well known annuals, if sown in June or July, will also be found to answer your purpose).—R. H. (Very good indeed, the leaf markings are distinct and striking. The fanciers of tricoloured Pelargoniums might take exception to the somewhat serrated leaf edges).—R. (The common *Stellaria graminea*).

The Name and Address of the writer are required with every communication, though not for publication, unless desired. Letters or inquiries from anonymous correspondents will not be inserted.

All questions on Horticultural matters sent to THE GARDEN will be answered by the best authorities in every department. Correspondents, in sending queries or communications of any kind, are requested to write on one side of the paper only.

All communications for the Editorial Department should be addressed to WILLIAM ROBINSON, "THE GARDEN" OFFICE, 37, Southampton Street, Covent Garden, London, W.C. All letters referring to Subscriptions, Advertisements, and other business matters, should be addressed to THE PUBLISHER, at the same Address.

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"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE GARDENS OF ENGLAND.

BENTHALL HALL, NEAR BROSELEY.

A BEAUTIFUL old house (date 1535), the gardens embellished with many of the hardy plants common in England at the time of its erection, and with many, too, first brought across the sea by its owner, Mr. George Maw, within the past few years. There are, or were, but few private gardens in the British Isles resembling those at Benthall. The late Mr. Borrer's wonderful botanic garden at Henfield, and Mr. Wilson Saunder's full and varied collection at Reigate, may be compared to it; Mr. Maw's garden being, however, far richer than any of them in interesting and valuable hardy novelties. Indeed, for the culture and introduction of valuable new and hardy plants—the most legitimate object of a public or private botanical garden—there is not a more noteworthy garden. I have never seen a place in which the charms of association were more agreeably woven round the plants. Here is a houseleek from the Atlas, a sedum from the Sierra Nevada, rock roses from Gibraltar, an iris from Tangiers, and a primrose from the Alps, all collected, brought home in a living state, and successfully grown by Mr. Maw. And so all over the garden, every step bringing some fair or interesting distant part of the earth before us for the moment in the person of one of the earth children. Not a day but brings fresh and interesting plants into bloom, scarcely a week passes without some fair European or North African flower first opening its eyes in British air. The chief feature of the garden is a very extensive collection of herbaceous and alpine plants. Many of the families are more than usually well represented, particularly as regards new members and authentic species, and none more so than

THE SAXIFRAGES, STONECROPS, AND HOUSELEEKs.

I have had the happiness of seeing some good collections of Saxifrages, but none on the whole so satisfactory as this. There was the well known one of Mr. Borrer, at Henfield, who had about seventy varieties of the mossy or Hypnoides section; the excellent collection of Mr. Niven, in the Hull Botanic Garden; the Kew, and some good ones in the nurseries round London; the well-grown ones in the Jardin des Plantes at Paris, and also that of good old M. Boreau, of the Botanic Gardens at Angers, who has made a study of the family; but, on the whole, this Benthall collection is the best by far, for several reasons. It contains many new species, named and unnamed, mostly collected by Mr. Maw, and some of these of the highest value as garden ornaments. It is as complete as any other in the species long known in our gardens. All the kinds are grown to perfection in the open air. This last is a great point. There never was a greater mistake than that of growing these hardy and vigorous, though small, mountain plants in pots. They require it no more than a collection of willows. Silvery, Irish, or mossy sections, they all grow to perfection in the open air, in any kind of soil. Here they grow in a long bed, very slightly raised towards the centre, the soil being well mixed with small lumps of broken sandstone. Even this, however, though beneficial, is not necessary for the majority of kinds. The capital plan of placing a little sand over the surface, where such dwarf kinds as *Saxifraga cæsia* and *S. valdensis* grow, is carried out with a good result. *S. cæsia*, which is so often seen like a stain on the Alpine rocks, is here now snowy with its delicate blossoms. At the time of my visit there were eighty species in flower of this interesting family—the most important of all to

cultivators of alpine plants; and of these the finest was the sturdy *S. Maweana*, discovered by Mr. Maw himself, in North Africa, and named in his honour by Mr. Baker. This, like most of the saxifrages from the same country, seems to completely perish in summer, after flowering and seeding, but again comes up abundantly from the little bulbils left at the base. It has a remarkably firm, compact habit, and bears myriads of large, waxy, white flowers, and deserves a place in every rock-garden. *S. Wilcomeana* is another remarkable kind, collected by Mr. Maw, and which, while showy in flower, is peculiarly marked by its very large, massive leaves, which form broad flakes of the richest green. It will prove an admirable rock plant. Other kinds are equally interesting; but of these we must reserve notice for the present.

The Stonecrops (*Sedums*) are equally well done, and also rich in novelties, about seventy species being cultivated. These, also, are all grown in the open air, and treated like the saxifrages. Among these was noticeable an as yet unnamed kind, like our common, brilliant, yellow stonecrop, but twice the size, and otherwise distinct. Of the Houseleeks (*Sempervums*) there is a collection of about fifty species, treated in like manner.

POT CULTURE OF ALPINE PLANTS.

Here I met with one of the first attempts to *cultivate* alpine plants in a worthy manner. We are all familiar with the wretched examples of these plants that are sent to our shows even by famed growers. Seldom could one gather from a specimen in one of their collections that alpine plants were specially distinguished by spreading out into the most vivid cushions of vivid colour; seldom the faintest notion of what their true habit or beauty is. Here there is every evidence of the highest cultural skill being applied to them. They (mostly true alpine or rock plants, and not herbaceous ones) are grown in shallow cold frames in pots of a peculiar size—eight inches broad by four inches deep. These seem peculiarly well suited to the wants of alpine plants, securing, as they do, a good body of soil not so liable to rapid changes as that in a small vessel; while in stature, being only four inches high, they are exactly what is wanted for these dwarf plants. The common garden pan suits some alpine plants well; but is not so well suited to the stature of alpine plants, or the wants of their roots as this. The principle of culture adopted as a rule is the best we know of yet, that of annually dividing and replanting; placing the young plants, suckers, or divisions as the case may be, equally over the surface of the pot. Treated thus, they soon furnish it.

RAMONDA PYRENAICA AS A POT PLANT.

This handsome alpine plant, so seldom seen in vigorous condition, is rarely suspected to be capable of forming as handsome a specimen as any of the cyclamens that now appear so often at our shows. It is usually seen at its best with two or three sprays of flower in our botanic gardens and good private collections. Here, in a window of the dining-room, I had the pleasure of seeing a specimen nearly a foot in diameter, and with quite a little cloud of its large soft mauve flowers. The plant had been grown in a cool frame all through the winter and spring; at Benthall, however, it does well in the open peat border. It thrives in any rich free loam. The largest pot specimens at Benthall were formed by putting a number of young suckers in a pot. So I presume we may in due time look for it at our early summer flower shows.

ARRANGEMENT, &c.

Some of the more important families, as for example the very fine collection of Saxifrages (considerably over one hundred in number), are grouped together in one long bed; much as the same family is by Mr. Verlot, in the Garden of Plants at Paris. But in a good many cases a desirable change is made in grouping in the same bed or mass, two widely different families; as, for example, Lilies and Pansies, or Golden Rods and Grasses. This is an improvement on the common plan of grouping single families together in the same ground, inasmuch as the effect is better, the soil less exhausted, and the plants in no danger of being confounded or mistaken by those who have to attend to them. There is a capital system of labelling with terra-cotta labels, capable of application to all kinds of plants. This, originated by Mr. Maw, is now in use in many gardens.

In addition to naming the plants in the ordinary way, a second series of labels is used, which renders good service in the rare, or new plant department. To plants, the seeds of which are to be saved, a black label (unwritten) is placed. A blue label marks those which are to be increased by cuttings, taken up in the autumn, or otherwise treated so as to secure their preservation through the winter, while a yellow one indicates those of which specimens are to be dried. This system simplifies and improves the work of preserving and keeping in proper order such a fine collection.

NEW PLANTS.

While enjoying in his own way the highest pleasures of which gardening is capable of imparting, Mr. Maw confers at the same time very great benefit on our gardens by the introduction of very many valuable and ornamental plants. Some of these have been figured in the leading botanical periodicals, as, for example, the showy *Cotyledon Salzmanni*, the very curious *Drosophyllum lusitanicum*, *Linaria tristis*, *Malope malacoides*, *Salvia interrupta*, a handsome hardy species, the fine variety of *Androsace carnea* known as *ximixia*, the pretty *Sedum glandulosum*, the brilliant *Iris* or *Xiphion filifolium*, *Saxifraga Mawiana*, and the superb *Iris tingitana*. There are besides many unnamed species in the garden, and every prospect that, while so much has been done to enrich our collections within the past three years, much more may be expected in the future.

Among other novelties in the garden may be noticed some dwarf and brilliantly coloured *Pyrethrums* from the Atlas as yet unnamed; the brilliant *Pyrethrum sulphureum* from Spain, nine inches high; *Papaver spicatum*, a fine orange red species; the *Etna Barberry*, the only European species besides the common one; *Phalangium boeticum*, a new, hardy plant in the way of the *St. Bruno's Lily*; *Medicago suffruticosa*, a fine rock plant from the Pyrenees, a spreading mass of gay yellow blossoms; *Euphorbia verrucosa*, large tufts of golden green throughout the summer; *Linum salsoloides*, a new and valuable perennial flax; *Linaria villosa*, a gem for the rock-garden; *Nepeta latifolia*, an ornamental species; *Mentha humilis*, cultivated in the south of France; *Cerinthe alpina*, the only introduced perennial kind; *Antirrhinum sempervirens*, a fine rock snapdragon; *Salvia taraxacifolia*, lately flowered by Mr. Niven, of Hull; *Narcissus gaditanus*; a gem of a daffodil in the way of *N. juncifolius*; *Lathyrus monspeliensis*, an everlasting pea related to the common one. There are many other novelties, which will be duly described in THE GARDEN from time to time.

W. R.

THE FLOWER GARDEN.

THE ROSE GARDEN FOR JUNE.

BY GEORGE PAUL.

A WEEK'S bright weather has brought out pruned-back Roses in profusion, though by no means improved by the past inclement spring. Truly, this has been a difficult season for the grower; let him, therefore, lose no time now in trying to repair injuries received. All plants should be at once carefully gone through. Remove the majority of shoots on which the flowers have been destroyed, and let all the sap go to cherish any buds that remain. Remove, in most cases, all but the central flower of each truss, the single bloom has room then to develop its full beauty; the practice has been condemned, but is perfectly defensible on the ground that individual flowers are improved by it; and one fine Rose is worth half-a-dozen poor ones.

Pegged-down roses have shown the value of this method of growing the queen of flowers in a bad season; of early kinds the eyes that started at the end of the pegged-down shoots were crippled and destroyed. The buds next in order down the stem shot out and gave a fresh uninjured lot of flowers, to be succeeded by the large and late terminal flowers on the shoots which burst from the base to furnish next year's supply of flowering wood, to be bent down in its turn. Caterpillar pests will have done their worst; but they should still be looked for and crushed mercilessly. The ground is quite moist still, and until the buds have swollen, where deep hoeing has kept up a mulch of loose soil, no further dressing or manure, liquid or solid, is just now needful, *i.e.*, on heavy soils; gravels and sands can hardly be too closely watched, a week's drought telling more than three weeks dry weather with us on rose soils, *i.e.*, good stiff loam.

In about a fortnight or a month's time we may expect heat, and

then, as Mr. Reynolds Hole has so ably described, all hands must be put on to the barrowing of the carefully-prepared mulch (liquid manure, saturated horse droppings, or thick liquid cow manure, applied on two or three occasions), if possible just before a drenching storm.

Exhibitors should get their boxes painted and varnished, tubes in order, and other minutiae in readiness for action. Pot Roses past their best, keep cool and ripened off; they no longer require exciting stimulants. The directions given last month for those still opening their flowers should be followed; but by the end of May all indoor Roses in pots should be over.

HARDY PLANTS IN FLOWER ROUND LONDON.*

(FROM MAY 30TH TO JUNE 5TH, INCLUSIVE.)

BY OUR OWN REPORTERS.

<i>Acantholimon glumaceum</i>	<i>Cotoneaster Simmondsii</i>	<i>Kalmia latifolia</i>	<i>Rhododendron ferrugineum</i>
<i>Ethionema orientale</i>	<i>Crataegus Pyracantha</i>	<i>Lathyrus tingitanus</i>	<i>Rosa cinnamomea florida</i>
<i>Allium magicum</i>	<i>tanacetifolia</i>	<i>Leptosiphon luteus</i>	<i>Fortunecana lucida</i>
<i>Androsace glacialis</i>	<i>Cyclobotrya pulchella</i>	<i>Ligusticum pyrenaicum</i>	<i>Rubus cordifolius suberectus</i>
<i>Anthyllis vulneraria</i>	<i>Cynoglossum montanum</i>	<i>Lilium bulbiferum</i> and vars	<i>Saponaria caespitosa</i> (Chiswick)
<i>Aphyllanthes monspeliensis</i> (Ware, Tottenham)	<i>Dianthus dentosus viscidus</i>	<i>Martagon</i> and vars	<i>Saxifraga</i>
<i>Aquilegia aurea</i> (Ware)	<i>Dictamnus Fraxinella</i>	<i>Limnanthes Douglasii</i>	<i>Cotyledon crustata</i>
<i>Whitmanniana</i>	<i>Digitalis grandiflora</i>	<i>Liparis filifolia</i>	<i>Scabiosa alpina</i>
<i>Asphodelus floribundus</i>	<i>Erodium carvifolium</i>	<i>Lonicera Brownii</i>	<i>graminifolia</i>
<i>Aster stellaris</i>	<i>Eschscholtzia californica</i>	<i>orientalis</i>	<i>Schizopetalon Walkeri</i>
<i>Astragalus alopecuroides</i>	<i>Ferula asperifolia</i>	<i>Lotus corniculatus</i> pl.	<i>Scilla ciliaris</i>
<i>chlorostachys galegiformis</i>	<i>Galega persica</i>	<i>Meconopsis cambrica</i>	<i>Sedum anglicum</i>
<i>Astrantia Biebersteinii</i>	<i>Gentiana imbricata</i> (Ware)	<i>Melittis Melissophyllum</i>	<i>Sempervivum soboliferum</i>
<i>carniolica</i>	<i>Geranium eriostemon ibericum</i>	<i>Mimulus luteus</i>	<i>Sieversia triflora</i>
<i>Bahia lanata</i>	<i>Brachycome glabra</i>	<i>Nemophila aurita</i>	<i>Silene longifolia</i>
<i>Berberis aristata</i>	<i>Gillenia trifoliata</i>	<i>Odontarrhena carsinum</i>	<i>Sisyrinchium macronatum</i>
<i>Brachycome glabra</i>	<i>Gladolus byzantinum</i>	<i>Onobrychis montana</i>	<i>odoratissimum</i> (Ware.)
<i>Buddleia globosa</i>	<i>Halesia parviflora</i>	<i>Orchis foliosa</i>	<i>Solanum jasminoides</i>
<i>Campanula fragilis</i>	<i>Helenium grandiflorum</i>	<i>hircina</i>	<i>Solidago minima</i>
<i>Centaurea uniflora</i> (Ware, Tottenham)	<i>Hemerocallis graminea</i>	<i>lactiflora</i>	<i>Spiraea</i>
<i>Cerasus sempervirens</i>	<i>Heracleum candicans</i>	<i>latifolia</i>	<i>Aruacus crataegifolia</i>
<i>Chrysobactron Hookeri</i> (Ware and Parker, Tottenham)	<i>Heuchera glabra</i>	<i>Phacelia tanacetifolia</i>	<i>Stachys lanata</i>
<i>Cladium Mariscus</i>	<i>Richardsonii</i>	<i>Potentilla argentea</i>	<i>Stipa pennata</i>
<i>Clematis acuminata integrifolia</i>	<i>Hippocrepis comosa</i>	<i>aurantiaca maculata</i>	<i>Veronica paniculata</i>
<i>Comarum palmstre</i>	<i>helvetica</i>	<i>pyrenaica thuringiaca</i>	<i>incana</i>
<i>Coronilla juncea montana</i>	<i>Iberis Lagasce</i>	<i>Ranunculus Lingua</i>	<i>Viburnum dentatum longifolium</i>
	<i>Iris acuta caelestina missouriensis</i>	<i>Rosa odorata</i>	<i>Vicia sepium</i> and var. <i>alba</i>
	<i>Jamesia americana</i>	<i>Rhaponticum scariosum</i>	<i>sylvatica</i>

* Plants in this list are almost without exception such as have come into bloom during the past week.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Gardens in Devon and Cornwall.—I am about to spend a month in North Devon and South Cornwall. Can any of your readers tell me of any botanical or other gardens open to the public, to be found there? Murray and other guides are silent on the point.—J. R. D.

Pelargonium "Mrs. P. J. Perry."—I find this variety to be the best of the white margined variegated race. The white is purer in tone than any other variety I have raised, and I strongly recommend it to your flower-garden readers.—V.

The Peacock Anemone.—With me this species proves very disappointing. After a year's cultivation or so it appears to degenerate from the beauty of the Continental type, the sepals assuming a greenish character, which renders the plant scarcely worthy of a place.—J. N.

Erinus alpinus as a Wall Plant.—I was pleased the other day to find this lovely little alpine luxuriating on an old wall in the Fulham Nursery, where its small flowers were produced in such profusion, as to form quite a sheet of red bloom on the face of the wall for a space of some yards. In this position the plant forms neat little tufts, and is a true perennial, whereas, on the level ground it mostly perishes in winter from excess of moisture or other causes.—T. S.

THE CHINESE RICE-PAPER PLANT.

(ARALIA PAPIRIFERA.)

THIS, though a native of the hot island of Formosa, flourishes vigorously with us in the summer months, and is one of the most valuable flower-garden ornaments we have. It is handsome in leaf and free in growth, though to do well it must, like all the large-leaved things, be protected from strong winds. If this *Aralia* be planted in a dwarf and young state, it is likely to give more satisfaction than if planted out when old and tall. Prefer therefore dwarf stocky plants when planting it in early summer. It should have rich, deep soil and plenty of water during the hot summer months. For the public gardens of Paris it is kept underground in caves during the winter; but in private gardens it will doubtless be thought worthy of a place in the greenhouse throughout that season. In Battersea Park a bed of *A. papyrifera*, thirteen feet in diameter, attained a height of five feet, from cuttings struck in the spring of 1868. The plants were left out all the next winter, and, although killed to the ground, the thick fleshy roots next season



The Chinese Rice-Paper Plant.

produced numerous strong shoots or suckers. These were produced irregularly, and so numerous that they had to be thinned out in many places; a few spaces only requiring to be filled up. It is easily increased by cuttings of the root, and is usually planted in masses, edged with a dwarfer plant; but as a small group in the centre of a bed of flowers, or even as a single specimen in a like position, it is very effective. In some places it survives the winter out of doors, though as a rule it is better planted from year to year.

THE KITCHEN GARDEN.

THE CUCUMBER—ITS CULTIVATION AND USES.

(Continued from p. 612.)

CULTIVATION OF THE CUCUMBER IN THE OPEN GROUND.

THE growth of the Cucumber in the open air has for many years past been a matter of considerable uncertainty, for where one person has succeeded fifty have failed. The reason of this is not very apparent, but the fact is not the less manifest on that account. Twenty years ago, raising a few plants on a slight hot bed or ridge as it is called, putting them out and covering them with hand-glasses, training them with very little trouble, and cutting quantities of fruit through the summer and autumn was a common occurrence achievable by any one; now the gardener who can present a good ridge of plants and cut quantities of gherkins for pickling, and larger fruit for general use is a very fortunate individual. At that time to see Cucumbers by the cartload in July, August, and September in our principal markets was a usual and annual thing. Then the market gardeners in Bedfordshire—at Biggleswade, Sandy, and other places—used to grow them by the acre, by merely manuring and ploughing the land, throwing it into raised ridges, sowing the seed in patches four to six feet apart, and attending to the plants with ordinary care. So managed

they were found to be a remunerative crop; but now outdoor cultivation is so uncertain, that it is to a very large extent abandoned. The reason why it is so is not easy to explain, for though some contend for a change of season, there has certainly been no change within the last twenty years that will account for the failure, while a finer season than that of 1868 was never known. Since the spread of the potato disease the Cucumber appears to have lacked constitutional vigour, and in consequence to have suffered not from one disease only, but from several diseases, some of them so virulent in their attacks, that a plant perfectly healthy in the morning may be dead at night. These diseases, however, will be more fully described in a subsequent page, our duty at the present time being to make such arrangements as may be the most likely to ward off, or at any rate mitigate, the virulence of these unwonted visitations.

The first thing, then, will be to provide such an amount of fermenting material as shall not only form a good ridge, but shall have the property of maintaining a gentle bottom heat for as long a time as possible. Thus, as this preparation will not be required before May, we should for some time previously collect all the vegetable refuse of the garden, such as leaves, weeds, prunings of trees, short grass from the lawn, &c., and these should be thrown into a heap with an equal quantity of horse-dung. Mix the whole carefully together and turn it weekly, so as to promote regular and steady fermentation. By the middle of May the prepared dung will be ready to form into a ridge. Formerly we used to make our ridges about four feet wide and eighteen inches deep, sinking the bottom a foot or so below the level of the surrounding soil, and casting that over the bed for the plants to grow in. Now a bed of wider dimensions is found preferable, and hence we should recommend that the ground be excavated seven feet wide and one foot deep, and of any given length, banking the soil around the excavation so as to protect the fermenting material from cold winds. In an excavation of this kind place some rough sticks in the bottom for drainage, and then make up a bed of the material before recommended, two feet thick, making it firm as if formed for a hotbed. When the heat has subsided sufficiently, place upon the mound a double row of mounds for the plants, each mound being three feet from the side and five feet apart. The mounds should be of sufficient size to receive a full-sized hand-glass, and about a foot deep, say a barrow-load to each hill. To insure success these mounds should be formed of good soil, say three parts of fresh loam, with which one part of leaf mould or mushroom dung may be mixed. We find an advantage in using the latter, as it generally results in a fine crop of mushrooms being produced in the autumn months. When the soil is of the proper temperature, 75° to 80°, the plants which have been previously prepared may be ridged out, giving a little tepid water to settle the soil, covering the plants with a hand-glass, and shading them during sunshine until such time as they are established.

The after treatment of the plants will consist in giving air on mild bright days, watering when necessary, say once or twice a week, with tepid water, and stopping and training as the plants require it. It will, however, be found a good plan to confine the plants to the hand-lights until they get thoroughly established; in fact, not to let the branches out until such time as more room is absolutely indispensable. Then harden them by giving air more freely for a few days, until at last the lights may be raised upon three bricks placed on edge, where they will remain throughout the season. We regard it as indispensable that the hand-glasses remain over the plants throughout the season, as we are convinced that the protection of the collar of the plants from cold rains and extreme atmospheric changes, is an element important to complete success. Before training the plants it will be necessary that they be earthed, and for that purpose, as soon as the heat of the bed has sufficiently subsided, place the soil from the excavation over the bed to the depth of nine inches or a foot, and make it tolerably firm. It is, however, desirable that the mound in which the plants are placed be kept a few inches above the surrounding soil so as to prevent the water becoming stagnant around the plants. Before training the plants, it will be found a good practice to mulch the ground with short

grass from the lawn, two or three inches in thickness, not only for the purpose of retaining heat and moisture, but also to keep the plants clean in stormy weather. A friend of ours, a very successful grower, in addition to this mulching with short grass, thatches it over with clean stable litter, fastening that down with long thin sticks or laths pegged firmly over it. In this manner the heat of the bed is very much husbanded, which is certainly an advantage. The only drawback is that the straw, from its colour, is not so absorbent of sun heat as the soil would be, but if the warmth of the bed is maintained that advantage can be dispensed with. Training is an important point in the management of the ridge Cucumber, and for that purpose a stock of hooked pegs, six or eight inches long, must always be provided ready for use. Place these over the branches, but while you endeavour to fix the latter firmly be careful in so doing not to bruise them, and a week after the plants are established it will be necessary to go over them and stop all the strongest branches, but leaving the weaker ones to gain strength. As a rule the branches may be stopped to one leaf before the fruit, but if they are very strong then to the fruit. Take care to prevent the branches becoming crowded; that is, do not retain more than the leaves produced upon them can be fairly exposed to solar influence. Sometimes a large branch may be removed with advantage to make room for the younger ones, and this will be found good practice, the object being to provide a succession of young wood all over the plants.

With reference to watering it will be advisable to sprinkle the plants in bright warm weather every evening just before the sun leaves the ridge. This will be best done with a fine rosed watering pot, and it is indispensable that the water be warm when used. The watering at the root must be governed by the weather. With the bed mulched and thatched so much will not be required as if the ground was exposed, and hence upon the average, a soaking of water at the root once a week will be sufficient, even in hot weather; let it, however, be a soaking sufficient to wet the whole soil, and the temperature of the water must not, at the time of application, be less than 80° of heat. When the plants are in full bearing alternate waterings of liquid manure may be used, and this can be best prepared by immersing equal portions of cow and horse dung in a large tub or cistern, stirring it daily for a week or more, and then clarifying it by throwing in a lump of quicklime. The manure water should be perfectly clean, and be used in the proportion of one to four of clean soft water. So managed, with an ordinary season, ridge Cucumbers may still be successfully grown, and be made a remunerative crop. Where hand-glasses cannot be had a very good and cheap substitute may be extemporised by forming a framework of hoops in a conical form, say thirty inches in diameter at the base and eighteen inches high; this covered with oiled calico or tiffany will form a very good protecting material. A.

(To be continued.)

The Chiswick Trial of Peas.—The ground selected for this trial has been thoroughly prepared for the purpose, and is well open to sun and air. The white round kinds are sown just beyond the orchard house in rows about five yards in length and five feet apart. There are two lines of each with a path down the centre. The sorts commence with Ringleader and Firststop, and end with goodness wonders what. All the first earlies are in full bloom, consequently they are beginning to be interesting, although the actual test of merit must be left until the period of podding. Near the back of the old council room is a large piece of ground covered with peas, and here there are four rows devoted to each sort, among which are Blue Rounds, Blue Wrinkled, and White Wrinkled Marrows. Birds, slugs, and mice are very destructive to peas, but so far those here have been kept clear of such depredators. Nearly two hundred kinds, we believe, are on trial, from among which surely something good may come. It may be named that it would facilitate the opportunities of comparison if similar sorts were grown side by side, instead of having tall and dwarf mixed. Some prefer dwarf kinds, and would like to compare them closely, others have a strong penchant for tall kinds, and would like to have them in close contiguity; this is the only exception I have to take to what otherwise must be a capital trial of peas.—BETA.

GARDEN DESTROYERS.

BARK-BORING INSECTS.

(Continued from p. 568.)

(SCOLYTUS DESTRUCTOR.)

THE number of species of bark-borers of that class, of which the *Scolytus destructor* is the type in this country, is considerable, and we often see trees suffering, and bearing traces of insect-mischief done by them, without any insects being visible at work. We see little round holes in the bark, as if made by a lead pellet of shot, and on tearing off a portion of it we see grooves and galleries, or eaten spaces, but we may fail to set eyes on the creature that has made them. It has perhaps left the galleries and flown abroad. They may be the work of former years, or the insect may be there all the time, but concealed from view. It is desirable, therefore, that in such cases we should be able to say, from an inspection of the bark or the galleries, what insect has made them, and it so happens that almost every different species has a different mode of working, which is capable of recognition.

The workings of some are mere irregular excavations, where, as it were, they clear all before them, leaving a sinuous or curved margin. The greater majority of bark borers, however, form regular galleries of a definite and constant character. These consist of two portions; one a wider main gallery, all of one width, made by the parent beetles, in which the female lays her eggs at regular but close intervals; and the other of smaller galleries diverging from it, more or less, in a herring-bone fashion, small and slender at their starting point from the main gallery, but increasing in width as they go from it, and ending in a terminal cell or bed. These have been made by the young larvæ, and the terminal space is where they pass into the pupa state, and undergo their metamorphosis into beetles. Now these galleries differ in their position; some have the main gallery always in a longitudinal direction, going upwards in the same line as the tree, and the grub galleries of course transverse (see fig. 1). In others the

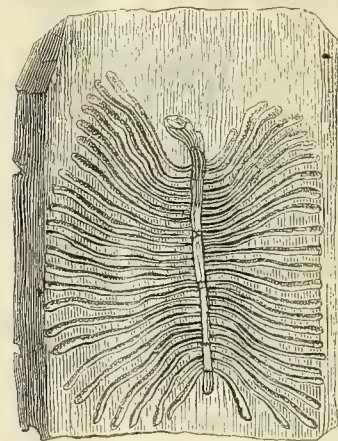



Fig. 1.

main gallery takes a transverse course, running in a direction as if to go round the tree; in many instances diverging from a point obliquely to the right and the left, like a , and going as if to embrace the tree. A third set have several main galleries radiating from a central point, where the beetle entered, and to which it has returned again and again, and has started afresh on each occasion. A fourth has them penetrating directly into the tree. Mr. E. Perris, in one of his papers on the insects of the Maritime Pine (*P. Pinaster*), has given a list of the principal xylophagous insects falling under each head, and although perhaps it may to some of our readers seem too technical for our pages, to others it may be convenient to have a handy reference to the different kinds. It is not long.

1. Main (or mother) galleries, as they are called, longitudinal; galleries of the larvæ transverse, but capable of becoming longitudinal if the diameter of the tree interferes with their transverse

extensions. The insects following this plan are *Scolytus destructor*, *S. multistriatus*, *S. Ulmi*, *S. pygmaeus*, *S. rugulosus*, *S. pruni*, *Tomicus typographus*, *T. stenographus* (often sub-radiate), *T. laricis*, *T. acuminatus*, *T. Cimbriae*, *T. bispinus* (mother gallery often spiral), *T. ramulorum*, *T. villosus*, *Crypturgus pusillus*, *Hylurgus piniperda*, *H. ligniperda*, *Hylastes palliatus*, *Hylesinus Thuyae*, *H. aubei*, and *H. Retamæ*.

2. Mother galleries transverse; larval galleries longitudinal:—*Scolytus intricatus*, *Tomicus suturalis*, *T. curvidens*, *T. bicolor*, *Cryphalus Tiliæ*, *Hypoborus Ficus*, *Polygraphus pubescens*, *Hylesinus oleiperda*, *H. crenatus*, *H. varius*, *H. Spartii*, *H. vittatus*, *Dendroctonus Hederae*.

3. Mother galleries radiating or starred; larval galleries perpendicular to the part of the mother gallery where they leave it:—*Tomicus bidens*, *T. Saxesenii*, *T. chalcographus*.

4. Mother galleries irregular; larval galleries entangled:—*Cryphalus piceæ*, *C. abietis*, *Dendroctonus micans*.

The penetrating galleries are of two kinds, one where each serves for one larva, as *Xyloterus domesticus*, *X. lineatus*, and *Tomicus dispar*; and another where the same gallery serves for several larvæ, as *Platypus cylindrus*, *Tomicus monographus*, *T. dryographus*, and *T. curygraphus*.

Although so many of the above make their galleries after the same types, most of them can be distinguished from each other by some variation in the style of their galleries, or by their size, or length, or depth, or closeness to each other.

As already said, *Scolytus destructor* belongs to the first type, where the mother-gallery is longitudinal; fig. 1 represents this. The parent will be found making its mother-galleries early in June. In some bark-boring insects both male and female parents are found inhabiting the same gallery, but in *Scolytus destructor* the male is present in the gallery only for a short period; and he would appear not to assist the female in eating it out, but to join her only for a short time after she has made some progress. The mother-gallery is usually about three inches long (sometimes a little longer or shorter), and as deep as the bark will allow, lying partly in the bark and partly in the wood itself. The insect takes about three weeks to make it; she lays her eggs along each side of it. These vary in number. Dr. Chapman, who has well studied the subject, has met with more than 160 in one, but usually they do not exceed a hundred. They are covered by the *débris* (frass) which remains in the gallery.

The young larvæ feed for about a month, and then make and settle themselves in the wider space or cell at the end of their gallery. Many go into the pupa state about the end of July, whence they emerge as perfect insects in the month of August; but a great number also pass the winter in their cells still in the larval state, and do not become beetles until the following month of May. It has been pointed out by Dr. Chapman that those larvæ which are not to come out until the following year make a deeper cell at the end of their burrow than those that undergo their metamorphosis the same summer, the former making their resting-place nearly half an inch deep in the solid wood, whilst the latter make it in or only immediately below the bark. The deeper position of the former not only protects them from the heat of summer and the cold of winter, but also from the attacks of birds and other enemies when the bark, which has been loosened by the burrowing of the *Scolyti*, falls off from the action of the weather; and the very similarity of the *débris* which closes their holes and stops up their burrows to the wood itself, which in the bark makes their position by its contrast very observable, serves in the wood to screen them from view.

Dr. Chapman very naturally remarks that "the object though not the cause of this difference in instinct between the beetles emerging in autumn, and those remaining as larvæ until spring is obvious"; but although this seems on the first blush a remarkable example of instinct, on further reflection it rather appears to us that there is neither instinct nor object in the matter, but that it is only a natural result of their relative positions. Those larvæ that happen to make their resting-place, in which they compose and repose themselves when full fed, in the bark, are of course nearer the surface than those that happen to go into the wood, and are more open to the developing influence of the heat of the sun and air, &c., and it is probably in consequence of this that they come out first. Those that are

deeper being retarded until cold weather comes on, are, by it retained torpid until the return of heat, and also, by the very same means which kept them back, preserved from the too great effects of the cold.

The larvæ are without feet, and much thicker near the head than towards the tail; they are white, with a yellowish head, with brown mandibles and mouth. The perfect insect is black, with pitchy-coloured or reddish elytra. The accompanying figures (figs. 2 and 3, which respectively show the insect magnified and of its natural size) enable us to dispense



Fig. 2.

Fig. 3.

with a description. We shall only point to one or two peculiarities in its structure, which are common to it and all its allies, and which are interesting from their remarkable adaptation to the mode of life of the insects.

The mandibles are short, strong, and toothed; the head is firmly attached to the prothorax; the antennæ are short, and capable of being folded up under the head; and the prothorax is often provided with a roughness which makes it like a file. The extremity of the elytra has oftener still a roughness or teeth, or, as in the case of certain species of *Scolytus*, the metasternum is provided with a point, all important arrangements to provide it with a fulcrum or *point d'appui* from which to put forth its strength in working its way in its mining operations. The feet are short, flat, often toothed or shaped like a rake. The body is nearly cylindrical. One can see that it would be very difficult to organise in a more harmonious manner insects destined to perforate bark and wood, and to excavate galleries. A. M.

Slugs.—Many complain of the injury done by slugs this season. They are supposed to be more numerous this year than usual, because there has been little frost to kill them. This, I think, is a mistake. They are more numerous because they breed faster in a mild season; not that they are killed by frost. Everyone knows that quicklime dusted on the ground in early morning is a good remedy; but to be effectual it ought to be repeated within an hour, because the slugs have the power of casting their skins, and after getting rid of the lime, will seek shelter. Of course, if the ground be covered, this will be difficult. But lime is a remedy which cannot be used in flower gardens. The best trap I know has been prepared in the following manner: Get some Cabbage leaves, warm them in an oven till hog's lard will spread on the surface; place them overnight near your favourite plants, and almost every slug will be found under them in the morning. It is hardly necessary to say that there must be no salt in the lard.—I. R. PEARSON, *Chilwell*.

Mice as Garden Destroyers.—The large bull-headed grass mouse eats its way, nibbling innumerable roads and runs in every direction, through old pasture and meadow grass. Its most destructive form of depredation is that of nibbling the bark off young plantation trees, coppice-wood, hedgerows, &c., sometimes destroying many acres. I have seen fine healthy plantations and holly hedges entirely destroyed by these mischievous vermin. The depredations of the field or garden mouse are too well known to farmers and to us gardeners, through their activity in digging up whole rows of peas, beans, radish, and other seeds, by their stealing all the best filberts, the walnuts, chestnuts, beech-nuts, acorns, common laurel-berries, Portugal laurel-berries, the hard kernels of holly-berries, thorn-berries, and a host of other berries and seeds, and hoarding the same for winter-store. They will get into cucumber frames, pits, or houses, dig up newly-sown seed of both cucumbers and melons; and, what is still worse, find their way in when the plants are in full vigour and bearing fruit, and make sad havoc; and, to crown all, they will gnaw fine plants in full bearing right through near their roots, killing and destroying the whole at once, and they will act in the same way with various other kinds of plants, both in-doors and out.—James Barnes.

THE GARDEN IN THE HOUSE.

CULTURE OF PLANTS IN ROOMS.

(Continued from page 616.)

IN rooms the new growth of most plants commences about the end of February, and consequently the necessity for watering them will be greater from that time forward than in autumn and winter.

Lastly, the necessity for watering varies with the organization and development of particular kinds of plants. With respect to organization, it is well known that many succulent plants, as for example, cactuses, are covered with an epidermis which has few pores, so that at the period of rest they transpire very little moisture, and so can remain for a long time without any water. But during the period of vegetation these plants require abundance of water. Other succulent plants, which possess true leaves (as the *Mesembryanthemums*), must be watered like other plants, and will die if kept too long dry.

The greater number of bulbous plants require abundance of water during the period of vegetation. After the seeds are ripened, water must for the most part be withheld altogether. There are also plants which grow in water and marshes which must be similarly placed when under culture; others again, such as ferns and orchids, which during the season of vegetation like a moderate degree of moisture; others again, as evergreens, which even at the season of rest, when they are forming new flower buds, must be guarded from too great dryness.

Of very great importance to the health of the plants is the time of the day at which they should receive water. The best time is in the morning and evening, and even in autumn and winter the morning, so that the superfluous moisture may be somewhat absorbed in the course of the day. In spring and summer towards evening is the best time, as under the influence of the coolness of the night the water given will be distributed over all parts of the plant. After such a watering in the evening, plants which had been dried up during the heat of the day recover themselves in the course of the night. But if they are watered in the morning the succeeding evaporation during the heat of the day will prevent the plants from properly recovering at night from the drying up they have received during the day. In the case of plants placed on sunny window sills, flower stands, and balconies in summer in the open air, watering in the evening is the chief condition of a vigorous growth. In such positions, for the sake of the better recovery and preservation of the plants in hot weather, after the evening watering should follow a sprinkling overhead, which by checking evaporation, promotes in a very great degree the rise and flow of the sap to all parts of the plant. This may be repeated the following morning. This sprinkling overhead is a very powerful stimulus to a strong luxuriant growth, therefore, where the locality permits, it should be employed along with the watering proper. It is necessary when the shoots droop in consequence of too great dryness. In the glazed cases and in plant houses it may be employed for the purpose of producing a moist atmosphere.

For sprinkling, the amateur should use a well-made brass syringe, as those made of tin neither work well nor last long. Specially adapted for room culture, where it is desirable to moisten the plants without wetting the floor, is an instrument of recent construction, called a "refresher." The simplest form of this instrument requires some effort of the lungs; but in improved forms, the open end of the tube is connected by a thin tube of gutta-percha with a hollow gutta-percha ball. By squeezing this ball the necessary blast of air is produced, and the operation is performed with much less effort. These improved "refreshers," with glass or brass tubes, are to be had at the surgical-instrument makers, as they are now frequently used by physicians. For sprinkling plants in rooms they are unquestionably the best instruments, as with them the water can be applied in the smallest quantity in a fine dew to all the leaves without wetting anything else in the room.

Although morning and evening are said to be the best times for watering, this may be done during the day in dull weather;

but in sunny warm weather it is not suitable for plants which are exposed to the sun; the balls of these being considerably heated, are liable to be suddenly chilled by the cold water; and in the case of tender evergreens, such as *Ericas*, &c., the result may be fatal.

From this follows the rule, not to water plants which are exposed to the sun as long as the sun shines on them, or at least not till the day declines. Should individual plants which stand in such positions exhibit signs of too great dryness in the course of the day, by the drooping of the points of their shoots, they should be moved into a shady place and sprinkled at intervals for some time, the ball being also well watered. As we have in preceding pages described the manifold circumstances which determine the greater or less supply of water to plants grown in pots, we shall now add a short summary of the results, for practical purposes, which may be useful to beginners:—

1. Always use soft river or rain water.
2. The temperature of the water should always be at least as high as that of the room.
3. By comparing the appearance of the soil when in a dry and in a wet state, and by noting the aspect of the plants under the same circumstances, an opinion may be formed as to whether water is necessary or not; and the plants should be watered on the first appearance of dryness; or even before it.
4. In watering, see that the ball is thoroughly soaked; this will be most certainly effected by absorption from the saucer.
5. In autumn and winter, water in the morning; in spring and summer, in the evening only. In dry, hot weather, where the locality permits it, employ a sprinkling in the morning and evening in addition to the watering. Plants which have become dried in the sun should be removed into a shady place, and after a while sprinkled and watered there.
6. When there is any doubt whether a plant is so dry as to require water or not, the following considerations may be a guide:—If the drainage is good, or the soil loose and light, or the pot small compared with the plant, or the ball full of roots, or the weather warm and dry and the position exposed to the sun, or the air in the room very dry in consequence of the great heat, and if the plants are in good health and full vegetation, in such a case it will be proper to water, whether any or all of the above conditions exist. Greater care must be observed, and in doubtful cases water must be withheld altogether, when the drainage is imperfect, the soil heavy, stiff, and rich, or when the plants are in very large pots, and the ball not yet filled with new roots; when the weather is cool and moist, the position shady, or when the atmosphere of the room is more moist than usual, or when the plants are shut up in glazed cases and double windows in an atmosphere kept moist by sprinkling. But the greatest caution must be observed when, in addition to the above, the plants are sickly or in a state of rest, in either of which conditions they will require very little water. Plants which have a fleshy stem, root, or root-stock, or a bulbous root, require no water while they are in a state of rest.—*Dr. Regel.*

(To be continued.)

PRACTICE v. SCIENCE.

I was much interested in Mr. Newman's note (see p. 548), and desire to say a word to point out that this seeming confusion between practice and science arises from a false rendering of the words "science" and "practice" by scientific men themselves. They divide books and men wrongly, as I think, into "scientific" and "practical." This is frequently done in garden literature. Is it any wonder then, that gardeners get a notion that "science" is something very different from anything they are accustomed to deal with, and that they themselves belong to quite a different class of workers? This awkward and mischievous barrier should be broken down; and everybody should understand that science simply means knowledge, that the knowledge of the gardener does not differ in kind from that of the highest scientific man, and that the division of ideas into "scientific" and "practical" is totally false in principle. What is right in theory is right in practice; what is sound in practice is correct in theory, and *vice versa*. But it will not be easy to make this clear to the less educated, till "scientific" men so-called help to dissipate the erroneous notion that they differ essentially from the simplest and most unlettered observer. J. L.

DINNER-TABLE CENTRE-PIECES FOR FLOWERS.

If you go into any shop where vases for flowers are sold, it is quite the exception to meet with a form that, when furnished with flowers or foliage, will not obscure the view across the dinner-table. All the greater, consequently, is the pleasure to a collector of these articles when he meets with such a form as that depicted in the accompanying engraving. I know not whether the design is registered; but it is only at one of the London glassworks that I remember to have seen it. The artist has represented four little vases, surrounding the large glass globe, which contains clear water. In that, however, he has erred, for this centre-piece is only made in two sizes, of which the larger has five little vases, and the smaller size has only three. In each, these little vases are placed at such a height that, when filled, they present no interruption to sight or conversation. Upon one occasion I used three of the large size, placed in a line down the longer diameter of an oval table,



Dinner-table Centre-piece for Flowers.

twenty-one feet long by ten feet wide, and round the central one were placed four of the smaller size, an arrangement which the great width of the table well permitted. The same table has frequently been dressed with other forms of vases; but, taking into consideration the few flowers required to decorate one of these compared with many other kinds of vases, I never was more pleased with the general effect of the decorations, than upon the occasion when seven of these centre-pieces were used.

W. T.

PASSION-FLOWERS FOR THE DRAWING-ROOM.

THESE are not very promising subjects for cutting, as the individual flowers generally last but one day, and close with the sunset. Still, many of the flowers when gathered from the plant seem, partially at least, to lose this provoking power of early closing, and the bright light of brilliantly-lighted rooms keeps them open a few hours longer—that is, long enough for an evening party. Unless, however, at the end of the season, when the vital functions seem weakened, and this power of closing the flowers with the day appears to decline with the diminution of growing force, passion-flowers are not to be depended on for bouquets. It is rather too much of a risk

to centre a bouquet with a gloriously-fringed blossom of *Passiflora quadrangularis*, when it may collapse into a hard ball, of no particular beauty of surface, before it is presented. The smaller *alata* is equally uncertain, and most of the other thinner varieties still more so. Still, both these passion-flowers, and many more, are very useful for cutting or gathering. Some dishes, glasses, or baskets filled with blossoms of *quadrangularis*, fringed with its own leaves, are a grand sight; while the perfume will fill the largest room or house with spicy fragrance. The flowers keep open best if gathered two or three hours before noon, placing them in water or on damp moss, and slightly sprinkling, or rather dewing, them over with water. *P. alata* does equally well, or better, under the same treatment. It is not so large, but very like the other in all respects. Most other varieties will keep open for a shorter period, and with less certainty, under similar treatment.

But such varieties as *P. Loudonii*, *Kermesina*, and *racemosa* or *princeps*, are more effective cut in branches of any desired length, the leaves and flowers depending from baskets, vases, &c., or twisting around them. With one end in water, the flowers will frequently keep open, as in the case of single flowers; and should they close, the closed flowers, with the advancing buds and leaves, are very beautiful. My favourite passion-flower for foliage is *Kermesina*. It is all that a leaf and branch need be for effective decoration. Fine, pliable, with small, exquisitely cut and coloured leaves, its elegance and beauty are beyond praise. And it matters little whether the flowers of *princeps* are open or not. They have a most unique effect depending over the sides of high stands, or enwreathing their stems. The leaves are likewise finer, though larger, and not of such a beautiful green, as those of *P. Kermesina*.

P. princeps flowers freely when properly treated. It should not be pruned much, and none of the old flower stems must ever be removed. It flowers again and again on the same flower stalk; hence, unless for use as cut flowers, none of these should ever be removed. In the winter season they hang in withered-looking bundles; but in the early spring the sap floods the channels with new life, and a fresh raceme is thrown out from the extreme point of last year's flower stem. And this goes on year after year, while other pendants of dazzling brightness spring forth near the base of the flower stems. Those also that have been shortened back sometimes break into fresh clusters of blossom. Many of them, however, die back: and, unless obliged to cut for the flowers, none of the old flowering branches should be cut at all. When the new flower-stem shoots forth, any dead points beyond it may be cut off. Another great advantage arises from this successional elongation of the flower-bearing branchlets. Almost any length of raceme may be secured for twisting round the stems of stands or vases. This enables the decorator to place the flowering blossoms of this brilliant plant in telling positions to which shorter flower stems, that must from necessity have one end in the water, could never have reached. Many of the common passion-flowers have beautiful foliage, and sometimes *caerulea* and other varieties will keep open throughout a long night. Though these lack the brilliance and size of those I have indicated, the whole of the passion-flowers are beautiful and interesting. While I advise that the massive cup-like sorts, such as *alata* and *quadrangularis*, should be placed simply on their backs on damp moss or in water, occasionally profusely-flowered branches of either have a grand effect, depending over the sides of silver stands or vases enwreathed with *Stephanotis*, or other white or light-coloured flowers.

T.

Clay a Foundation for Table Bouquets. On examining the construction of some table bouquets the other day, I found that little round balls of wet clay had been placed in small flower-pot saucers, and that into the clay the flowers had been inserted. These were so arranged with sprays of ferns, and graceful flowers, as to completely hide both saucer and clay, and present an appearance scarcely attainable in bouquets made in the ordinary manner, and placed in glasses or vases. —W. F.

Caladiums for Room Decoration.—The value of these is not sufficiently known. The beauty of the form of the leaves of well-grown plants is of the highest character. With this important, if not most important, quality in plants for indoor decoration, they combine a variety of beautiful mottlings and shadings of colour, which is seen to great advantage in gaslight. The plants are so easily grown and increased that any injury specimens may receive is of no account, which is not by any means the case when rare and expensive plants are employed. The great variety in the size of *Caladiums* is also in their favour; among them we may find subjects fitted for the smallest *pergine* or the largest recess.

Asparagus for Cutting. The fine foliage of *Asparagus* is very useful for bouquets, and I have seen sprays of it used with advantage for the backs of "button-holes." There is also another use to which it may be devoted, when full of berries; if the tops are cut off, inserted in pots of moist sand, and some moss, or other green covering, placed on the surface of the pots, it forms a graceful object for the drawing-room table, especially among other plants. As beet is used extensively for ribbon bedding, I do not see why *Asparagus* should not be used as occasional plants for the backs of borders, &c. And I am sure it is a positive relief to rest one's eyes on a bed of its graceful foliage, after being dazzled with the glare of a mile or so of the red, yellow, and blue of the present style of bedding. —W. JONSON, *Kilburn*.

MARKET GARDENING.

BY H. EVERSLED.

(Continued from p. 623.)

Mr. W. W. GLENNY has been good enough to permit me to give an account of his garden farm at Barking. It consists of 150 acres of gravel loam, made rich and friable with manure, and kept in the highest state of cultivation. The farm is entirely in vegetables, with the exception of eighteen acres of permanent pasture, and sixteen of wheat, on the stiffest land, which is furthest from the railway station. At the time of my visit the acreage of the farm was thus appropriated:—Potatoes, 34; permanent pasture, 18; spring-sown and Lisbon onions, 15; cabbage, 12; red ditto, 2; seed-beds, 2; carrots, 7; parsnips, 9½; French beans, 6; scarlet runners, 3; vetches and green food for horses, 4; parsley, 1½; willow and osier beds, 1½; wheat, 13; mangold, 1½; peas, 8; asparagus, 1; men's allotments, 1; cucumbers and marrows, 2; seeds, 1; buildings, roads, brook, and small crops, such as sage, &c., 11. Twelve horses are kept to cultivate the farm, convey the produce a distance of eight miles to London, and to cart manure. The sums paid for dung, exclusive of cartage, during the past three years have been—£211. 9s. 8d., £271. 16s. 7d., and £278. 15s. 2d. From four hundred to seven hundred bushels of soot were also used in each year. About one-half of the dung is purchased at three shillings or three shillings and sixpence a ton, and is drawn from London in the empty waggons; the remainder is bought at five shillings per ton, at the railway station or quay. Some other manures, including the spent hops from an adjoining brewery, are also brought on this farm. The live stock consists of a couple of milch cows, and forty or fifty pigs during the winter. The labour bill, including beer, is £1,500, or £10 an acre. At the time of my first visit—June 17th—the number of labourers employed, including ten women, a wheelwright, and a salesman, was thirty-five, and their wages amounted to £30 a week. During the winter five women are employed preparing goods for market, bunching leeks, pulling and bunching greens, putting up onions, &c. The implements of the farm, besides carts and market waggons, consist of common ploughs, a double-breasted or ridging-plough for moulding potatoes, beans, and peas, and some hand-drills. A small patent tool, which resembles a Dutch hoe put on wheels, must be mentioned, because its use shows the mechanical effects of dung and good farming in making the surface friable. It is not uncommon for a man to push this little implement over two acres in a day, cutting up all the weeds between the wide rows of the garden crops. A willow-bed supplies bunching rods for tying the bunches of onions, greens, &c. The plants are set at two feet by eighteen inches, and the bed lasts twelve years. Osiers of coarser habit are grown to make baskets for vegetables and fruit. I may note that the cost of the baskets (with a few sacks) used on the farm exceeds £50 a year.

Parsnips are one of the main crops which are successfully grown on this farm. The chief points to observe in their cultivation are:—1st. To sow on land that is least liable to wire-worms and the small creatures—probably slugs—which are said to be invisible to the eye, and which soon make the parsnips so, by eating the young plants as fast as they appear; the remedy for slugs is soot, and the prevention is, sowing on land that is not liable to be infested. 2nd. To take precautions against having forked parsnips, and to grow them of a fine, tapering, marketable shape by breaking the land well up and applying the manure to the previous crop. It is not perfect management to sow after corn, because the land is not then in sufficient heart and tillage; or after clover and grasses, on account of the danger of wire-worms and canker; or after potatoes, because potato-ground ought to yield a crop of greens after the potatoes are off, instead of lying idle till parsnips are sown. They generally follow late cabbages or savoys, which are cleared respectively in November and from Christmas till 1st March. In either case, the field is not touched until immediately before sowing the parsnips, and Mr. Glenny would prefer to plough, scarify, and sow on the same day, so that the seeds of the crop might start fairly with those of the small nettle, chickweed, grass, and the shepherd's purse, which are favourite weeds in market gardens, frequently escaping the continual hoeing, and almost serving to establish in some quarters the theory of spontaneous generation. Supposing the clearings of the savoys to have been bunched by 1st March, as in 1867 (14th March in 1868, 20th February in 1869), the land is ploughed with two horses and subsoiled with three horses, and is thus moved and stirred to a depth of about nine inches. It is then drilled with a hand-drill as early in March as the state of the weather permits. Mr. Glenny objects to preparing the land in autumn, because it solidifies too much by the time the crop is sown. In garden-farming a stale furrow and a frosted surface are not entirely appreciated, since the made soil of a garden-farm is effectually

pulverised by manure and surface tillage. Parsnips are sown fifteen inches apart in the rows, and the plant is singled at ten or twelve inches. The crop is hoed, singled, and kept clean for forty-five shillings an acre. The hoeing last year had cost, up to 21st June—First hoeing, 5s; singling, 16s. 8d.; second hoeing, 6s. Frost does not injure parsnips. The roots are raised and sent to market from the field, and are in season from November till the end of Lent, occupying the ground longer than any other crop.

French beans often follow early cabbages, without dung. The last of the three successive sowings is made about the 21st June. This delicate plant is impatient of fresh manure, and requires the preparation of a perfect garden tilth. Mr. Glenny always ploughs twice, and for this and similar crops the land should be lightly rolled, to level it and to retain moisture. Drills are formed at 2½ feet apart by means of a small hand-plough, or marker, drawn by a man and a boy; women follow, and drop a seed at every nine inches, and the drill is then covered by a man with a hoe. The plants are carefully hoed. French beans grow rapidly, and soon become what salesmen call "old beans." In hot weather they should be gathered every other day, and they are cleared in about four pickings. The latest-sown beans are cut down by the slightest frost. Scarlet runners are generally sown in the last week of April, after greens. The land is ploughed twice, with an interval of two or three weeks. The rows should be three feet apart, and a seed is planted in every foot of the drill. Runners continue to bear until they are cut down by severe frost. When manured, they are liable to become too luxuriant in damp summers; they should, therefore, be planted on good land, without manure. It does not pay to support them on sticks, except when they are grown as a shelter for cucumbers; and instead of giving them artificial support, an upstanding habit is induced by continually topping the vine from the period of its beginning to "run," about the middle of June. Unless beans and runners are gathered when very young, they should be sorted before sending them to market, in order that the broad ones may be picked out.

Cabbages.—A second crop in succession was planted last year, on June 21st, after ploughing in a second and heavy coat of dung with a seven-inch furrow. After rolling the land a line is used in setting the plants, which are put in with a short dibble, at a distance of twenty-two inches by twenty inches. In the case of "collards," which are planted twelve or fourteen inches each way, a light roll after the plough is followed by the "fiddle"—resembling a rake with four or five long teeth—dragged by a boy, to mark drills for the plants. Red cabbages for pickling are planted in October, a yard apart in each direction, and occasionally collards are set previously between the rows in which the cabbages will afterwards be planted. The catch crop is sent to market early in spring, before the ground is required for the main crop.

(To be continued.)

THE ARBORETUM.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE VENETIAN SUMACH (RHUS COTINUS).

This forms a highly ornamental, deciduous shrub, from six to eight feet high, and when loaded in autumn with its large, loose panicles of elongated hairy pedicels, it is a striking and attractive object. It is a native principally of the south of Europe, but it is found from Spain to the Caucasus. In the south of Russia and Greece the whole plant is used for tanning and dyeing leather, wool, and silk, yellow; in Italy, about Venice, it is employed for dyeing black, and is called "scotina." It thrives best in a dry, loamy soil, and is readily increased by layering. It was first introduced in 1656. The leaves are more or less round or obovate, simple, alternate, coriaceous, stiff, smooth, bright glossy green, and on long, slender footstalks. They measure from 1½ inches to 2½ inches in diameter, and remain on the plant until late in the autumn, when they become of a fine reddish-yellow colour. The flowers are hermaphrodite, yellow, or flesh-coloured, and are disposed in large, loose, terminal panicles, with many of the flowers abortive; after flowering, the pedicels lengthen, and become hairy. The fruit is a smooth, veiny, half-heart-shaped white drupe, with a triangular stone inside, and ripens in September. This Sumach, as a shrub for autumn decoration, deserves a place in every garden where there is room to allow it to extend itself on every side.

THE MAGNOLIA HOLLY.

(ILEX LATIFOLIA.)

THE accompanying life-sized illustration of one of the leaves of this fine plant may serve to give some idea of the size and beauty of its foliage. For the opportunity of figuring it we have to thank Mr. Stevenson, gardener at Cobham Park, Surrey,



Life-sized Leaf of the Magnolia Holly.

where, as has already been stated in THE GARDEN, there is a noble specimen of this remarkable Holly. It looks at first sight to be a handsome pyramidal specimen of *Magnolia grandiflora*, such as one sees in the warmer parts of France,

and sometimes near Paris; as, for example, at Madame Pescatore's garden near St. Cloud. It need hardly be said that if the plant attains such perfection so near London as Cobham Park, it is a most valuable subject for planting in the southern and milder parts of England and Ireland.

This Holly, Mr. Gordon tells us, often forms a tree twenty feet high. It is a native of Japan, and was first sent to Belgium by Dr. Siebold in 1840, and the year following it was introduced into England by the late Mr. Joseph Knight, of the Exotic Nursery, Chelsea. The leaves are sometimes nine inches long, the berries are red, and about the size of those of the common Holly. The plant is perfectly hardy, and very similar to the kind called *Ilex Torajo* by Dr. Siebold, and which appears to be only a variety of it. When first introduced it was frequently called *Ilex laurifolia*.

The Tulip Tree.—However hardy the Tulip tree may be in America, I fear it cannot be considered so in many parts of England. In the severe winter of 1859-60, the finest tree here was so crippled that it never recovered; and the Tulip tree is so seldom met with that one can hardly but suppose that its tenderness, assumed or real, has something to do with its scarcity. There are, probably, many deciduous trees and shrubs that would pass safely through much more severe frosts in America than they would in England. Their wood is more thoroughly ripened, whence their safety. The brittleness of the Tulip tree is also doubtless a drawback to its more general cultivation. We have scarcely a high wind, or a heavy rain in the summer, but down comes a limb or two of a Tulip tree, and even the little snow that can lie on their bare boughs, frequently results in similar breakages. I shall be glad to know if others find the Tulip tree equally brittle.—D. T. F., *Bury St. Edmund's*.

Berberis Darwinii.—Few know how well this thrives in drained bog soil. It does well in most soils, but seldom have I seen it equal to a few plants of it which we have here in a bog soil, where it makes finely branched shoots from eight to ten feet long in one season; and when in spring these are smothered with bloom, and surrounded by masses of *Rhododendrons* in all shades of colour, from white to a deep crimson, the contrast is most pleasing; the colour is so rich and telling, so entirely its own, that there seems nothing wanting to make the picture perfect. It should be planted well back, or it is liable to bury things behind it of dwarfer growth; and do not forget after it has done blooming to head it well in. It makes, too, here and there, grand isolated specimens. I hope this account of it will induce others who have bogs to plant it largely. It seems to thrive even where the *Rhododendron* looks sickly through too much wet and hard frost during winter. Why not also have miles of hedging planted with it? It is both handsome and effective, and, on account of its spines, quite equal in the way of defence to thorn or quick, which do not do well in bog. Under such circumstances, therefore, this *Berberis* should not be overlooked.—J. TAYLOR, *Maesgwynar, Whitland*.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Does Ivy injure Trees?—Although an admirer of the effect of Ivy clinging to the trunks of our forest trees, I suspect that the growth of the trees is retarded by the pressure; indeed I have observed young plants almost overwhelmed by it. Will some of your correspondents favour us with their opinion as to the amount of damage, if any, produced by the adhesion of Ivy to the bark of exogenous plants, at different stages of their growth?—E. D. T.

A Remarkable Yew Tree.—The large Yew tree, of which I gave some account in your columns a few weeks ago, is the same tree your correspondent "S. X." alludes to in No. 26, p. 573. I cannot make out the large beech tree he mentions. The largest tree on Longleat estate is an Oak growing in a grove in the park; the dimensions are as follows: girth of stem at one foot from the ground, thirty-four feet; girth of stem five feet up, twenty-two feet; contents upwards of 1,100 feet of timber.—GEORGE BRAY, *Longleat*.

Hardiness of the Umbrella Pine (*Sciadopitys*).—This has stood out here for these last four years, during which time we have had the thermometer at zero, and one night three degrees below that point. Not a leaf was injured. Eight plants were out during the time mentioned, and the largest is eighteen inches high and twelve inches through, but would have been twice this size had it not been cut for propagating purposes. No doubt, in private establishments there are much larger specimens, where they have been left to grow; nevertheless, this conifer is a slow grower.—J. SCOTT, *Messing, Somerset*.

Hardy Trees for Moist Places.—Can you kindly give me a list of the best Hardy Trees, Conifers, flowering Shrubs, and Herbaceous Plants to grow in ground on the margin of a river, and liable to be flooded?—J. H.—[Of Conifers, the Spruce Fir and *Abies Douglasii* will be best; the white Cedar and *Cedrus atlantica* also stand a great deal of moisture; so does the Silver Fir. Birch, Spanish Chestnut, and Beech will do well; and of under-shrubs you may with confidence employ the Privet known as *ovalifolium*; Box, and *Berberis Aquifolium*. Both the Silver-leaved Willow and the Silver-leaved Poplar would prove distinguished ornaments of such a position. Limes, Alders, and the finer kinds of Willows would, of course, do well. All the herbaceous kinds of Aster, the golden Rods, the *Epilobiums*, *Eupatoriums*, *Herncleums* will also thrive. So will many coarse herbaceous plants. *Iris sibirica* will look very well in the water associated with our common Yellow Flag.]

THE PLANES.

BY GEORGE GORDON, A.L.S.

VI.—THE VARIOUS LEAVED PLANE (*PLATANUS HETEROPHYLLA*—LINDLEY).

THIS is a native of the more southern states of North America and California, where, along the banks of the Carmel River, it forms a tree from sixty to eighty feet high, with a stem four feet in diameter. In England it is a round-headed tree, forty feet high, with large, crooked, arms, contorted branches, well furnished with stunted spray, and a stem full of large, protuberant, warty swellings, which give it quite a gouty appearance. From these swellings frequently arise during the summer a number of small twigs or spray, which perish annually, but form at their base woody knots or kernels of various shapes and sizes, with conical fangs at their base, which reach to the wood of the stem.

The Various-leaved Plane is one of the least valuable of the tribe to which it belongs, as it gets more or less injured by even an ordinary English winter, and, as it commences growing early in the season, it suffers greatly from late spring frosts. It succeeds well, however, in the south of France, where it is



The Various-leaved Plane.—Natural size, largest leaf, 9½ inches long, including footstalk, and 7½ inches broad; smallest leaf, 1½ inches long, including footstalk, and 2½ inches broad.

much planted and cultivated in nurseries under the name of the American Plane; and in consequence, it is sometimes called in this country, the French, or tender variety of the Occidental Plane. When this species of Plane was first introduced is uncertain, but it is frequently to be met with from thirty to forty feet high in the neighbourhood of London.

The leaves are of various shapes and sizes; those on young and vigorous trees are in general very large, acutely five-lobed, more or less deeply divided, rounded at the base of the divisions, and furnished on the margins with acute coarse serratures, while a great portion of those on old trees are frequently little more than three-lobed, somewhat rounded in outline, and either nearly entire or coarsely toothed; but all the forms are to be found on the same tree, and all the leaves taper more or less visibly to the petiole, which is long and slender in the larger leaves, but quite short in the smaller ones. When first

the leaves begin to unfold, they are densely coated all over with a rich cinnamon-coloured tomentum, while the adult ones are quite glabrous, with the principal ribs on the under-side frequently of a bright orange colour. The balls, or seed-heads, are mostly in twos or threes, distantly placed along the slender footstalk, and, when fully matured, are large, very downy, and thickly furnished with rather long, stiff bristly points.

Its synonymous names are *Platanus californica*, *occidentalis aurea*, and *occidentalis acerifolia*.

VII.—THE MEXICAN PLANE (*PLATANUS MEXICANA*—LINDLEY).

LITTLE is known about this kind, except that it forms a lofty tree in Mexico, and has large, palmate, five-lobed leaves, which in the adult state, are thickly covered on the underside with a short silky down.

It has not yet been introduced, and no doubt will prove tender in the climate of England.

THE BORGHESI GARDENS, ROME.

NONE of the gardens of Rome—public or private—can be compared either for beauty, extent, or profuse sculptural decorations with that known as the Villa Borghesi. It must be understood that the term “villa,” as used by Italians, does not mean a house, but a garden. The Villa Reale, at Naples, does not contain any building whatsoever; not even an alcove, or a summer house. It is simply a public promenade, decorated with statuary and fountains, on the shore of the lovely bay, in front of the famous Chiaja. The residence in a *villa*, if there be one, is generally called the casino, or palazetto; though occasionally, when an important structure, it is, like a street mansion, styled a “palazzo.” But the *villa* means the garden, or park, or vineyard, or small farm with which a summer residence is surrounded. The Villa Borghesi, therefore, is the garden-park, in which the suburban palace of the Borghesi family is situated. It lies close to the walls of Rome, and many of its most striking features may be seen from the Pincian Hill.

It was originally one of the estates of the Cenci, but being confiscated to the Papacy during the persecutions of that unfortunate family, it became the property of Scipio Borghesi, nephew of the Pope Borghesi, who reigned as Paul V. The entrance to this beautiful villa—to which the public have free access—is closely contiguous to the Porta del Popolo; and affording, as it does, shady drives and walks of great extent, forms by far the most frequented promenade of Rome. It is, in fact, the Hyde Park of the Romans. But neither Hyde Park nor Kensington Gardens, nor even the Tuileries or Versailles, can convey any idea of the peculiar charms of this delightful Roman villa. There is a freshness and vigour of vegetation about the suburban *deliziev* of Rome, that the close proximity of a large and populous town almost always seems to tarnish and check; while the immediate vicinity of Rome, with its great native and foreign population, seems to produce no check whatever upon the fresh verdure of the Villa Borghesi; at all events not in early spring; for the beautiful Apennine anemone, with all its enchanting varieties of hue, from the deepest lilac to the palest azure, makes its way through the tufts of coarse grass in luxuriant profusion; as does the crimson cyclamen, many species of Scilla, and several kinds of European orchids; all of which are so shy of the smoke of our northern cities, and of the fatal tramp of their thousands of destructive feet; while in the Villa Borghesi these denizens of the forest wilds seem to enjoy themselves and flourish with the same profusion and fragrance as in the woody dells of the secluded country.

One of the grandest features of this Roman garden is the lofty growth of the cypress, which, while with us it is little more than a shrub, assumes in Italy almost the dimensions of a forest tree, towering to the height of the largest poplars. Its dark forms rising like sharply-defined spires against the blue Italian sky suggested to Shelley the epithet, “sky-clearing cypress;” and those who have noted the effect of that tree in Italian landscape, will at once acknowledge both the poetry

and the realism of the description. Another striking characteristic of the Villa Borghesi, is its noble avenues and groves of Ilices, meeting in matted foliage overhead, and forming—

“A pillared shade,
With echoing walks beneath.”

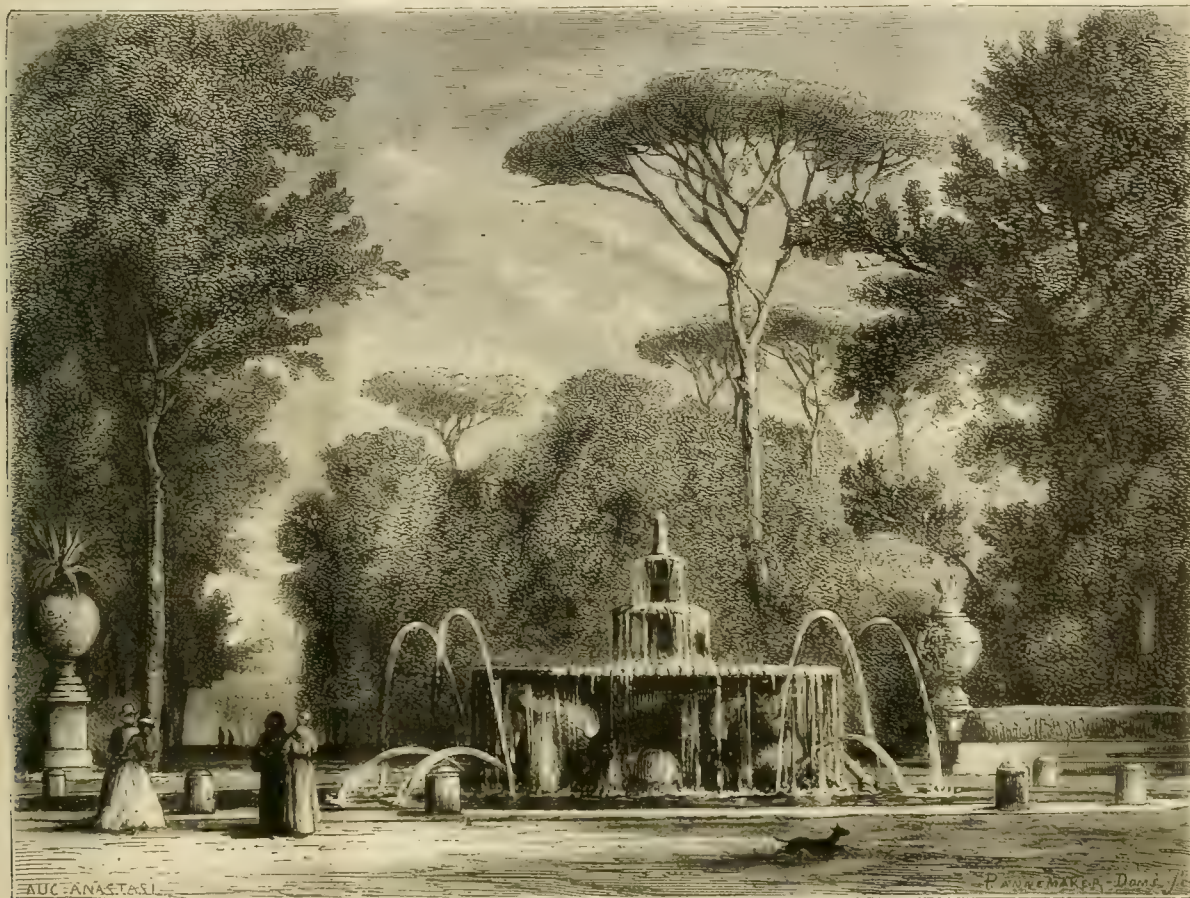
Still another feature of purely Italian character is that formed by the tufted heads of the stone pines, as they are shown in the engraving which serves as our illustration. Those southern pines are the delight of artists, who could not conscientiously paint an Italian scene without one or more of them being made to form a marked feature in the composition.

As in all Italian villas, statuary and fountains are profusely introduced as legitimate, and indeed indispensable, decorations. In the Villa Borghesi they are so well managed, as to seem

THE INDOOR GARDEN.

WHY CAMELLIAS DROP THEIR BUDS.

No plant is easier to manage than the Camellia, so long as it is in perfect health—few more difficult to resuscitate when sickly. Then it is that the buds drop prematurely, leaves become flabby and pale, and the whole plant has a “lack lustre” appearance, anything but satisfactory to the cultivator. This may arise from several causes, such as unsuitable soil and bad potting, too much water or the reverse, and insect attacks upon the roots. Of this latter cause of failure I had an example very recently. A fine vigorous plant of double white was moved into a larger pot, using soil from the same place from which I had been in the habit of obtaining it for some years past with the best results, the only difference being that this soil was used fresh from the field, while generally I lay it by for a few months to rot and ripen. The con-



View in the Borghese Gardens, Rome.

really a necessary part of the *mise en scène*. The casino, or rather palace, is not a very ornamental building, but it contains a fine collection of statuary and paintings, though the more celebrated gems of the collection are not there, having been allowed to remain in the Louvre after the general return of the Napoleonic spoils of war in 1815. This arrangement was effected in consequence of the French predilections of the Borghesi family through their alliance with the Bonapartes, the noble Italian proprietor receiving a rent for the use of his works of art from the French Government.

There are many points in the Borghese Gardens fully as picturesque and attractive as the one selected for our illustration, but the solitary sample is sufficient to convey a good general idea of the style in which the gardens are laid out, and of the effect produced.

NOEL HUMPHREYS.

sequence has been that the plant started weakly, the young growth flagged when not shaded, and the old leaves began to fall off. In this state of affairs I turned the plant out of the pot, and found not a root had been made, but on the contrary, those outside of the old ball had been eaten, so that an active rootlet could not be seen. On examining the soil and drainage more closely, I found quantities of wire-worms, and these, no doubt, had been feeding upon the young roots. Removing the new soil, and as much of the outer portion of the old ball as I could with a pointed stick, the plant was repotted in carefully-selected soil, and now it is progressing as well as could be desired.

I was requested once to take charge of a plant that had fallen into bad health. Formerly it had been a very handsome plant, with a head five feet in diameter, and had been purchased at a cost of fifteen guineas. When I received it all the foliage upon it would not have made a screen for a tom-tit, though it was in a tub containing little short of half a cubic yard of earth. Taking hold of the

stem I lifted it out of the soil, when I found that all the active root which it had would scarcely have filled a nut-shell. Clearing away as much of the old soil as I could, the plant was repotted into a thirteen-inch pot in a compost of turfy loam, leaf mould, and sand, with a dust of charcoal in small pieces, lumps of charcoal being mixed with the drainage. This compost was made as firm as possible firm potting being a great point with me in the cultivation of the Camellia. Placed in a vinery just started to be forced and damped three or four times daily with tepid water, it soon began to show signs of growth, and now it is in perfect health, and has flowered abundantly. Camellias, however, in bad health are, as I have already said, exceedingly difficult plants to manage. Some plants will start at once with renewed vigour, others will remain sulky for months, possibly years. Though shaken out, and the roots washed and repotted in suitable soil, some small plants made scarcely a shoot the first season, but in the autumn I found the pots nearly filled with healthy roots, and the next season they started vigorously. Those therefore who have sickly plants will find it best to remove as much of the old soil as possible, to repot in suitable compost, place the plants in a mild moist atmosphere and rather shaded, and wait patiently for the result. Coddling is useless, and properly potted the less the roots are interfered with the better. With reference to watering, enough is as good as a deluge, and with amateurs I believe more plants are destroyed by daily dribblings than by giving either too much or too little. The right thing when a plant requires water—and that is difficult for most people to know—is to give sufficient to soak the whole soil in the pot thoroughly, and then let it stand until a second watering is necessary. To the practical cultivator knowledge of this kind is intuitive, as he can see in a moment when a plant requires water, and he rarely errs by giving too much; but the amateur or handy man is guided by custom, and waters whether the plant requires it or not. The best plan, if the plant is properly potted, is to test the humidity of the soil by ringing. Rap the side of the pot sharply with the knuckles; if the sound emitted is sharp and sonorous, the ball is dry; but if, on the contrary, it is dull and heavy, no water will be required. At Chatsworth each man when watering carries a little wooden hammer, and is guided by the sound emitted, after striking the side of the pot with it, as to whether the plant requires water or not, and the quantity to be given. Another plan is to weigh the plants or rather pots, by lifting each with the hands; but that is a troublesome process. If, however, the pot feels heavy, no water is required; but if it should be light, then a soaking may be necessary. Plants in robust health, and well rooted, are not likely, so long as the drainage is perfect, to take injury from a liberal supply of water; but let the pots become waterlogged, or short of water for a few days, and the falling buds will soon reveal the consequences of neglect. With experienced cultivators this is not likely to happen; but, notwithstanding, it is just the thing that does happen with three-fourths of those who complain of falling buds.

Camellias, however, as you have lately shown, will grow in the open air in many places, and form glorious shrubs, but the flowers are so easily injured that sheltered situations must be selected for them. As far back as 1830 there were fine Camellias growing at Wortley Hall, near Sheffield, in the open border, the utmost protection they received being a mulching of leaf mould over the roots, and a mat or two to break the force of rough winds and severe frosts during the blooming season. However, these plants perished in Murphy's memorable winter, 1836-37, being killed to the ground. In the garden of the Royal Horticultural Society, at Chiswick, there used to be some handsome Camellias upon the north wall of what was called the experimental garden, but these perished some years ago, though I have many times seen them bloom very superbly. Camellias, too, used to bloom well every year against a north wall in Messrs. Chandler's nursery, in the Wandsworth Road.

The finest Camellia tree in England is that at Thames Bank, near Kingston. This, even thirty years ago, was a splendid bush, often producing upwards of a thousand blooms in a season. The kind is *C. reticulata*, and I have seen flowers upon it eight inches to nearly a foot in diameter. Few gardens have finer Camellias than Chatsworth. There they receive abundance of soot water in the growing season, and the plants are never exposed to the open air. One plant upon the conservatory wall of *C. reticulata* is a superb specimen, and when in bloom, is a sight worth seeing.

One fact connected with the cultivation of the Camellia must not be omitted, and it is this: it will not grow in soil from the limestone formation; like the *Rhododendron* and other American plants, it seems to abhor lime. In tough fibrous loam from the sandstone formation, taking the fine soil out, using it rough and making it as firm as possible in the pots, it will grow like a Willow; and the same may be said of it in such upland peat—poor as it is—as may be procured upon most parts of Sherwood Forest. This laid up for a few months

to rot and then broken up to the size of pigeons' eggs, and the fine soil taken away, is as good a soil as need be used for Camellias. Cleanliness, that is, a regular washing of the foliage, and a timely thinning of the blossom buds, are important items in reference to success. Many plants cast their buds more from the numerous quantity left on than from any inherent weakness in the plant. Therefore, always thin boldly, never leaving more than two buds upon each branchlet, and let those be of a size to give a succession of bloom for the longest time. Do this, and less will be heard of Camellia buds dropping. B.

A REVISION OF THE GENUS *DRACÆNA*.

BY DR. REGEL.

(Continued from p. 567).

DRACÆNA GRIFFITHI (RGL.)

STEM half-shrubby, branching; scales at the lower joints of the stem probably soon deciduous. Leaves in partial whorls, lanceolate, acuminate, slightly undulated, gradually narrowed at the base into a channeled stalk from $\frac{1}{4}$ to $\frac{3}{4}$ of an inch long, with a rather conspicuous midrib, and marked with fine longitudinal veins, from $\frac{3}{4}$ to $1\frac{3}{4}$ inches broad, and from 4 to 7 inches long (including the stalk). Panicle terminal, shortly stalked, simple; branches reflexed and loosely racemose. Flowers solitary on slender stalks $\frac{1}{2}$ inch long and jointed near the base, the lower joint persistent, the upper one deciduous with the flower. Bracts scarious, scarcely as long as the lower joint. Corolla about three quarters of an inch long, with a slender cylindrical tube and linear divisions. Eastern Bengal.

I have seen the specimen gathered by Griffith and described by Hooker in No 5,869 *Bot. Mag.* It is very like *D. surculosa* in habit, and has stems of the thickness of a goose-quill. Whether these are solitary or whether several issue from the rhizome is undetermined. The *D. ternifolia* of C. Koch (*Wochenschr*, 1867, page 238) appears to be identical with this species.

DRACÆNA THALIODES (MORR.).

Stem stout, simple, leafy from the base up, or from the middle up. Leaves in two rows, elongated-lanceolate, abruptly narrowed at the base into a wedge-shaped stalk from 4 to 9 inches long and very gradually attenuated at the point, with a rather conspicuous midrib which is prominent on the under-side, striated with veins, from $1\frac{1}{2}$ to $2\frac{1}{2}$ inches broad, and from $\frac{3}{4}$ to $1\frac{1}{2}$ feet long, exclusive of the stalk. Upper leaves closely erect, patent; lower ones recurved at the point. Raceme terminal, simple or branching at the base. Flowers two or more together, on very short stalks or sessile, with a narrow lanceolate bract. Tube of the corolla white, slender, cylindrical, about half an inch long, longer than the bracts; divisions linear, patent or recurved, of a reddish colour on the outside, white within, as long as or longer than the tube. Tropical West Africa.

Synonym.—*Dracæna aubryana* (Fl. d. Serres, and Koch *Wochenschr*, 1867, p. 239).

DRACÆNA PHRYNIOIDES (HOOK.)

A low under-shrub with a very short stem which has some scales at the base. Leaves ovate, rounded at the base or subcordate, acuminate, $2\frac{1}{2}$ to 4 inches broad and 8 inches long, of a dark green marked with whitish spots, with a midrib which is prominent on the under-side and from 6 to 9 slightly prominent longitudinal nerves; stalk from $2\frac{1}{2}$ to 8 inches long, cylindrical, channeled on the upper part and sheathing at the base. Raceme terminal, capitate, with a short stalk. Flower-head sub-globose, about $1\frac{1}{2}$ inches in diameter, surrounded by broadly-ovate, abruptly acuminate, tawny, imbricated bracts. Flowers white, in clusters of several together; bracts tawny, ovate, as long as the tube of the corolla, which is thread-like and half an inch long. Divisions of the corolla oblong, patent, shorter than the tube. Found by Mann in Tropical Africa, near Fernando Po.

DRACÆNA SAPOSCHNIKOWI (RGL.)

Stem tree-like, simple at first, afterwards branching. Leaves crowded together at the top of the stem and at the ends of the branches, sessile, strap-shaped, sharply attenuated towards the point, flat, with a mid-rib which is inconspicuous on the

upper surface, but prominently convex beneath, striated with fine veins, of a full green colour, not variegated, covering the internodes of the stem with their clasping bases, from $1\frac{1}{2}$ to $2\frac{1}{2}$ inches broad, and from $1\frac{1}{2}$ to $2\frac{1}{4}$ feet or more long, the upper ones very patent, the lower ones reflexed. Panicle terminal, with numerous divaricated branches; the branches and their sub-divisions being very patent and densely covered with flowers. Flowers on short pedicels, and arranged in fascicles of three to six flowers; fascicles scattered or collected in partial whorls, with scarious lanceolate-acute bracts somewhat shorter than the pedicels. Corolla scentless, small, green or yellowish-green, three-tenths to four-tenths of an inch long, divided beyond the middle; divisions linear-oblong, erect. Filaments saffron-coloured, thickened, attenuate-filiform only at the apex; anthers yellow. Style about as long as the stamens. Native country unknown. I saw a specimen growing in the gardens at Saposchnikowi.

DRACENA STENOPHYLLA (C. KOCH.)

Stem shrubby, often branching, with leaves from the base to the top, or from the middle to the top. Leaves narrowly linear-lanceolate, slightly undulated, somewhat membranous, covering the internodes of the stem with their partially-clasping bases, a quarter to three-fifths of an inch broad, and from 1 to $1\frac{1}{4}$ feet long, with a mid-rib which is inconspicuous on the upper surface and prominently convex beneath, striated with fine veins, and marked with yellowish longitudinal lines on a dark-green ground. Flowers unknown. Native country Africa or tropical Asia.

Synonym—*D. punctata* (Hort. Van Houtte).

DRACENA REFLEXA (LAM.)

Stem shrubby, branching, leafy towards the top. Leaves recurved, patent, linear-lanceolate, not covering the internodes with their half-clasping bases, with a midrib which is inconspicuous on the upper surface, and prominently convex beneath, striated with veins, $\frac{3}{4}$ to $1\frac{1}{4}$ inches broad, and from 5 to 8 inches long, not variegated at the margin. Panicle simple, sub-erect, terminal, or nearly so, with loosely racemose branches. Flowers solitary, or more rarely two or three together. Bracts scarious, shorter than the pedicels. Corolla $\frac{3}{4}$ of an inch long, greenish on the outside, white within, style longer than the stamens. East Indies and Madagascar.

Synonyms—*D. cernua* (Hook. et Roxb. fl. Ind.), *D. purpurea* (Hort. Berol.), *D. divaricata* (Willd. Herb.), *D. flexifolia* (Hort. Berol.), *D. timorensis* (Knth.); *Cordylina reflexa* (Fl. des Serres), *C. timorensis* (Pl. L. C.)

DRACENA CERNUA (JACQ.)

Margin of the leaves red. Panicle drooping. In other respects similar to the preceding, The Mauritius.

Synonym—*Cordylina cernua* (Fl. des Serres).

DRACENA RUMPHII (HOOK.)

Stem tree-like, robust, simple, short, with leaves only at the top. Leaves sessile, patent, recurved towards the extremity, linear-lanceolate, concealing the internodes of the stem with their clasping bases, flat, gradually attenuated into a long point, from 1 inch to $1\frac{1}{4}$ inches broad, and from $1\frac{1}{4}$ feet to $1\frac{3}{4}$ feet long, with a narrow transparent margin, and with a midrib, which is inconspicuous on the upper surface, and prominently convex and broad beneath. Panicle terminal, erect, compound, with racemose branches. Flowers in threes or fours. Bracts shorter than the pedicels. Corolla greenish-white, an inch or more long. Stamens as long as the style; filaments dilated towards the top and wrinkled. East Indies.

Synonyms—*Cordylina Rumphii* (Bot. Mag.), *D. Hookeriana* (C. Koch), *D. angustifolia* (Knth.), *Cordylina Rumphii* (Fl. des Serres).

(To be Continued).

The Training of Hothouse Climbers.—If we spoil our hardy climbers by nailing them as rigidly against walls as the gamekeeper does his enemies, our indoor climbers fare, as a rule, no better. A decided improvement in the mode of training indoor climbers is shown in the Birmingham Botanic Garden, in letting loosely down the flowering shoots of such plants as the *Lapageria* and *Stephanotis*. Trained close to the roof as usual till just coming into flower, and then allowed to hang freely down in a natural manner so that their beauty may be seen, the effect is very good, much better than that obtained in the ordinary way.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Adiantum rubellum.—This singularly pretty fern deserves a place in every warm fernery, associated with the comparatively few coloured or variegated-leaved ferns we have. Just now its young fronds are peculiarly attractive, being of a crimson red, the older ones varying through brownish green to green. The plant gives a pleasant sparkle to other delicate ferns with which it is grouped.—H. V.

Oxalis rosea.—I was struck with the beauty of some pots of this charming plant, which I saw growing at Chiswick, a few days ago. Mr. Barron had many plants of it in thirty-two sized pots, in the hope that they would have proved useful for house decoration at South Kensington, but when transferred there, this *Oxalis* refused to flower, though at Chiswick it is literally covered with pretty rose-coloured blossoms. I presume, therefore, that it requires a clear, airy locality like Chiswick in which to flourish, and under these conditions it is certainly an attractive and useful pot plant. The plants which I saw had been raised from seed, and about two or three had been placed in a pot of the size I have mentioned.—R. D.

Clivia nobilis.—This is beautiful in the conservatory during February and March, associated with masses of Camellias, Cinerarias, Deutzias &c. Charming as this plant is by itself, the colour seems still more intense and striking when combined with other things. This really noble plant should have a conspicuous place in all conservatories, especially where planted in the natural style, which, sooner or later, must come to pass. It is easily grown in equal parts of sandy loam and peat with a sprinkling of sand and charcoal. Do not pot often, but feed it with a little weak manure water when growing. Give it a little extra heat in January; you thus get it to bloom early and secure a second bloom in August or September. A plant here in a twelve-inch pot has thrown up eight fine spikes, averaging twelve blooms on each. It is surprising how long these flowers last before fading if kept from drip, and not in too high a temperature.—J. TAYLOR, *Macclesfield, South Wales*.

THE FRUIT GARDEN.

RUST ON GRAPES.

UPON my grapes last summer—an abundant and healthful crop—there appeared, to my sad surprise, the disfigurement of rust. Of some two hundred bunches, nearly one-half became unsightly and distasteful. There was no remedy. What was the cause? Some said the vines had been overcropped; and they certainly had yielded for many summers a very ample fruitage. Some said they had been robbed of atmospheric aliment by plants growing beneath them; and I had, undoubtedly, been constrained by a circumstance, not unknown to enthusiastic gardeners—that is, want of room—to crowd my vinery too much. Some said that the grapes had been rubbed in thinning, or touched by persons walking beneath; and every one who has thinned grapes knows how difficult it is only to touch that which we take, and every one who is six feet four inches in height has occasionally had more berries than blessings upon his head, when walking in a low vinery. And some said that the grapes had been syringed with hard water; and, when I remembered that, in a season of drought not long before, there had been a tremendous duel between my gardener and laundry-maid on the subject of soft-water, this suggestion did not seem improbable. And so the origin of the rust, like a good many other origins, remained a mystery.

Some three weeks ago the plague-spot reappeared, only on a few bunches, and on a few grapes in each bunch, but to my great disappointment and perplexity. Again came the question, What is the cause? And I believe that I have found the answer in my good friend, William Thomson's "Practical Treatise on the Grape Vine," under a paragraph devoted to the subject. "I am certain," he says, "that the most fertile source of rust is the application of sulphur to the pipes or flue about the time the grapes come into bloom." I remembered, as I read, that in the spring of last year, the hot-water pipes in my vinery had received an extra coating of sulphur until they were as yellow as the legs of a Blue-coat boy, and that rust, for the first time, had subsequently appeared on my grapes; and I rushed off to my garden to remove at once certain plates, filled with brimstone powder, which had been placed underneath the vines. Since that removal the rust has not extended, and but little harm is done. And I have just had a striking confirmation of Mr. Thomson's observations, while conversing with one of his old pupils, Mr. Lyon, who is now head-gardener to my neighbour, Lord Ossington, the late Speaker of the House of Commons. I was speaking of sulphur as the cause of rust, when he remarked that there was an exceptional case in one of his vineries near us, for he had noticed slight traces of rust upon some grapes where no sulphur had been used. Then he suddenly remembered that beneath the very vine referred to, there was growing a plant of rose *Maréchal Niel*, which had been affected by mildew, and liberally dusted with sulphur.

I am aware that many readers of THE GARDEN know much more of this subject than I, but I have written for those who know less; and some of these, hearing for the first time, that *no sulphur should be applied before grapes are showing*, may profit from the experience of

S. REYNOLDS HOLE.

OVER-CROPPING FRUIT TREES.

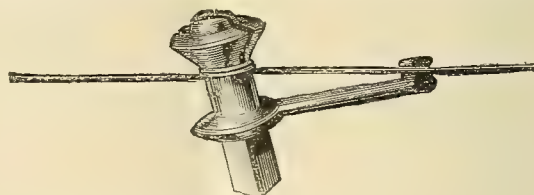
THERE is more permanent injury done by over-cropping fruit trees, especially in the case of vines and stone fruits, than is generally supposed. Sometimes a voice is raised against the evils of this practice; but generally without avail. There is something seductive and gratifying to one's vanity in seeing a tree carrying what is called a "splendid crop," and in hearing the praise that is often lavished on a man for overloading his trees, when in reality he ought to be censured for his short-sightedness. We are all very apt to think too much of the present and neglect the future. Overwork is bad both to animal and vegetable organizations, and even an iron constitution will, in time, break down under it. Fruit trees when persistently over-cropped become so exhausted and debilitated that they fall an easy prey to insects, which still further reduce the vital principle, and render their recovery almost hopeless. I am convinced many peach and apricot trees, both in houses and on walls, have come to a premature end by over-cropping alone; while some other cause has often been assigned for the loss.

It is an old saying, "our enemies ought to thin our fruit," meaning thereby, that the thinning would be effectually done. It requires a vast amount of resolution to thin sufficiently, and especially do I find it so this season in the orchard house, where I have never seen the fruit set thicker, whilst on the walls the crop is thin. One is too apt to overload the trees under glass in a season like the present to compensate for the thin crop out of doors; but this system of striking balances is a most unsound one. Mulching and frequent soakings of sewage or liquid manure are very useful in enabling a tree that is heavily cropped to bring the fruit to perfection with a minimum amount of loss to its permanent vigour and strength. It is much better to render assistance in this way when it is wanted than to dig manure into the borders; in fact, I believe the digging of fruit tree borders to be bad in principle, as fruit trees do best in a firm soil. It is only in places where the subsoil is especially suited for fruit culture that digging and cropping close up to them can be done with impunity. E. HOBDAY.

Ground Vineries.—The simplest way of making glass available to produce first-class grapes is the adoption of ground vineries. In the first instance of using these, a trench was dug; the trench was lined with slates, and was covered with a small glass ridge. The vine was planted in common soil at one end outside the trench, and was trained along the centre of the trench under the glass, the bunches being allowed to hang in the trench, and receiving heat direct from the sun overhead, and indirectly by radiation from the slates. This answered very well; but experience proved that the simplicity of this contrivance might be simplified. The glass ridge was placed on the level ground, on a row of bricks placed a few inches apart to afford ventilation, and with slates or tiles laid on the ground inside, so that now the bunches lay upon the slates, and were there subjected to greater heat than when they hung in the trench, and the consequence was, the berries grew to a greater size and ripened more perfectly. There is no mystery about ground vineries; any carpenter can make them, any amateur, even a mere beginner, manage them; and they are so far useful for the cultivation of grapes, that by their aid bunches fit for exhibition may be grown in them without difficulty. The chief secret of their efficiency is their power of absorbing and retaining a greater amount of sun heat than is possible for either walls or exposed soil. Currents of air which quickly cool the common soil, are excluded by the glass, which also tends to check radiation, so that within the ground vinery a better climate is secured than can be in any way obtained without the aid of glass. These vineries are made in various ways and sizes. Some are adapted to accommodate two vines side by side, others for single vines only. The size found most suitable for one vine is thirty inches wide, sixteen inches from ground line to ridge, twenty inches slope of roof. For two vines, forty-two inches wide, twenty inches deep, twenty-eight inches slope of roof. The length of such vineries may be indefinite, but for convenience sake they are usually made in seven feet lengths, and as the vines extend in length, additional lengths of glass frames are added; and of course the vines are always kept to single rods, closely spurred in. To appropriate these simple structures to the purpose they are intended for is easy enough. The ground is marked out, and bricks are laid a few inches apart for the frames to rest upon. The bricks keep the frames from touching the ground, which tends to preserve them from decay, and they serve at the same time to insure perfect ventilation, so that there is never any occasion for this purpose to move any portion of the glass. As for the vine, that is planted at one end, in a mixture of good loam and broken plaster or old mortar, with a little manure. A rich soil is not desirable, but it is desirable the position should be dry and the soil light; conditions which promote a perfect ripening of the wood in the autumn. The slates are simply laid on the common soil, and the vine is kept in its place on the slates by means of a few pegs.—*Floral World*.

THE THOMERY WIRE-STRAINER.

THIS simple little raidisseur, which I brought from Thomery several years ago, is now much used in some places and successfully. In Mr. Mault's garden, at Stoke, I saw a good deal of very neat trellising effected by its aid. It would be an improvement to cast it with two arms instead of one. In this way it would be less



liable to break the wire than it now is in inexperienced hands. In France they have no trouble in wiring walls well with it, with little or no breakage. To save the wire from breaking over the sharp edge of the little implement, it is well to put a few coils of wire round the drum before winding it tight. W. R.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Trees Exceptionally Fertile.—I have a young peach tree, only three years old, with twelve dozen of fruit on it. Shall I leave them all? or remove some, and how many?—**AGNES.**—[Remove seven or eight dozen of the fruit. There is nothing so disastrous as over-cropping; it cripples the trees for years. The temptation is great, but every tree must bear its proper burden.]

Wall Trees and the Garden Engine.—The garden engine is a good servant at this season, but a bad master. There are some who send a stream of water with such a force against their wall trees as to rend delicate leaves asunder, bruise tender fruit, and even fracture the young shoots. A shower is a good thing, but a waterspout means destruction. A word to the wise is enough.—D. T. F.

Walls and Orchard Houses.—I see one of your correspondents, writing from Lochgilphead, denounces garden walls (p. 537). I know not exactly where this is, but assume it to be some unpleasant part of Scotland where a sight of the sun is a phenomenon. I beg to submit to you that he has no more right to denounce garden walls for the midland and southern parts of England and Ireland, than we have to denounce him for resorting to the orchard house in a climate where good fruit culture against walls is impossible. It is simply untrue to say that the best fruit may not be grown on properly-managed walls.—H. V.

Forwarding Strawberries.—Place some of Rendle's protectors over a row or two of Black Prince and Keens' Seedling Strawberries in the open air, and gather the fruit three weeks or more before the general crop in consequence. Or young plants may be planted in blocks in the autumn the size of one, two, three, or four light frames, and these now placed over them. As the crop is all that is wanted, the plants may be packed closely together, and the quantity of fruit that may thus be reaped from a given space may really be called prodigious. The fruit is not only forwarded, but its quality is improved, and it is safe from birds and vermin, unless, indeed, the mice or rats, attracted by the unseasonable odour, find a way inside, as they are almost sure to try to do.

The Edible Passion-Flower.—Whatever the value of jam or compôte from the granadilla or the pumpkin-fruited passion-flower may be, I have long ago come to the conclusion that, though these two plants are noble ornaments both in flower and fruit in the warm stove, yet that, as fruits, they are utterly inferior to the small *Passiflora edulis*, which, though not growing bigger than a large plum, fruits abundantly. It grows freely in any cold greenhouse, conservatory, or orchard house, its shoots, with a fruit in the axil of every shining leaf, hanging down long and gracefully from the rafters and cross-bars. It has a really distinct and deliciously acidulous flavour, and well merits a regular place in every garden where indoor fruits are grown. Of all the neglected greenhouse or hothouse fruits I know, it is the best.—H. V.

Best Dessert Apples.—Will you kindly tell me what are considered the best of the dessert apples now in our gardens, limiting the selection to about twenty?—**Z.**—[The following are recommended by an experienced grower, but no doubt tastes will differ, and we shall be glad if correspondents from different parts of the country will kindly give us their favourite selections:—White Jeanneting, early Red Margaret, Red Astrachan, Early Strawberry, Irish Peach, Summer Golden Pippin, Kerry Pippin, Margil, Ribston Pippin, Cox's Orange Pippin, Mannington's Pearmain, Golden Drop (Coe's), Ashmead's Kernel, Old Nonpareil, Reinette Van Mons, Sky House Russet, Kedleston Pippin, Golden Harvey, Winter Peach Apple, Sturmer Pippin, Calville Blanche, Court Pendu Plat, Adam's Pearmain, and Court of Wick.]

The French Paradise Stock.—Is the French Paradise Stock really quite hardy in England, and will it suit a clayey soil?—**COLONEL W.**—[The French Paradise Stock is hardy in all parts of Britain. As respects its behaviour in a colder country than ours, the following communication, sent in 1869 to a contemporary by Mr. Such, of South Amboy, New Jersey, speaks sufficiently clear:—"In my garden I have on this stock many little bush-like apple trees that have endured the greatest extremes of heat and of cold. About four winters ago the thermometer fell to 20° below zero, and last summer the heat was intense, reaching 106° to 108° in the shade. In spite of this my little trees are in perfect health. The Doucin stock is also thoroughly hardy. There is near here a small orchard of apples on this stock, planted more than fifteen years ago, all of which are in full vigour. My trees on the Paradise are like very large currant bushes; those on the Doucin are from ten to fifteen feet through." The Paradise thrives best on a clay soil. In planting trees on this, the part where graft and stock unite should never be buried, or the roots of the scion will be sent into the soil, and then farewell to your dwarf apple tree. It will take root from above the graft, and then grow freely enough for an orchard specimen, as I have found in several cases. It promises very well indeed on stiff clay soil in Middlesex, both as horizontal cordons, and as small pyramids.]

PUBLIC GARDENS.

THE CENTRAL PARK, NEW YORK.

(Continued from p. 545.)

THE water in the Park is very well managed; but under this head is not included the large reservoirs, with which the gardeners, or landscape-gardeners, have nothing to do. In various parts the margins of the water present a very picturesque appearance, from the cropping forth of the natural rock.

One of the most pleasing features in this park is a wild, tangled wood, called the Ramble. This pleasant spot, to many the greatest attraction the park contains, lies upon the southern slope of the rocky ledge that occupies the middle of the park, sloping gradually towards the east. It is estimated to contain about sixty-three acres, and, although it has several open spaces of lawn, it is for the most part, quite thickly planted with trees and shrubbery, and laid out with a multitude of irregular and interlacing walks, arranged without any definite plan. It was once an unsightly mass of particularly barren rock, on which even mosses and lichens refused to grow; the soil thinly spread between the ledges was too poor to support any but the toughest and least graceful shrubs, while along its centre there ran a bit of boggy marsh that held the drainage of the higher portion until it could leak down into the still lower valley, or until it should be dried up under the heat of



View of portion of Lake in Central Park, New York.

the August suns. To-day no rock is seen but such as is needed for picturesque variety; the rest is covered with earth or overlaid so thickly with honeysuckle, wild grape, trumpet-creeper, or Wistaria, that its presence is not suspected by the passer by. From April to September the Ramble is filled with the delightful perfume of these honeysuckles, while to these is added, in June, July, and August, the even more delicate odour of the swamp Magnolia (*M. glauca*).

The design in planting the Ramble has been to give it, if possible, the delicate flavour of wildness, so hard to seize and imprison when civilization has once put it to flight. Therefore, an effort has been made to bring into these bounds as many of the wood flowers and flowering shrubs, the native growths of forests, as would thrive here—foreign flowers and imported shrubs being put in places more evidently artificial. The success has been considerable, and every year adds something to the list; so that already the city boy or girl may find here the earliest anemones, hepaticas, blood-roots, adders-tongues, and columbines. We have seldom seen a place more suitable for the naturalization of British and European wild flowers.

The Central Park contains the essentials for the noblest rock-gardens ever seen. We have never anywhere else seen in a garden so many large picturesque and varied outcroppings of rock, scarcely one of which is yet planted with its appropriate ornaments. No such opportunity elsewhere exists for the natural culture, so to speak, of alpine and the more beautiful herbaceous plants.

In part of the park, the soil in the long clefts of a mass of the gneiss rock is filled with the native cactus,

commonly called the prickly-pear, which grows so thickly over the rocks and cliffs in New Jersey, along the Hudson River shores. It has thick, fleshy leaves, blunt oval in shape, set all over with small bunches of very fine sharp thorns, so easily detached that it is impossible to touch the leaf without getting some of them into the flesh. The flowers, which, in the season, are very numerous, are extremely delicate and pretty, being of a bright canary yellow, and having a tropical appearance that increases the pleasure of coming upon them in one's walk. Whether they were found growing wild on these rocks when the park was first taken in hand, we do not know, but here they are to-day, mingling their large, gauze-like, yellow stars with the profuse bloom of the *Portulaca*, and, no doubt, deceiving many with the belief that they are some rare species of cactus from foreign parts, set out here to bloom for a summer, and to be tenderly nursed and housed during the coming winter.

The designers deserve great praise for having so carefully preserved these beautiful rocks, which, if properly planted, must one day become the finest series of rock-gardens in existence. For our illustrations of the Central Park (with the exception of our plan, now being engraved from the large



Arboret of Lake in Central Park, New York.

and admirable reports issued yearly by the Commissioners), we are indebted to "A Description of the New York Central Park," published by Huntington & Co., of New York, a capital guide to the park, and containing many just remarks on it. It is evidently written by some one who has looked a little below the surface into some of the more important questions concerning public gardens, as the following extract on sculpture therein will show:—

"There is no one among the many difficult subjects almost daily presented to the park authorities for consideration more difficult than the limit to be placed to the admission of sculpture into the park. To persons who have not given much thought to the matter it may seem that the easiest, and also the wisest, thing the Commissioners could do, would be to take every piece of statuary that is offered them, that has any merit whatever, and find a place for it somewhere in the park. But to this the Commissioners very properly, as it appears to us, demur. In the first place they do not want any statuary at all, unless it is the best that can be produced. Looking upon the park as they do, not merely as a place of amusement, but as a place of education, they have always considered it a matter of conscience to exclude everything that falls short of the standard they have proposed to themselves. It may be very difficult to get good statuary; they may have to wait a long time for it; but they cannot see in either of these suppositions any argument for permitting

the precedent of placing second-rate or indifferent works of art in the park until the good works shall arrive. Thus far there has not been a single piece of statuary presented to the park and placed in it that it is at all desirable to have there. The statue of 'Commerce,' presented in 1865, by Stephen B. Guion, Esq., a native of New York long resident in Liverpool, is a mere commonplace emblematic figure, such as are all the time being produced in French studios, but which have very little meaning or interest for the great mass of people, and for artists none at all of either. Yet, what are the Commissioners to do? A much respected gentleman, animated by a praiseworthy desire to do something for the adornment of his native city, orders this statue from Fesquet—a clever French statuary—and in the quietest, most modest way possible, presents it to the park, without imposing any conditions, without asking for any particular site, without even attaching his name to the gift. It certainly is very much to be wished that the respected donor had given us something else; that he had ordered, for instance, Quincy Ward to put his 'Indian Hunter' into bronze, or had given a commission to Story, or to Brown, or to Launt Thompson; but, as he did not do any of these things, we must make the most of the gift he has presented.

"It will be seen, then, that the whole subject of sculpture in the Park is beset with difficulties, and that the Commissioners have more than any mere personal interests, whether of their own or of



View in Ramble, Central Park, New York.

other people, to consult. For, apart from the question of good or bad sculpture, is the problem how to limit its introduction to such a point that it shall not detract from the apparent size of the park; a most serious consideration. Many of our readers must have had the opportunity of observing how quickly the apparent size of a garden is reduced by the introduction of statuary, which it was at one time the fashion to use much more freely than has been done since the 'natural style' of gardening came into vogue. Not only is the area of the garden or lawn so ornamented diminished to the eye, but walks and roads along which statuary are placed are visibly shortened. Both these facts are no less facts for being optical delusions, which are the result of a well-known natural law. They are delusions constantly taken into account in decorative design, and cannot safely be neglected. Their bearing on the question of the park is plain. The area of the park, however large it may sound when stated to the ear, or however it may seem on paper, is in proportion to the population that is to use it, by no means so large as it seems to the superficial observer. And this process must continue; the park growing sensibly smaller and smaller with every conspicuous object that is placed in it, giving the eye a means of measurement, until, at length, its real dimensions cannot any longer be concealed.

"The great danger is, lest the park should come to be looked upon merely as a place wherein are collected a large number of curious

and rare, or pretty things, which would, it is true, be a recommendation to a museum, or to a garden of plants or animals, but not proper to a park. A park is a place of rest and recreation for mind and body; and while nature soothes and tranquillizes the mind, and thus gives the body that repose it needs, a number of petty artificial



Cove and Outcropping Rocks in Central Park, New York.

objects, merely curious or pleasing, distracts the thoughts and frets the nerves. But we plead for the preservation, as far as possible, of largeness and simplicity, for the greatest amount of unobstructed lawn, for trees, and shrubbery, and flowers; for lakes and streams; in short, for as much of nature as we can get for money, and for a very little art, and that only of the choicest and best."

(To be continued.)

THE LIBRARY.

HORNBY MILLS.*

ONE of the charmingly and spiritedly written books of Mr. Henry Kingsley, particularly interesting to lovers of gardening from that capital story, "Hornby Mills Garden," with which the book opens. The following description of Hornby Mills garden will suffice to show the character of the work:—

"'WE used to say, and I believe now, that the house had been a "religious house," because of the great fish-ponds which surrounded it. The fact that it lay in a hole, rather below the level of the neighbouring ditches, seems to confirm that theory, though the house itself was scarce a century old. There was a rookery, in elms planted certainly at the Restoration, and the garden invaded their shadows, until nothing would bloom in the shade except primroses, which grew white and flesh-colour in the darkness; a wilderness of wild hyacinths, shining in May like another heaven; wood anemones, wood sorrel; the blue pasque anemone. And as the summer heat settled down, and made the summer beds blaze into a scarlet mass of geraniums, and infinite varieties of other beautiful flowers, the golden Tutsan St. John's wort lit up the darkness of the shrubbery. Waterer in those days was a comparatively young man at Bagshot, and azaleas were hardly invented. . . .

"'A busy brisk house, until you opened a gate in a wall, and passed into the odorous silence and heat of the garden; here was a stillness scarcely disturbed by the cawing of the rooks. This was the ladies' quarter. This was the life's amusement of the two

"Hornby Mills, and other Stories." By Henry Kingsley. In Two Volumes. London: Tinsley Brothers.

maiden sisters of the house, Aunt Bridget and Aunt Hester. On this garden they lavished all their own perfect refinement; to this garden I wish to call your attention, as a type of English garden now almost extinct; and before I have finished with it I think you will allow that I was right in speaking of the general *ménage* of this particular country house. . . .

"Extravagant as all the other arrangements in the house were, there was no extravagance in the garden. There was no gardener, for instance, worth calling so, only an old man kept on by the week, with sometimes a labourer to help him; all the direction, and no inconsiderable part of the work, was done by those two charming refined maiden ladies. A rich acquaintance of ours, Mr. Dash, has made me laugh to day, by telling me of a letter he had received from a gardener who had advertised for a situation. This gentleman gardener said "that he *did not like the tone of Mr. Dash's letter*, and thought the place would not suit him." Now the old garden I speak of is not much smaller than my friend Dash's garden, and, I think, infinitely more beautiful. . . .

"There were but few sorts of chrysanthemums cultivated then, and those of inferior sorts; but such as there were, were gay and gaudy enough. In an open winter, their yellow had scarcely become tinged with the delicate rose-pink which marks their decay, when the Christmas rose (*Helleborus niger*) began to blaze out in white patches of large flowers at regular intervals about the otherwise empty beds; and before they were gone the whole map of the garden was marked out by brilliant golden lines. The little aconite, planted thickly, close under the box edging, showed the shape of each parterre in a hard golden line. The garden, beautiful at all times, was seldom more beautiful than at the beginning of February, when the aconite and hellebore were in flower; but before the yellow bands and the brilliant white patches had begun to fade, the colour of the garden had changed, the hepaticas—crimson and blue alternately, and giving a general effect of purple, planted closely just inside the aconites—marked out the beds once more with a new colour, and held on nearly till March.

"But by this time nature, under the guidance of our two ladies, had begun to rebel against formalism, and there was no more "ribbon gardening." After the hepaticas, the flower borders began to possess a new interest, and your admiration of "bands of colour" became lost in the contemplation of individual beauty. From the centre of each bed, white, yellow, and purple, arose a corona of crocuses, about two feet in diameter, matted thickly together, and the whole garden shone like fire, relieved by the moonlight effect of the snowdrops. Almost with them came patches of the pale pink dog-toothed violet, and the white dog-toothed violet with the purple eye (which last is, with very few exceptions, one of the most beautiful flowers in nature, and the roots cost sixpence apiece). None of the above-mentioned roots were ever moved; they cost nothing whatever in maintaining; and, once planted, would flourish for ever, being far best left alone.

"I say that one flower *succeeded* the other in this wonderful garden: but the truth is there was no break. The crocuses were not fairly done, and the dog-toothed violets not half done, when a still more fantastic piece of colour trickery was ready for your eye. A ring arose round the fading crocuses, cunningly alternated in every other bed. In the one bed this ring was made up of cream-colour, pink, white, and purple all commingled; in the next, of a vivid intense scarlet, more vivid than most geraniums, nearly, or quite, equalling the brightest tropaeolum; and these bands were about a foot broad. What were these flowers? These were the anemones, nodding their heads to one another in the March wind, and seeming to congratulate one another on the coming spring. We must now leave the principal borders for a while, and go down to certain sloping beds near the gold-fish pond, in front of the moss-house, which were never disturbed by the gardener's fork, and which are quite ready for us now.

"The first thing which struck the eye here, in this quiet sheltered spot, sloping south, were bright patches of the common primrose, shining among the ferns and other green vegetation like groups of stars; until you had ceased looking at them, you could not take in the fact that there was a haze of blue violets mingled through them, which was loading the air with perfume. Primulas, too, of every wonderful variety were here. All the beautiful polyanthus, some running almost into dull purple, others almost into fiery scarlet. The pale and coloured primroses, the commoner auriculae, the sturdy oxlip, the delicate scented cowslip, even the rare pale blue bird's-eye primrose. There were orchises from the meadow trenches, sombre-coloured fritillarias from the Oxford meadows, blue pasque anemones; every flower which spoke of spring, of budding leaves, of singing-birds, of the renewed hopes and plans which always come to us at that time, year after year, until the eternal spring buds forth which never turns into summer; all these were collected here in that

quiet sunny border beside the fish-pond, and close to the church-yard.

"Viator here begged Horticulturist not to be sentimental.

"Every flower in that spring border," Horticulturist said obstinately, 'spoke of spring-time, and youth, and hope, and love-making. And of all the beds in the garden, those two quiet melancholy old maids—quiet and melancholy amidst all the growing extravagance and profusion around them—loved that secluded border the best, and tended it most carefully. They may have walked out among the blooming meadow flowers, not alone, once on a time, and that may have been the reason why they bent their spare and weakening bodies, and their faces, which grew more anxious year by year, as the reckless riot went on, so lovingly over them now.

"The wonderful freshness and beauty of our English spring flowers are scarcely beaten by any class of flowers in the world," he continued, 'any more than a good example of our English spring is to be rivalled, either for weather or for colouring, elsewhere. The Australian spring, when nature expresses herself in a sudden efflorescence of delicate, hitherto unnamed, orchises; when the earth is all flowers, and the air like maddening champagne, that is a season which goes near to satisfy your soul; but an English spring is finer. The "lushness" of the English spring vegetation is, I think you will find, unsurpassed in the world. I have had a glimpse of the tropics, and you may see the tropics at Sydenham and at Kew pretty well; have they anything to offer you like an acre or so of wild blue hyacinths in the middle of May?' . . .

"Have you anything more to tell me about this wonderful garden?"

"A good deal. I could put more into your head about gardening than ever was there before; but you won't let me do it in my own way. Once more; is the garden we saw to day, a labyrinth of badly-conceived and worse-executed Chinese patterns, with a Scotch gardener to show you over it, and point out its barbarisms—is that a garden at all?"

"A sort of one."

"A sort of one, exactly. But these two old ladies of mine had flowers in their borders all the year round, whereas my lord's beds are utterly empty six months in the year. Can you gather that?"—"Yes."

"Well, when the time came their garden was just as brilliant as my lord's, and ten times more artistic. Time would fail me were I to attempt to tell you of the beauty of these flower-beds in summer; of the mass of colour, confused but always artistic, which grew brighter as the summer went on, and which lay round the towering spikes of the hollyhocks, the various lilies and bee larkspurs (the *Delphinium formosum*, the most splendid of our perennials, unless the new blue columbine of last year, which I have not yet seen, is destined to beat it, was not invented then). These hollyhocks and bee larkspurs were insignificant-looking things, just outside the anemones, if you will do me the favour to remember; not obscuring them in the least till they were out of flower, and then shooting up, and hiding the untidy crocus grass, and the seedy-looking foliage of the anemones, until they in their turn died down with the first frosts of autumn.

"So much," continued Horticulturist, 'for the most perfect and well-arranged garden I have ever seen, and what is more, the cheapest. Let me recapitulate for a moment. The centre of each bed was filled in an oval or square of two feet, more or less, with thickly-planted crocuses; outside this, a ring of anemones; outside this again, a ring of hollyhocks and delphinia; then a bare space, of say of four feet, to receive the summer flowers. Then the hepaticas, a hedge of ivy-shaped leaves in summer, for a few weeks in early spring a blaze of crimson and purple; then the closely-planted aconites, and then the box. Such was the garden. I can describe the colour, but the hot rich scent of it is beyond me. The recollection of it makes me faint. It was the sweetest smelling garden I was ever in.'

"Was?" said the unsentimental Viator.

"Yes. It is gone now. It was the most cheap and the prettiest garden of its pretensions I ever saw; but it is gone. Part of the old house is left, and a well-to-do man lives in it. But he has laid three quarters of it down in turf, because he says, much as he likes flowers, that he can't afford them. But Aunt Bridget and Aunt Hester never spent one half on their glorious garden which he does on his formal, and somewhat ugly (if flowers could be ugly), rows of calceolarias and scarlet geraniums. Now, in July, instead of the eye wandering from one curious piece of beauty to another, it loses itself, and gets thoroughly Cockneyfied in running along mere bands of colour.'

"All the old perennials eradicated?" asked Viator.

"Very nearly. Nature occasionally reasserts herself, to the great disgust of his gardener. Some of the old tulips still insist on

peering up through the new turfed ground, to be nipped off by the new mowing machine. Impertinent crocuses still appear in the middle of the beds. The dear old hepaticas still hope to be forgotten by the new Cockney gardener, and modestly thrust themselves up in his absence (for he never is in the flower garden before May) and appeal to his more highly educated master. He *pleads* for them, but what pleading is of any avail against the spite of a doctrinaire new broom?"

THE PROPAGATOR.

THE ART OF GRAFTING.

(Continued from p. 596.)

GROUP 2.—CROWN GRAFTING.

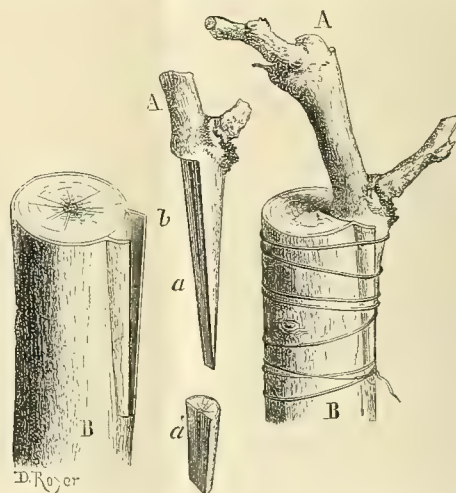
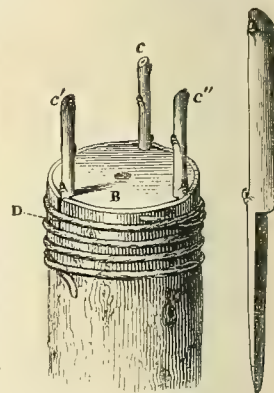
GENERAL DIRECTIONS.—This method is suitable to a large number of trees and shrubs of various kinds. It is practised in spring, as soon as the bark is easily separated from the alburnum, but the precaution should be observed of preparing the stocks beforehand, and heading them down three or four weeks before grafting takes place. Formerly this operation was very often performed in autumn, several months before the usual time of grafting. When inserting the scions, the cuts, which have been more or less cicatrised, should be freshened with the pruning-knife. The scion branches are cut during winter, before the sap begins to flow, and placed in soil or sand, either in a cellar or on the north side of a wall, in a vertical or a horizontal position, and either half or entirely buried; the essential point is to keep them from vegetating, and to see that the bark does not dry up. The scions are pieces of branches from two inches to five inches long. The upper half should have two or three eyes; the lower half is cut with a flat sloping splice-cut, which should begin opposite to an eye, and end in a thin point. It should be so cut as to contain no pith, which would rather interfere with the process of cohesion, and on the whole should be of no great thickness. A small notch or shoulder cut in the upper part, will serve to rest the scion better on the stock.

The scion is inserted into the top of the stock between the bark and the wood, the point being generally cut on both sides to facilitate its entrance; some operators, however, content themselves with moistening the point with their lips. A small implement of wood or ivory is usually employed in preparing a place for the insertion of the scion. It has a long sloping point, which is introduced between the bark and the alburnum and on being withdrawn, the end of the scion is slipped into the opening. When this precaution is taken, there is no fear of breaking slender scions nor of bursting the bark; however, the simple pressure of the hand will often suffice to fix the scion under the bark without previously raising it. The introduction of the scion is in most cases facilitated by the circulation of the sap which separates the bark from the alburnum. However it may happen that the scions of large size will threaten to burst the tissues; in that case the best thing to do is to make a longitudinal cut in the bark with the grafting-knife at the moment of inserting the scion. The thicker the stock is, the greater the number of scions

which may be placed upon it; however, to render the cohesion more complete, there should be a distance between them of at least two inches. A bandage, which should not be too tight, nor compress the bark too much, is necessary after the insertion of the scions. Grafting-wax is applied to the cuts, and to the bark of the stock where it covers the scions, in order to prevent rents. The adhering of the wax is facilitated by wiping off the sap which oozes from the cuts. Our illustration

represents the head of a stock (which has been grafted, either by crown-grafting, or cleft-grafting, or inlaying, or veneering) bandaged and covered with grafting-wax. The wax is spread over the cut (A) on the head of the stock, where a branch has been removed (E), where the scion and stock are joined (I), and on the top of the shortened scion (O). The terminal bud (U) is not covered, nor the bud (Y) imbedded in the incision. Crown-grafting is, so to speak, indispensable in the case of large trees, on which a great number of scions may be grafted in consideration of the amount of nourishment furnished by the roots.

ORDINARY CROWN-GRAFTING.—In the stock (B) which has been cut to the quick, we insert three scions (*c, c', c''*), which are as many as its diameter will allow of. It would be rather difficult to insert more without bursting the bark in at least one place by the increased tension. In the present case, that mischance is prevented by making a longitudinal incision (D), which not only facilitates the insertion of the scion *c'*, but also allows the others (*c* and *c''*) to be easily introduced without any danger of bursting the bark of the stock. When a stock is grafted close to the ground, it will be no harm to earth it up as far as the upper buds of the graft. This will secure it from being dried up; and in certain kinds new roots will be formed on the incisions, which will promote rapidity of growth. It is not absolutely necessary to select scions of the current year's growth. Wood two years old, but fresh, has an equal chance of success, on the condition, be it understood, that it is furnished with eyes capable of being developed. In the case of old trees, there need be no hesitation in selecting mixed scions, two years old in the part which is to be united to the stock, and one year old in the upper part which is to make the growth. The American *Gleditschia*, on which G. Bujotii and other kinds are grafted, requires to be treated in this way. Thus, the scion (A) is a branch two



years old, bearing two shoots of the current year cut down to the length of an inch or so. A sloping cut (*a*) is made in the old wood, of which a section is given at *a*. It is then placed on the stock (B), in which a simple incision (*b*) has been made. It will be necessary to raise the bark with the spatula of the grafting-knife, or some such implement, in consequence of the size of the scion and the want of elasticity in the bark of the *Gleditschia*.

IMPROVED CROWN-GRAFTING.—This method differs from the preceding in two essential points:—1. The stock (A) being cut obliquely (as at B), the scion (F) is inserted on the top, with a tongue cut at an acute angle, and which fits accurately on the

slope of the stock. 2. An incision must be made in the stock, and the bark raised with the spatula on one side only (C). The scion is then slipped in, so that the fresh cut on the inside may come into contact with the alburnum (E), and the back (G) be covered by the lip (C). The chances of success are increased by removing a small strip of bark (I) on the side of the scion, corresponding to the lip (D) on the stock, which will overlap it. At (J) the work is shown completed before the application of the bandage and the grafting wax. The section (B) of the stock exhibits the lip or portion of bark (C), which is raised from the wood, and the portion (D) which is not raised. These little alterations, which have been suggested by reflection and practice, and which are susceptible of great variation, have for their object the multiplication of points of contact in order to accelerate the cohesion of the graft. Professor Du Breuil has invented several of these improvements and recommends them in his works. In the department of Isère, where grafting the walnut is more practised than anywhere else, M. Chaix, of Biviers, has for a long time used the modified method of crown-grafting which we have just described. He cuts the stock in a sloping direction, so that the oozing sap may not obstruct the cohesion of the graft. An angular notch is made in the scion, which fits on the top of the stock, and the face of the longitudinal cut is made even to correspond with the surface of the stock where the bark is raised. The bark, it may be observed, is raised on one side only. In order to preserve the graft from the effects of heat and cold, he covers the cuts with clay, he then surrounds the graft with a band of bark four inches wide. In this way he operates on stocks thirty years old, and vouches for the success of the method.

TREATMENT AFTER CROWN-GRAFTING.—This is limited to—1. keeping an eye on the bandage, loosening it if it becomes too tight, and renewing it if the cohesion is not perfect; 2, tying up the young shoots on rods or on a stake taller than the graft; and 3, removing any shoots or buds that may appear on the stock—*C. Baltet*

(To be continued.)

NOTES OF THE WEEK.

— At Ribchester, a boy, aged twelve, named Leeming, was poisoned the other day through eating monkshood.

— ABOUT 2,000 miles of irrigating canals have been projected in California, which, it is said, will protect ten million acres of land from drought.

— REPORTS from America describe the forest fires there as extensive and terrific in character, both in New York State and Pennsylvania.

— IN consequence of the heavy rains of the past month, herbaceous plants round London are very luxuriant, and promise abundant and vigorous bloom. The kinds now in flower are unusually fine.

— A NEW yellow flowered Columbine (*Aquilegia aurea*) is now in bloom at the Hale Farm Nurseries, Tottenham. In point of merit it is scarcely equal to the finely coloured flowers of many other species, but it is nevertheless quite distinct, and a really very interesting plant.

— THOSE who are not aware of the beautiful effect of good edgings of Irish Ivy, would do well to look at those at the east side of the avenue gardens in the Regent's Park, which are now of the loveliest and richest green imaginable.

— PALM OIL has become one of the most important articles of commerce from the west coast of Africa, especially to this country. In the year 1808, we received 200 tons of palm oil from Africa; in 1827, the quantity had increased to 1,700 tons. Last year, 51,087 tons, valued at £1,789,000, were imported.

— WEDNESDAY last ("Royal Oak Day," 29th May) was observed in the usual way by the hanging out of sprigs of oak, covered with green foliage, on several shop windows in various parts of the country.

— AFTER vines, potatoes, sugar-canes, and silk-worms, being each attacked by disease, there is now a fresh victim—the tomato. This crop we learn, will suffer much from disease in the south of France this year.

— THE French Minister of War has decided that in future soldiers shall be allowed to be employed by cultivators on their lands. All who require them must forward their demands, through their mayor, to the prefecture of the chief county town.

— THE very remarkable group of succulents shown at the Royal Horticultural Society's exhibition, South Kensington, last Wednesday, by M. Pfersdorff, of Paris, has been purchased by Mr. Peacock, of Sudbury House, Hammersmith, whose collection is one of the richest in Europe in such plants.

— A REMARKABLE collection of the finer varieties of German Iris (*I. germanica*), and likewise numerous other species of this family, may now be found blooming in great perfection at the Hale Farm Nurseries, Tottenham. Lovers of this fine genus should not fail to shortly visit this establishment, if they wish to see this collection at its best.

— THE finest specimen we have ever seen of the beautiful Rocky Mountain Columbine (*Aquilegia carulea*) is now in flower, planted out in Mr. Parker's nursery, Tooting. It is when well done the queen of the family, and is as fair and as beautiful an example of lovely colouring as any hardy plant we possess. Those who do not know this Columbine should make a point of seeing it.

— THE Central Park at New York has recently been embellished by what is considered to be a very fine statue of Shakespeare, the work of the celebrated American sculptor, Mr. Ward. We suppose the as yet unalaid-out parks of Alaska or the Yellow Stone Valley will be embellished with statues of our great bard before Hyde Park, Kensington Gardens, or the Thames Embankment.

— A FINE bush of the by-no-means-commonly-grown Tree Lupine (*Lupinus arboreus*) is now in great perfection at the Exotic Nursery, Tooting. The plant is about three and a half feet high, and its racemes of rich golden yellow flowers are so freely produced as to make it appear, at a distance, to be a complete mass of bloom. For the ornamentation of shrubbery borders this fine Lupine deserves attention.

— THE effect of the cold and wet month through which we have just passed, has been, on the whole, favourable to market gardens round London. They at present seem teeming with fertility, and have evidently been greatly benefited by the abundant rains. Everything looks well except kidney beans and asparagus, both of which have suffered somewhat from cold; cuttings of the latter have, up to the present, been much fewer than usual.

— CATERPILLARS this year have committed sad havoc among fruit bushes. Dusting with newly-ground white hellebore powder has, however, effectually cleared them of these pests. A few weeks after the first dusting the caterpillars re-appeared. Applications of the same powder were repeated, *i. e.*, of some saved from the first dressing. These proved powerless. A dose of freshly-ground powder was resorted to, and this again cleared the bushes. Powder in a fresh state is, therefore, a *sine qua non*.

— A FOREIGN contemporary says tea and coffee are threatened with a Brazilian rival called guarana. Guarana consists of the seeds of a tree known to botanists as the *Paulinia sorbilis*, which is very abundant. The tree produces a fruit about the size of a walnut, containing five or six seeds. The seeds are roasted, mixed with water, and dried. Before being used they require grinding, when they fall into a kind of powder. The active principle is an alkaloid, identical with that found in tea or coffee, but there is twice as much of it in guarana as there is in tea. The effects are similar to those of tea and coffee.

— WE have received from Mr. Henry Winthrop Sargent, whose beautiful gardens on the Hudson we had the pleasure of seeing in 1870, information as to terrible destruction by frost which has taken place among his fine collections of conifers and other trees and shrubs. Mr. Taplin, formerly of Chatsworth and now of South Amboy, New Jersey, also informs us that there has been enormous destruction of trees and shrubs throughout all parts of the States east of the Rocky Mountains. A curious feature connected with the destruction, is that some plants, such as the *Cryptomeria* and *Ilex latifolia* have escaped, while kinds supposed to be indestructible, such as the Hemlock Spruce and the field Maple, have been destroyed. Of these disasters we shall publish some details next week.

— THE Epping Forest Bill, which is now before the House of Lords, has been referred to a select committee, consisting of the Duke of Manchester, Earl Stradbroke, the Earl of Effingham, Viscount de Vesci, and Lord Monteagle of Brandon. The committee will meet on Monday next.

— VERY good and well-flavoured fruits of the Loquat were shown the other day at South Kensington, by Mr. Colbourn, of Woolhampton Gardens, Berks. They were grown against the back wall of a warm conservatory, in a border consisting of peat and loam. They flowered in November, when the blossoms, which come very thickly, were thinned, leaving about six or eight on a spike. While in bloom, the atmosphere was kept dry and maintained at about 60°, fertilization being assisted by means of a camel's-hair brush. The fruit ripened about the end of May.

— At this season the celebrated Strawberry beds near Dublin attract numbers of people to them belonging to that city. The "beds" are situated on the high sloping banks of the Liffey, just outside the Phoenix Park, through which the drive to them is one of the pleasantest with which we are acquainted. The season at this popular resort lasts from the first Sunday in June to the middle of July, during which time the place bears somewhat the aspect of a fair. This season we learn that the cream is waiting for the strawberries, and that the strawberries are waiting for summer heat.

— A LADY residing in the West End has been appealing through the *Daily Telegraph* for flowers for the sick in hospitals and elsewhere, and has been liberally responded to. The flowers sent have come quite fresh, and the exceeding pleasure they have given has been even beyond what was expected. They have been shared amongst the sick, the old, the insane, and the hard-working needlewomen. Each day fresh applications for weekly nosegays are received. Let us hope, therefore, that a work so well begun may be continued, so as not to allow poor people to be disappointed of so pure a pleasure.

— BEDDING out in the London parks, so long delayed on account of the weather, is now being forwarded with vigour. At Battersea pelargoniums and similar common summer and autumn flowering plants are already put out; also the hardier subtropical plants, such as *Acacia lophantha*, variegated *Yuccas*, New Zealand flax, and *Aloes*. A new feature, and a promising one, consists in filling up some of the beds with specimen fuchsias, below which the ground is carpeted with *Amarantuses*, and edged with suitable plants. These fuchsias are at present protected with canvas. *Alternantheras*, or any of the more tender plants, such as *Ficuses*, palms, *Dracenas*, &c., are not yet put out, the middle or end of the month being considered soon enough for such plants.

Bedding Out.—The *Daily News* is becoming quite horticultural. The other day it had an article on "bedding out," the general tendency of which was that although bedding was objectionable, it was nevertheless the right thing after all! A correspondent combats this view, and adds, "There is nothing new under the sun, and the modern flower garden appears to me a carrying out of what I saw in 'The Great Central Flowery Kingdom,' twenty years ago; our Chinese house-boy used daily to lay out a large plate of many-coloured flowers, in a kaleidoscope pattern, which seemed to change every day (though I believe the forms were all old, handed down either by books or tradition); the effect was startling; it was beautiful; but it was artificial. An English lady came out to the far land to be the Mistress of the Hong; and she, fresh from a country parsonage—loving and understanding flowers—laid them out in her own fashion; it seemed as if by instinct, not by rule. We never wished to return to the kaleidoscope; and so I think it will be with modern flower gardening.

Leicester Square.—If, according to the orthodox political theory, destruction is a necessary preliminary to construction, we may hope that Leicester Square is about to enter upon a new and a better era. The bare space cannot possibly be left unoccupied, and something must be done with this "improving locality." All sorts of suggestions have been made for utilising the vacant land; but they all seem to err by the assumption that it should be built over. The example of Paris ought to teach us how such an unoccupied waste can best be made use of. Every visitor to the French capital knows the Square Montholon, the plot by the Chapelle Expiatoire, and a dozen other similar places—which a few years ago were as bare and barren as Leicester Square, and which, under the Empire, were converted into charming open gardens, with flower beds, trees, walks, and benches. There is absolutely no reason why in Leicester Square we should not have a public plot of garden like that of the Montholon in the Rue la Fayette—an oasis in the desert of London.

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

BY OUR SPECIAL REPORTER.

INDOOR PLANT DEPARTMENT.

Conservatories.—The beauty of *Camellias* is over; *Azaleas* will soon be in the same condition; and *Roses*, although so grand a few weeks ago, are now past their best. *Acacias*, *Rhododendrons*, *Heaths*, and other hard-wooded plants are now contributing to the beauty of indoor structures. Any appearance of mildew on *Heaths* is immediately checked by dusting them with sulphur; in the centre of large plants mildew often develops itself unnoticed, a circumstance which renders it necessary to keep the central shoots thin; such prunings are used for propagating purposes. To *Fuchsias* one stake only is placed as a support, the lateral branches being allowed to hang gracefully down. *Petunias* are now very fine, and are supplied occasionally with liquid manure.

Stoves.—A genial moist temperature is now maintained in these; the syringe is freely used amongst growing plants, and fumigating is frequently practised in order to keep down insects. *Cycas revoluta* is often affected with scale, for which the only sure remedy is hand washing. *Zamias* and *Palms* making young leaves are never allowed to receive a check from cold draughts or to be in want of water. Creepers are pruned, trained, and luxuriant growths stopped, in order to induce them to form good specimens. *Allocasias* and *Marantas* are kept above water tanks to encourage their growth.

Orchids.—During bright sunshine these receive a little shade, such as are in flower are removed to a cooler and drier house than that in which they are grown, and they receive more shade in order to prolong their flowering period.

Ferns.—These now enjoy a steady moist temperature and plenty of shade. Sprinklings from the syringe are occasionally given; but care is taken to keep the foliage of *Gymnogrammas* and *Adiantums* always dry.

Pits and Frames.—These are now mostly cleared of bedding plants, and are filled with *Pelargoniums* for late flowering, and other plants. *Verbenas* are being increased in gentle heat, to take the place of early annuals, or other plants that are likely soon to be done blooming. *Cinerarias* are sown immediately the seed ripens, either in gentle heat, or in cold frames; *Auriculas* from seed, which is gathered as soon as ripe, are potted off singly and kept in cold frames; *Chrysanthemums* are shifted as they require it, and liberally supplied with water. *Heartsease* are increased from cuttings in frames with a north aspect. Young *Fuchsias* are being shifted, using a light rich soil, and supplying them plentifully with water. *Balsams* and *Cockscombs* are shifted, as they require it, never allowing them to become pot-bound; if a little bottom heat is given, and at the same time some top air, it greatly improves them.

The Flower Garden.—Most people are now busily engaged in planting out summer bedding plants. In a few places, where they were turned out about the middle of May, they seem to have suffered a good deal. The hardiest plants are put out first, and some of the more tender kinds will not be trusted outside before the middle of the month. Beds are being filled with *Pelargoniums*, *Calceolarias*, *Verbenas*, *Lobelias*, *Gazanias*, &c., and in sheltered positions even *Dahlias*, are being planted out. Where long lines of these are made, the stakes are first driven into the ground, holes being taken out at their base, and a spadeful or two of good rich manure put into each hole and mixed with the soil; the *Dahlias* are then planted, and tied at once to the stakes. Variegated *Yuccas*, *Acacias*, New Zealand Flax, and a few other graceful plants are being planted out, either in beds or as isolated specimens. *Edgings* of *Echeverias*, *Mesembryanthemums*, &c., are also being made. *Centaureas*, *Solanums*, and Tobacco plants are likewise being planted out. Some of the more tender plants have inverted flower-pots placed over them at night. *Alternantheras*, *Palms*, *India-rubber* plants, *Monstera*s, *Anthuriums*, *Tree Ferns*, &c., are not yet put out. Herbaceous plants, such as *Lupines*, *Delphiniums*, *Pyrethrums*, &c., are being staked; and to *Phloxes* and similar plants a good surfacing of old hot-bed manure or leaf mould is given. Hardy annuals are being transplanted from seed-beds or from other places where they have been sown too thickly. Half-hardy annuals are also transplanted out of doors, and amongst them the beautiful *Amarantus salicifolius*.

INDOOR FRUIT DEPARTMENT.

PINES.—Suckers are removed and potted as they become ready. Plants, the fruit of which is swelling, receive occasional waterings

with weak manure water and an abundant supply of atmospheric moisture.

VINES.—Such as are colouring, constantly receive a little fire heat, also a little air night and day, but whilst the weather continues dull, only a very little top air is left on at night. Later crops receive no fire heat, except such as are in flower, in order to assist the setting of the fruit. To pot vines, manure water is frequently given. Thinning the fruit and stopping the shoots are being attended to.

PEACHES AND NECTARINES.—To ripening crops, a liberal supply of air is given in favourable weather, and a decrease of moisture. Those stoning enjoy a steady genial temperature; later crops are being thinned and disbudded. Top-dressings of good rich material are given to those in pots, keeping it towards the outer edge of the pots, and half-an-inch higher than the rim, so as to leave a small basin in the centre, to hold water.

FIGS.—To such as are ripening their fruit, a steady temperature is maintained; plenty of air is given them, and they are kept rather dry. Plenty of water, both at root and overhead is given to advancing crops.

MELONS.—As the heat in frames begins to decline, fresh linings are applied, and the frames are matted up at night. Top-dressings are given to the beds, and such fruits as are swelling are placed on slates, tiles, or pieces of wood.

CUCUMBERS.—Borders in pits are top-dressed with rich material, fruit and foliage timely thinned, and liberal waterings given at the root and overhead.

FRENCH BEANS.—These are top-dressed as soon as they show flower, removed to cooler houses or pits, plentifully supplied with water, and kept near the glass.

EGG PLANTS AND CAPSICUMS.—These are kept near the glass in cool pits, and watered abundantly.

HARDY FRUIT AND KITCHEN GARDEN DEPARTMENT.

DISBUDDING of Peaches, Nectarines, Apricots, and Cherries now claims particular attention, and the thinning of the fruit is also being attended to. In the case of Peaches and Nectarines, a good many more than are required for a crop, are left on the trees, as during the stoning process many drop off. Figs are stopped at the fourth or fifth joint; they receive very little further thinning. Trees on walls are frequently syringed vigorously to dislodge any insects that may harbour about them. Standard fruit-bushes have any superfluous young wood that may come up in the centre of each bush removed. On the least appearance of caterpillars they are dusted with newly-ground white hellebore powder. Those bushes, the fruit of which is near the ground, have a layer of rank litter spread under them, so as to prevent heavy rains destroying the berries with sand.

STRAWBERRIES.—These are being mulched with rank litter; liberal applications of manure water are also given to them.

BEANS.—A few of the early long-pod are being sown. Those furthest advanced are now podding. Succession crops are in flower, and are topped when about 2 or 2½ feet high. Earth is drawn to advancing crops.

BROCCOLI.—These are planted out as space permits. A small sowing is made for a late crop.

BRUSSEL SPROUTS, CABBAGES, AND CAULIFLOWERS.—Plant out as ground becomes vacant. For Coleworts, a few dwarf early Cabbages are sown. Cauliflowers are greatly benefited by applications of manure water.

CELERY.—The earliest is planted out, two lines in a trench fifteen inches wide and six or eight inches deep, with a ridge of three feet between the trenches. Succession crops are fully exposed, and a small sowing is made for late spring work.

CUCUMBERS.—Some are planted out on ridges, and protected with hand-lights, over which litter is placed at night.

ENDIVE.—A little is sown on a warm border, and some of the previous sowings are planted out.

KIDNEY BEANS.—A little earth is drawn to these; succession crops are sown on warm borders.

LEeks.—March sowings are being transplanted in lines twelve inches apart, and six inches plant from plant.

LETTICES.—Some are sown for succession on cool shady spots, others are transplanted as required, and strong plants are being tied up for blanching. Those put in between lines of young Strawberries are removed for use, in order that the ground may be mulched, to save the fruit from grit.

NEW ZEALAND SPINACH.—The main crop of this Spinach is being planted out.

ONIONS. Where these have come up thickly, either in beds or lines, they are thinned out to a few inches apart. When in beds, Lettuces, Parsley, and early Carrots, are frequently sown with them; these

are now thinned out considerably, allowing none of them to stand nearer one another than fifteen or eighteen inches.

PARSNIPS.—These are thinned to about ten inches apart.

PEAS.—A sowing of tall Marrows is being made for late autumn use, in lines six feet apart, the intervening space being planted with Cauliflower, Brussels Sprouts, or Cabbage.

POTATOES.—Those planted on wall borders are now advanced so much that the rows are meeting one another; to main crops earth is being drawn, carefully avoiding packing the soil.

SPINACH.—Successional sowings are being made between lines of Peas, or it is sown broadcast on ground newly planted with Cabbages and Cauliflowers.

TOMATOES.—These are planted out along the base of walls, or on warm borders; little basins are left around each plant, so as to permit of watering being freely given, should such be necessary.

TURNIPS.—The last sown crop is being thinned.

SMALL SALADS, are sown every ten days, according to the demand.

NURSERIES.

INDOOR PLANT DEPARTMENT.

A good deal of time is consumed at present in preparing plants for exhibition. In many cases those that have been shown have suffered considerably, especially the young fronds of Palms, which are now subjected to a strong heat and plenty of moisture and shade. Bedding plants turned out of frames are placed between hedges or in other sheltered places. The frames have been filled with Heaths, Roses, and other greenhouse hard-wooded plants. Heaths, Epacris, &c., growing vigorously in frames, are kept a little close, and are carefully shaded; the young wood as it advances is pinched, in order to make the plants bushy.

The propagating of Begonias from leaves laid on the surface of a pan, of which half an inch of the surface is white sand, is being proceeded with. Some of the kinds are increased by means of cuttings, as are also Gesneras. Gloxinias are also increased by means of well-matured leaves, not too old; these are inserted up to their necks in sand, kept under hand-lights in the propagating pit, and closely shaded for a time. Seedlings of all kinds are being potted off singly as they become fit. Maurandias from seed are potted singly and staked; Melianthus, Coronillas, and Cytisus are also potted singly and placed in cold frames. Gomphrena globosa and Mimosa pudica, from seed-pans, are potted singly, using a light rich compost for the purpose; the plants are kept for a time in gentle heat. The young shoots of Primula sinensis are taken off and inserted singly as cuttings in small pots. Old plants of variegated Thyme continue to be forced for cuttings, which now root freely in cold frames; those rooted are repotted or pricked into boxes. Cuttings of Statice continue to be shifted, never allowing the plants to suffer from want of root room. Young Palms from seed are potted singly into thumb or sixty-sized pots, and receive abundance of heat, moisture, and shade. Rooted cuttings of Deutzias, and plants of Plumbago, &c., are repotted and kept rather closely in cold frames.

OUTDOOR DEPARTMENT.

Seedling Conifers in beds are now up, and are immediately cleaned, for as they are slow growers they are apt to be choked. Plants in seed-beds are seldom thinned, as they are commonly transplanted after the first year. From grafted trees all suckers are removed as they appear. The grafts are frequently examined, and the clay renewed should it be loosened by the weather. Conifers, deciduous and evergreen trees grown in lines, are being cleaned; also walks and edgings. From about the roots of hedges, all weeds—both annual and perennial—are removed. Young fruit trees are being attended to as regards training and disbudding; unless when requisite to test the kind, no fruits are allowed to come forward. Herbaceous plants are being staked and top-dressed; those in pots are also being surfaced and top-dressed.

MARKET GARDENS.

Notwithstanding the backwardness of the season, crops in market gardens look well. The first crop of Cauliflower, i.e., those reared under hand-glasses, furnishes abundance of heads; and now the second crop, or those of the first planting in lines, are beginning to yield abundantly. Lettuces are in great perfection, especially those grown by themselves; those that have been planted between other crops are also of fine quality, and are removed as the more permanent crops begin to occupy the space. French Beans are a little injured by cold winds, but such as have been protected under hoops and mats, look fresh and well.

ASPARAGUS.—Beds of this are now yielding more abundantly than they did a few weeks ago; they have, however, not been so productive as in warmer springs. No shoots are yet allowed to run up; all are cut.

BEET.—The first crop of this sown between lines of Lettuces, fifteen inches apart, is now eight or nine inches high; the lettuces are just being removed for market, and another crop of the same is put in their place. The main crop is being thinned.

CABBAGES, CAULIFLOWERS, AND BRUSSELS SPROUTS.—These are being transplanted, as the ground becomes vacant. A successional sowing of Coleworts is being made on cool, damp soil.

CELERY.—Lines of this are planted four feet apart, the intervening space being in the form of a ridge, about four inches higher than the line of Celery. On the top of this ridge, from one to two lines of Lettuces are planted. In some cases, a few weeks ago, four-foot beds were planted with three lines of Lettuces; between the beds were twelve or fifteen inch wide alleys about six inches deep; these are now planted with Celery about eight inches apart.

CUCUMBERS.—Those in frames are bearing freely, and are closely attended to as regards pinching the points off the vines, a joint or so beyond the fruits; the shoots are being pegged down, and the fruits thinned, placing those inclined to grow crooked in tubular glasses. They receive abundance of water, and to those some time in bearing, a little liquid manure is also applied. After watering, and during bright sunshine, a little litter is scattered over the lights, to act as a kind of shade; the frames are also covered with litter at night. Some Cucumbers are likewise planted out in ridges, but the vines are kept as much as possible under hand-lights.

KIDNEY BEANS.—In exposed situations these have suffered a good deal from cold winds, but where they have been sheltered they are progressing favourably. Those protected by hand-lights, and in beds surrounded by mats, are making rapid progress. Some are just appearing above ground, and to succeed these another sowing is being made. The lines are three feet apart and cropped between with Lettuces or Turnips.

LEeks.—These are being transplanted in little furrows in lines a foot apart; those planted some time since, have the furrows filled up by repeated hoeings.

MINI.—This is now abundantly produced on pieces of damp soil, and in places where little else could be grown. It forms a permanent crop, the only care taken being to exterminate weeds. Fresh plantations are also made in shady cool places in lines a foot apart; in the intervening space between every third and fourth line, a row of Lettuces is planted.

ONIONS.—Transplanted ones from the autumn sowing are now being gone over, and all those showing flower are pulled and sold at a low price; those still remaining in the autumn-sown beds are being cleared for market, and the ground devoted to other crops. Broadcast spring sowings are being cleaned a second time with narrow hoes. The last sowings for drawing young are just appearing above ground.

PARSNIPS.—The first crop of these are eight or nine inches high, in lines fifteen inches apart; between every second and third row a line of Lettuces is planted. The main crops are being thinned a second time to about eight inches apart.

PARSLEY.—Old plants under the shade of trees furnish at present a good supply; about two months since along with the Radishes some Parsley seeds were sown in beds. As the Parsley takes a much longer time to germinate than the Radishes, the last was removed from the bed immediately after the Parsley made its appearance, so these now form the succession crop.

SEAKALE.—Old plants are now allowed to develop themselves, and are in full bloom. Overcrowding of foliage is prevented by thinning. From young plantations made this spring, intermediate crops are removed.

STOCKS AND ASTERS.—Young plants remaining unsold, are planted in lines six inches apart each way, where they will be kept for cut flowers.

SWEET MARJORAM AND OTHER HERBS.—Those raised in frames are now planted out in lines a foot apart, in separate plantations or in alleys between other crops.

TOMATOES.—Plantations of these are made in the open ground in sheltered positions, in lines three feet apart, and eighteen inches between the plants in the line. Those still unplanted are kept in pots plunged in cold frames, but fully exposed.

TURNIPS.—Early sowings have all been removed, and Kidney Beans, Tomatoes, or other crops occupy their place. From main broadcast sowings the supply is now derived. Some are advancing, and are being thinned. When necessary, another large sowing is being made.

VEGETABLE MARROWS.—Those first planted out on ridges, heated by a little manure, are now growing strongly without any covering; others are kept under hand-lights; and those planted out without any bottom heat, if protected, are making some progress; if unprotected, they are doing little good. Fresh plantations are being made in the ground occupied by Mushroom-beds.

SOCIETIES, EXHIBITIONS, &c.

ROYAL HORTICULTURAL SOCIETY.

(JUNE 5TH).

THE opening day of the great show of the season was as fine and sunny, and as agreeably tempered with a refreshing breeze, as could be desired, and, on the whole, the interest and beauty of the show were of a very high order. There was, besides the great exhibition of Rhododendrons by Mr. A. Waterer, and the usual interesting novelties in the Council Room,—

NEW PLANTS.—The prizes for these brought forward a number of beautiful novelties, most of them in a much finer condition than the public has heretofore had the pleasure of seeing them. The first prize group in this section, shown by Messrs. Veitch & Sons, King's Road, Chelsea, consisted of the following remarkable plants: *Dracæna Dennisonii*, *Pandanus Veitchii*, *Begonia Chelsoni*, *Dracæna Mooreana*, *Epidendrum syringothrysis*, *Nepenthes Sedeni*, *Croton Hookeri*, *Begonia Sedeni*, *Todea Wilkesiana*, and *Croton undulatum*. The second prize group, shown by Mr. Bull, was enriched by a fine specimen of the very handsome *Bertolonia guttata splendens*, the giant, Arum-like *Godwinia*, and the palm-like *Curculigo recurvata striata*. The first prize for six plants in or out of flower, introduced by the exhibitor, and not in commerce, was won by a group shown by Messrs. Veitch, consisting of the following plants:—*Adiantum speciosum*, a vigorous, distinct, and most graceful fern; *Croton Youngii*, with a dark green mottled sword-like leaf; *Dracæna amabilis*, a handsome kind, with white and reddish variegation; *Dracæna spectabilis*, with pale crimson bands and margins, a very remarkable species; *Aralia Veitchii*, a graceful and delicate kind, with a narrow crisply undulated leaf. In the second prize group, shown by Mr. Bull, there were three remarkably striking new plants, *Bertolonia superbissima*, which may be called the queen of spotted-leaved plants; *Dieffenbachia nobilis*, a noble looking kind, and *Alocasia illustris*. *Botryodendron magnificum*, a noble fine-leaved plant, with glossy foliage, having a metallic green hue, was shown by Messrs. Downie, Laird, & Laing. It is likely to prove a distinct and valuable plant. One of the most beautiful plants we have seen for a long time is the remarkable *Utricularia montana*, shown by Mr. Denning, gardener to Lord Londesborough. Its large white flowers, with yellow spots, abundantly produced and gracefully pendent, looked exactly like those of some fair and well-grown Orchid. It is at once a great curiosity, differing, as it does, so wonderfully from its little British relatives, and is a plant of the very highest value in an ornamental point of view. Very singular, too, among Orchids, was *Nanodes Meduse*, shown by the same exhibitor. Its quaint flowers, seen beneath the eye on the council room benches, looked quite dull in hue; but placed so that they came between the eye and the light, this colour was at once changed to a bright magenta. The same exhibitor showed one of his brightly-coloured *Masdevallias*, which are likely to prove as marked an addition to the Orchid family as the *Anthurium Scherzerianum* is to our stove Arums. In a mixed group of plants shown by Messrs. Veitch, fine examples of *Arancaria Rulei* and *A. elegans* were conspicuous for their merit; also a large basket of the brilliant *Begonia intermedia*, and the finest specimen we have ever seen in this country of the Californian Pitcher Plant (*Darlingtonia californica*). A remarkable group of plants came from Mr. Kellock, of Stoke Newington. This consisted of the most graceful specimen of *Beaucarnea* we have ever seen. It was accompanied by *Yucca Trecaleana* and *Puya coarctata*.

STOVE AND GREENHOUSE PLANTS.—In these classes Mr. Baines, of Southgate, was first, his specimens being, as usual, very remarkable ones, especially his noble American Pitcher Plants. Among other plants from Mr. Baines, was a very fine *Ixora coccinea*, two years and nine months old from the cutting stage. The collections from Messrs. Ward & Donald also contained some good plants, as did also others, especially that contributed by Messrs. Jackson, of Kingston, to which a first prize was awarded. Plants remarkable for the beauty of their leaves were also numerous, Mr. Baines being foremost in this class, and a good collection of them was also shown from Ghent, by M. Dallièrre; Mr. Cole & Mr. Donald also showed good collections.

PYRETHRUMS.—It is very probable that these plants will soon beat the *Chrysanthemums*, both for beauty and variety, as well as for the size of their blooms. Messrs. Kelway & Son, of Langport, Somerset, had a first prize for a fresh and well-grown collection. Why not show these plants in pots, in which they form very fine specimens? Messrs. Veitch exhibited an interesting collection of them, not for competition.

ORNAMENTAL GRASSES.—Judging by the list of these in our catalogue, one would think that ornamental grasses were well understood in gardens; but the fact is there is no family so imperfectly known from a horticultural point of view. Many of the comparatively few really ornamental kinds we now grow, are often passed off as distinct grasses under distinct names. We were, therefore, pleased to see a very fine collection of grasses shown by M. L. Bassuerts, Botanic Garden, Ghent. These were deservedly awarded an extra prize, and should be seen by all who take an interest in the subject.

HERBACEOUS PLANTS.—Considerable improvement was manifested in the showing of these as cut flowers. Mr. Ware's collection being exceptionally fine. By the way, we will venture to suggest that, in this class, as well as in others in which shallow baskets are used, it would be very desirable to conceal their ugliness by allowing some trailing plants to hang over them.

TREE CARNATIONS AND PICOTÉES.—A very marked advance was evidenced in these as shown by Mr. Charles Turner, of Slough. Pyrethrus, Fancy Pansies, and various other flowers have shown striking improvement of late. But we don't consider any recent gain so precious for the garden as these large and well marked tree Carnations and Picotées. The blooms seemed even larger than what are commonly termed the finest florists' varieties, and the colouring quite as delicate and true. The fact that they may be had through the winter and spring, and indeed almost at any season, should make them very precious to all who have to provide cut flowers.

PELARGONIUMS.—These were wonderfully fine, and well bloomed, some measuring as much as four feet in diameter. They were also well varied as regards colour, which at June shows is always bright and beautiful. A group of seedlings from Mr. Foster excited much attention; those among them to which certificates were awarded are enumerated below.

ROSES IN POTS.—The only exhibitor of these was Mr. George Paul, who furnished a charming group fresh and beautiful. Besides those in pots, he likewise showed some fine boxes of cut blooms, as did also Messrs. Kelway & Son.

HEATHS.—These were shown on the whole in better order than usual. Some of them were of wonderful size and beautifully flowered. The only fault observable was the stiff way in which some of them were trained, the natural habit of the variety being completely lost sight of. Striking novelties are still much wanted in this class.

FERNS.—These filled conspicuous positions with refreshing verdure. Both hardy and tender kinds were shown in profusion. Among the latter was a splendid plant of *Adiantum Farleyense*, from Mr. Williams; who likewise contributed grand examples of *Gleichenias* and *Davallias*, and also some fine tree ferns.

ORCHIDS.—Of these there was a tolerably good display. Among them one of the most conspicuous was *Saccolabium guttatum* Holfordianum, on which there were no fewer than seven fine spikes of bloom. This came from Mr. Williams, of Holloway. *Chysis aurea* was also shown in lovely condition by Mr. Denning, and *Epidendrum vitellinum* majus, unusually well coloured, by Mr. Wilson Saunders. Amongst other Orchids were the somewhat rare *Dendrobium McCarthiae*, and good well-flowered examples of *Anguloa Clowesii*. There were also some fine plants of *Aërides* and *Cattleyas*, especially *C. Warneri*, a richly coloured and fine variety.

CUT ORCHIDS.—A rich and beautiful collection of cut blooms of Orchids was shown by Provost Russell, of Falkirk. They were gracefully arranged, and very suggestive of the vast improvement orchids in a cut state are likely to effect in arrangements of cut flowers.

SUCCULENTS.—These plants have fallen on happy days at last. After having been banished from our gardens for years, Mr. Peacock, Mr. Wilson Saunders, and others, have shown us what great merits they possess, and we may soon expect to see them taking their proper place in our gardens. A fine collection was shown by Mr. Peacock on this occasion. M. Pfersdorff's collection, long known to be the richest of all in curiosities, contained the most extraordinary example of a grafted Cactus we have ever seen. It was a huge *Echinocactus Pottsii*, about fourteen inches in diameter through the body, supported on three legs of a cylindrical *Opuntia*, none of them more than an inch and a half through; such a giant head and diminutive legs we have never seen before, except in the cartoons of some of our comic contemporaries. The art of grafting as applied to succulents, is truly productive of wonderful results.

PANSIES.—These old favourites were well pleased to see well represented by Mr. Bragg, of Slough, Mr. Hooper, of Bath, and other growers. Remarkable among these was a splendid strain of Fancy Pansies, shown by Messrs. Downie, Laird, and Laing, which for size, novel and rich markings, would have made a little show of themselves. A Pansy, shown by Mr. Ware, named Pluto, which received a first-class certificate, was the blackest and glossiest object we have ever seen in the shape of a flower. Oliver Wendell Holmes says, that "a florist's Puritanism is coloured by his flowers, and that nature never shows him a black corolla." But here we have it at last.

BASKETS ARRANGED FOR EFFECT.—In this class the first prize was well earned by Mr. Cole, Ealing Park Gardens. It was, perhaps, the most tasteful basket of plants we have ever seen. The basket and its support were completely concealed by fresh-growing *Lycopodiums*, and from the centre of the group sprang a tall, graceful young Palm (*Cocos*), which completely relieved it from the squatness of form so common to compositions of this kind. Miss Williams, who won last year, was second. A very attractive basket was also shown by Mr. Ware. It consisted wholly of herbaceous plants, and although it did not get a prize, it seemed to us to possess much merit.

CAPE BULBS.—Many of these beautiful flowers, which either our climate or want of knowledge of their requirements prevents us from seeing to advantage in this country, were shown in brilliant bloom by Messrs. Hooper, of Covent Garden. Their charms are sufficient to encourage us to persevere with their culture till we succeed in growing them. We think there is no reason why they should not be seen in the milder and warmer districts of southern England in nearly as great beauty as in the Channel Islands.

CERTIFICATEES.—First-class ones were awarded to *Utricularia montana*, from Mr. Denning; to *Tree Carnation Model*, a very finely shaped white flower from Mr. Lee, florist, Arundel; to *Dasyllirion glaucum*, one of the finest of its class, being almost white on the under side of its long thorny leaves, and also to *Puya coarctata* and *Yucca Treculeana*, above alluded to, from Mr. W. B. Kelcock, Stamford Hill. A similar award was likewise

given to *Nanodes Medusæ*, from Mr. Denning. Like awards were also bestowed upon the following *Pelargoniums*, all from E. G. Foster, Esq., Clewer: *Syren* (with fine dark upper petals), *Prince of Wales*, *Ruth*, *Druid* (well-shaped), *Robin Hood* (fine dark upper petals), *Highland Lassie*, *Duchess*, *Scottish Chieftain*, *Senator*, and *Countess*; also a second-class certificate to *Blue Bell*. A first-class certificate was likewise awarded to *Pelargonium Captain Raikes*, a beautiful showy fringed kind, from Mr. R. Weatherill, florist, Finchley, and to a most excellent Zonal *Pelargonium*, named *Richard Cœur de Lion*, with large brilliant scarlet symmetrical flowers from Dr. Denny, Stoke Newington; and to *Petunia*, *King of Crimson*, a good double crimson; and also to a beautifully crested fern, named *Pteris serrulata cristata*, from Messrs. Dickson & Co., 48A, Moorgate Street. A first-class certificate was likewise conferred upon *Aquilegia aurea*, a distinct kind from any others of its class, from Mr. Ware, who also received the same award for a black Pansy named *Pluto*. A first-class certificate was awarded to *Botryodendron magnificum* from Messrs. Downie, Laird, & Laing, and to *Enphorbia Habena monstrosa* from M. Pfersdorff, Paris.

FRUITS, considering the season, were exhibited in tolerable profusion. Pine-apples were abundant, and of first-rate quality; they consisted chiefly of *Queens*. In classes for Grapes there was a keen competition, both as regards light and dark coloured sorts. Some of the bunches, although very large, were not quite ripe, and it seemed almost a pity to have cut them so soon. Black Grapes consisted of *Black Hamburg*, *Black Prince*, and *Grizzly Frontignan*; amongst the white ones were *Buckland Sweet-water* (splendid examples from Mr. Douglas, Loxford Hall, Ilford), white *Muscadine*, *Golden Hamburg*, *Ascot Citronelle*, from Messrs. Standish & Co., and *Foster's Seedling*. Of Peaches there were several dishes of excellent fruit, highly coloured and well ripened; they comprised *Royal George*, *Grosse Mignonne*, and *Bellegarde*. Nectarines were also fine in quality, and consisted of *Elruge* and *Violet Hative*. Figs were remarkably fine, the kinds being *Brown Turkey* and *White Marseilles*. Cherries were exceptionally fine, and exhibited only by Mr. G. T. Mills, gardener to Lord Carrington, Wycombe Abbey; the kinds being *Black Circassian* and *Elton*. Strawberries were abundant, very fine, and of excellent flavour; they consisted of *Sir Charles Napier*, *President*, and *British Queen*. Amongst fruits perhaps there was nothing so interesting as the collection of Melons, which included pale and scarlet fleshed kinds. Pale fleshed sorts comprised *Colston Basset Seedling*, *Green Hybrid*, *Victory of Bath*, *Conqueror of Europe*, *The Sultan*, *Hybrid Cashmere*, and *Golden Queen*. Scarlet-fleshed kinds consisted of *Scarlet Gem*, *Little Heath*, *Lee's Hybrid*, *Malvern Hall*, and *Scarlet King*. Of Cucumbers there were several examples of *Blue Gown*, a large fruited kind. There was also a fine box of ripe Tomatoes. Of old Apples two kinds were shown in a state of good preservation; they were *Cornish Aromatic* and *Easter Pippin*. Two nice examples of *Juneating* were exhibited by A. Smee, Esq.; they were grown in an orchard house. Amongst miscellaneous fruits, the *Loquat* shown by Mr. Colbourne excited most attention.

THE RHODODENDRON EXHIBITIONS.

ONCE more the Regent's Park and South Kensington are embellished by those brilliant little American garden plants, now famous over the gardening world. They feebly represent the amazing beauty of the great Rhododendron grounds of Knaphill and Bagshot, where the Rhododendrons have been brought to greater perfection by the Waterers than even they have been seen on their native hills; so at least the Americans tell us. Although to some these exhibitions may appear monotonous, they are by no means so to those who annually look for new and improved varieties; while to the general public, like bluebells and nightingales, they are ever new. Both exhibitions this year are fully up to their usual merit, both in extent, profusion of bloom, and novelties, and we hope to have the pleasure of speaking soon of their more important features at greater length.

The Climate and Vegetable Products of Persia.—It is a popular error to suppose that the climate of the whole of Persia is tropically hot and its soil rocky and sandy. On the contrary, in the southern provinces the climate is most delightful, and there is probably no spot in the world more lovely by nature than the neighbourhood of Ispahan. The heat consequent upon the latitude of Persia is greatly tempered by the height of ground, which is generally a table land supported by high mountains. The natural products, vegetable and mineral, of this country are prodigious. The vine flourishes in several provinces, and the wine of Shiraz is as famous in its way as Tokay or Johannisberg. In the northern provinces the mulberry is universally cultivated, and the silk produced thereby is inferior to no other growth, while the quantity is far above the average. In the fecund plains of Gilan and Mazanderim the sugar cane flourishes with a vigour unsurpassed in the West Indies or Southern States, but the value of this staple is almost nullified by the want of due appliances in refining the sugar. Indigo, cotton, hemp, hops, opium, and the liquorice plant are found in Persia, all of exceptional quality, although produced with the minimum of care or skill. All the favourite European fruits grow here with hot-house luxuriance and flavour. The melons of Ispahan are the finest in the world. There also exist in sheltered situations splendid and almost illimitable tracts of rich land suitable for the cultivation of timber of all valuable kinds.

COVENT GARDEN MARKET.—June 7th.

Flowers.—These, both from stoves and greenhouses, are plentiful, especially in the form of cut blooms. Of hardy and half-hardy annuals there is also a good supply; these consist chiefly of Nasturtiums (about six inches high, sown thickly in six-inch pots) and Sweet Peas, treated similarly; also *Nemophila*, singly, or in small pots, brought to market just as they are beginning to bloom; Prince's Feather and Loves-lies-Bleeding, three or four inches high, in thumb pots; and Stocks and Asters, drawn from the seed-bed, and tied into little bundles. There are also small stubby plants of Balsams and Cockscombs, pricked into boxes about three inches apart, and as soon as they fill up the space they are brought to market in the boxes and sold singly, with a bit of paper or some grass tied round their roots, or wholly by the boxful. In addition to these, there are several herbaceous plants, such as Sweet Williams, lifted with balls just as they are beginning to flower; Pansies, both in small pots and lifted out of the ground with balls; *Mimulus* lifted from the ground, and small pots filled with *Cerastium*. Besides these, bedding plants are very plentiful; among them are *Pelargoniums* of different sorts in small pots, also *Calceolarias*, *Heliotropes*, *Lobelias*, *Ageratums*, &c., all grown in pots. Amongst climbing and trailing plants, are *Ivies*, also *Tropæolum canariense*, *Lophospermums*, *Cobæas*, *Honeysuckles*, *Passifloras*, and *Virginian Creepers*; these are all grown in pots and trained to upright stakes.

PRICES OF FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples .....½ sieve	6	0 to 10	Lemons .....100	7	0 to 10
Cherries .....per box	2	0	Oranges .....100	6	0 to 12
Chestnuts .....bushel	8	0 to 15	Fine Apples .....lb.	8	0 to 12
Filberts .....lb.	0	6 to 1	Strawberries .....oz.	0	9 to 1
Cobs .....lb.	0	6 to 1	Walnuts .....bushel	10	0 to 25
Grapes, hothouse .....lb.	5	0 to 10	ditto .....per 100	1	0 to 2

PRICES OF VEGETABLES.

Artichokes .....per doz.	4	0 to 6	Mushrooms .....pottle	2	0 to 3
Asparagus .....per 100	4	0 to 8	Mustard & Cress, punnet	0	2 to 0
Beans, Kidney .....per 100	1	6 to 2	Onions .....bushel	3	0 to 6
Beet, Red .....doz.	1	0 to 3	pickling .....quart	0	6 to 0
Broccoli .....bundle	0	9 to 1	Parsley, doz. bunches	3	0 to 4
Cabbage .....doz.	1	0 to 2	Parsnips .....doz.	0	9 to 1
Carrots .....bunch	0	6 to 0	Peas, Continental, quart	0	0 to 0
Cauliflower (hand-glass) doz.	4	0 to 8	Do. English .....do.	2	0 to 3
Celery .....bundle	1	6 to 2	Potatoes .....bushel	4	0 to 6
Chilies .....per 100	1	6 to 2	Kidney .....do.	4	0 to 6
Coleworts doz. bunches	2	6 to 4	Potatoes, New, per cwt.	16	0 to 24
Cucumbers .....each	0	6 to 1	Radishes doz. bunches	0	6 to 1
Endive .....doz.	2	0 to 0	Rhubarb .....bundle	0	6 to 1
Fennel .....bunch	0	3 to 0	Salsafy .....do.	1	0 to 1
French Beans .....per 100	1	0 to 2	Savoy .....doz.	0	9 to 1
Garlic .....lb.	0	8 to 0	Scorzoneria .....bundle	0	9 to 1
Herbs .....bunch	0	3 to 0	Shallots .....lb.	0	4 to 0
Horseradish .....bundle	3	0 to 4	Spinach .....bushel	3	0 to 4
Leeks .....bunch	0	2 to 0	Tomatoes .....each	0	4 to 0
			Turnips .....bunch	0	6 to 1

Why is a Botanist like a Prize-Fighter? Because he is a Phytologist.—

ANSWERS TO CORRESPONDENTS.

J. F. (we quite agree with you, and will attend to your request).—J. H. (Acer platanoides).—J. GRAHAM (many thanks).—H. J. W. S. (they are usually stopped at the joint beyond the bunch, but this is not now practised by our best growers, who leave several joints beyond the bunch; in fact, as many as they have room for; laterals stop above the first joint).—MARY (you will have no difficulty in getting a coffee plant through any respectable nurseryman).—A. McA. (1. *Claytonia perfoliata*; 2. common *Alchemilla*, largely developed; 3. a variegated form of *Potentilla anserina*; 4. *Achillea Clavanne*).—J. R. NEEVE (apparently a gigantic specimen of common horse-mushroom. As regards your other questions—1. *Sophia Dumaresque*, Mrs. Headley, Prince of Wales, Lady Cullum; 2. Excellent, Mrs. Rousby, Princess of Wales, Imperatrice Eugénie; 3. Harrison Weir, A. H. Wills, Red Ring, Black Douglas; Dr. Ricci, Jean Sisley, Clipper, Chain; Triumphans, Avalanche, Warrior Queen, Alexandra; 6. Apollo, Thos. Lawden, Kate Lawden, E. W. Badger).—J. TAYLOR (the varieties of *Rhododendrons* are now so numerous that it is difficult to name them. Some of your kinds are considered to be unnamed seedlings. 1. is *Johnsonianum*; 4. *Mammoth*, and 9. *Blatteum*).—J. C. (the illustrated edition of *Bentham* is best; a cheap and useful book is "Old English Wild Flowers," published by *Warne & Co.*).—C. W. (wet the foliage and dust it well with sulphur; there is no better remedy).—INQUIRER (*Dahlia* blooms certainly harbour earwigs, which must be trapped by putting small flower-pots inverted, half filled with dry moss, on the tops of the *Dahlia* stakes. By regularly emptying the pots into boiling water, these pests may be kept in check).

The Language of Flowers.—A woman, not young, having heard of the success of Effie Carstang, in St. Louis, in recovering 100,000 dollars from her lover, determined to proceed against a suitor of her own. She accordingly consulted a lawyer in Richmond, submitting as the main evidence of his attachment the following *billet doux* that accompanied a bouquet of flowers:—"Dear —, I send u by the boy a bucket of flours. This is like my love for u. The nite shaid menes dark. The dog fenil menes i am ure slaive. Rosis red and poisail—My luv for u shall never faile."

The Name and Address of the writer are required with every communication, though not for publication, unless desired. Letters or inquiries from anonymous correspondents will not be inserted.

All questions on Horticultural matters sent to THE GARDEN will be answered by the best authorities in every department. Correspondents, in sending queries or communications of any kind, are requested to write on one side of the paper only.

All communications for the Editorial Department should be addressed to WILLIAM ROBINSON, "THE GARDEN" OFFICE, 37, Southampton Street, Covent Garden, London, W.C. All letters referring to Subscriptions, Advertisements, and other business matters, should be addressed to THE PUBLISHER, at the same Address.

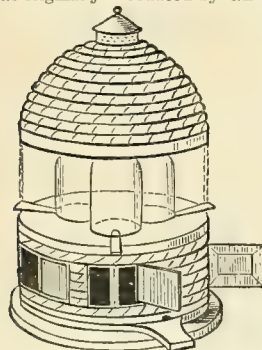
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THE ROCK PART of the SCENERY in the OAK LODGE and BERRY HILL GARDENS, which have been so commended in this Journal, was executed by JAMES PULHAM, Broxbourne and Brixton, in the years 1859 and 1864, for picturesque effect. See illustration in the number for December 30, 1871.

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"This is an art

Which does mend nature : change it rather : but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE GARDENS OF ENGLAND.

PACKINGTON HALL, NEAR COVENTRY.

PACKINGTON HALL, seated in a fine wide park and with extensive and interesting old gardens, is of interest to horticulturists for two things above all others—oaks and peaches. These mark it—as Bushey Park is dignified by its horse-chestnuts, and Bicton by its noble evergreen trees. To know the oak in its hale old age and healthy, full-grown vigour, one must visit Warwickshire; and to know the oak in Warwickshire, one must see the park at Packington. In one part of it they cluster like an army of giants. It is not one big oak to be seen here and another there, but a forest of patriarchs. The wood is dense, and one wonders how the trees grow so large while withal so crowded; yet, standing in one spot, a dozen trees may be seen, any one of which would elsewhere be dignified by a name and be the pride of the neighbourhood. Through the green wood, here and there in the distance, start up what seem to be the bases of small towers, but on nearer approach they are found to be oaks, with such huge, contorted, wide-spreading boles, that one is reminded of pictures of the African tree-giant, the Baobab. Many trees measured—without seeking for the largest specimens—from twenty-six to thirty feet round, and one thirty-three feet at five feet above the ground. Yet to none of these trees would apply Tennyson's comparison of an oak, so hollow, huge, and old,

"It seemed a tower of ruined mason-work,"

for every tree was intact and had a green young head, except, indeed, where the mysterious tree-destroyer we call lightning had struck with his fiery death magic, and riven one of the old mountains of strong fibre as easily as if it were a summer reed. But otherwise,—

"The spring

Finds them not less alive to her sweet force
Than yonder upstarts of the neighbouring wood."

IMPROVED PEACH CULTURE.

There are vast regions of the earth where the climate suits this noble fruit perfectly, the south of Europe and a number of the biggest States and territories in America—from Chesapeake Bay to the foothills of the Sierras, for example, not to mention other lands where the peach is happy as a standard tree. But one has to travel far before meeting with as good a peach as that grown under glass, or against walls, in an English garden. The culture of this fruit under glass has long been admirably practised by our gardeners; but nevertheless, in this, as in almost every other branch of the happy art of gardening, the intelligent cultivator may always hope to advance another step. And Mr. Temple has done it here; his peach culture is the finest example I have seen.

The peaches and nectarines are grown in two half-span houses, each about ninety feet long, eighteen feet wide, and 15½ feet high to the apex of the roof, the back wall being twelve feet high. The trees are trained under the roof in the usual way, only with a little more space between the roof and the tree than is usual, so as to allow of the trees being attended to from the front, and from above as well as from beneath. A narrow passage along the front affords a good view over the whole upper surface of the trellised trees. So far nothing out of the way. The breadth of the front trellises is about thirteen feet; above these there is about six feet of clear space, through which the light enters for the benefit of the back wall

and whatever plants may be beneath. These back walls are covered from the top to the bottom with healthy shoots as regularly dotted with peaches and nectarines as if there were no trees on the roof. As the back wall peaches invariably ripen about a fortnight later than the same kinds on the roof above them, it is evidently a great gain to have the high back walls so perfectly covered.

The trellises overhead are also regularly covered with as fertile peach and nectarine trees as could be seen: many of the fruits of the past year weighed fifteen to seventeen, and even eighteen, ounces each. The most interesting part of the culture here is the rapid way in which the walls are covered. Mr. Temple considers that with healthy young fan-formed trees large houses should be well filled with bearing wood after two, or at most after three, years' growth. In spring he does not cut back in the usual mutilating manner, but allows the young trees to grow as vigorously as they like, till they cover their allotted space. Afterwards their vigour is given off in heavy crops of large fruit. The pruning is simple enough. The old bearing wood of the previous summer is of course cut out in winter or in early spring, but the flowering shoots are not touched till the fruit is set. Once set, both fruit and the shoots of the bearing wood are gradually thinned, the shoots being all removed except a healthy one at the base, which is allowed to grow as freely as it may, and one beyond the fruit, which is pinched in rather closely. In respect of pruning and setting of fruit, however, we have not so much to learn in peach culture as in other ways. Trouble is rarely experienced in getting house peach trees to bear as much fruit as their strength will permit. It is the vigorous tree and the perfectly covered wall or trellis we want, and then, unless the management is not only bad but destructive, the rest follows, almost without trouble. But we also want the vigorous tree and the perfectly covered trellis as soon as possible after planting; and we shall not have to wait long if we give the trees their own way, so far as is not inconsistent with the necessary training. The rule has so often been to cut back so hard in spring and to mutilate so much in pruning at other times, that long years pass as we look in vain for the tree to cover its given place. The whole tendency of the best recent practice both here and on the Continent is that the plan of cutting back hard in spring to secure a good break has caused an immense amount of mischief. Henceforward the aim of good cultivators must be that system of pruning and training which enables us to cover wall or trellis in the quickest and most regular manner.

The soil and water are very important, or rather the most important, points in peach culture. The subsoil at Packington being a good open gravel, no kind of concrete was necessary. The borders are simply composed of three feet of sandy loam, without other mixture. They form the floors of the houses, as well as the slip of ground immediately in front of them, the roots passing from the inner to the outer border through arches as usual. The outer border is now heavily cropped, but it is not intended to crop it after the trees show the slightest sign of wanting more nourishment. Then the borders will be dressed and devoted entirely to the feeding of the peach roots. The inner border is not forked up in the usual way, but allowed to remain as closely consolidated as it usually becomes from men tramping on it. The system of watering pursued here is peculiar, and well worthy of remembrance. The water is gathered from the roof into a large tank in the centre of each house. During heavy rains each tank fills rapidly of course, and then begins the watering. Should it rain for several days at a time, the tanks are daily nearly emptied—the water being poured on to the border-floor. This is done in winter as well as in summer. And the great oaks in the park seem to have suffered no more from heavy waterings in winter than Mr. Temple's peaches.

In the open air there is also, notwithstanding such seasons as the present, which cause the peach to almost perish from cold, a very good example of peach culture: a dividing wall between two parts of the very well-cropped and managed kitchen garden is perfectly covered with rider trees, of which the shoots radiate from about the centre of the wall, like the rays of a star. This wall and others here are thickly studded between each course of brick with galvanised eyed studs, to which the trees are trained. This is a simpler and better

system than either nails or wire. Thrust deeply in the wall, when the mortar is soft, they become as firmly imbedded as if part of its substance. They save their cost in a few years, as nails, shreds, wires, &c., are not afterwards required.

THE SOOLYA QUA CUCUMBER.

This was first grown and fruited here. It was sent from the neighbourhood of Foo Chow, in China, by Mr. Temple's brother, manager of the Oriental Bank at that place. Mr. Temple saw it largely cultivated in the neighbourhood of that city only, although his journeyings in China were extensive, and not remembering to have seen it in England, sent home some seeds of this monster gourd-like cucumber. It was quickly multiplied at Packington Hall gardens, and soon became spread throughout the land. As yet, however, it is to us only a hothouse curiosity; but the Chinese use it extensively in a boiled state to eat with their rice, and European residents in Foo Chow are said to use it in a variety of ways. This last account gives us more hope of its edible qualities than the statement that it is eaten by the Chinese, for, to say the least, they are not over nice in their food. The curious mixture of vegetable and animal food that one sees in their little shops in the Chinese quarter at San Francisco, affords little proof that what is edible with them would be so with us. It is probable, however, that the Soolya Qua possesses as much value as most other fruits of the gourd tribe, distinguishing this, however, from the melon and true cucumber races.

PLANTS FOR RAILWAY HEDGES.

BY JAMES M'NAB.

In many districts of England railway hedges seem to receive much greater attention than many of those planted for the intersectional fencing of land. The plant generally employed for railway fences is the white thorn, and a useful plant it is for such purposes, and now contracted for as regularly as the rails themselves. On some of the newly-formed lines the varieties of evergreen hollies ought to be tried, particularly on those portions of a line running through extensive and well-regulated policies in sight of the mansion. In some cases the proprietors may be induced to pay the extra difference of the plants, while the after-keeping will be much the same as the ordinary thorn hedge. In all peaty districts the spruce fir will make an excellent evergreen fence. It will cover more ground than the holly; but in mossy situations this extra land will be found of less value. In sandy places, and particularly those near the seashore, the sea buckthorn (*Hippophae rhamnoides*) will be found an admirable substitute for thorns to form hedges. If it should ever be required to make at once an impenetrable live fence, the hornbeam (*Carpinus betulus*) will be found the most suitable, and for this purpose clean-grown sapling plants, six or seven feet in length, ought to be procured. After the ground has been properly trenched and prepared, the plants should be put in, two together, at every ten or twelve inches, according to the thickness or length of the saplings employed, giving one an inclination to the right and the other to the left. After being trod in firmly, commence to plait all together, taking one set of the plants the one way, and the other set contrary, interlacing them at an angle of 45°. It will be necessary to tie them at top with a piece of wire or rope yarn, and also at several points near the bottom, to keep them in position till they adhere to each other. To facilitate the union, although not absolutely necessary, it will be desirable to take a thin cutting off the bark of several, particularly where they approximate. Shortly afterwards they will grow together, and form an impenetrable net-looking fence. From the pressure caused by the plaiting, they will throw out numerous shoots along the stems, which will continue to work in and fill up the interstices. In time the whole length will become an impenetrable mass, all engrafted together, and will bear cutting-in like any other hedge. Numerous other plants will be found in nursery establishments suitable for such purposes, as the hazel, elm, ash, beech, laburnum, &c. Such hedges can be made of any height, depending entirely on the length of the saplings employed. When not in leaf, they will be found extremely ornamental and agreeable to look on, and therefore worthy of encouragement, particularly when standing on a level with the rails.

It should ever be wanted to plant such hedges so as to render them useful as well as ornamental, particularly on lands slightly elevated above a damp surface, in such places willows could be profitably employed, and the annual cuttings taken from them would yield a considerable revenue. Besides, when such plaited hedges are cut for profit, they are more likely to be kept in order than thorn

hedges, particularly when they run through lands which would be profitably employed for the growth of willows. When planting willows for such purposes, they could be inserted either as growing plants or cuttings—the latter will be preferable, provided the strip of ground has been properly prepared for them. They should be placed twelve inches apart, and during the first thinning the strongest shoots should be left for plaiting. After the plaiting has been successfully accomplished, all after shoots could be removed for basket-making purposes.

Ozone.—We have heard of late years so much of the beneficial influence excited by the presence in the air of ozone—Nature's great bleaching and disinfecting agent, produced hitherto only by electricity or phosphorus, or permanganate of potash—it is well to know that it has been lately discovered by an eminent professor to be evolved profusely in light by strongly-smelling flowers and herbs, also by vegetable essences—as mint, cloves, lavender, lemon, cherry, laurel, and others of a similar kind. The amount of ozone is said to be in proportion to the strength of the fragrance emitted. Flowers destitute of perfume do not develop it.

HARDY PLANTS IN FLOWER ROUND LONDON.

(FROM JUNE 6TH TO JUNE 12TH, INCLUSIVE.)

BY OUR OWN REPORTERS.

<i>Achillea</i> serrata plena	<i>Clematis</i> cærulea erecta	<i>Hieracium</i> maculatum	<i>Plagius</i> grandiflorus
<i>Aconitum</i> paniculatum	<i>Collinsia</i> corymbosa	<i>Iberidella</i> rotundifolia	<i>Podophyllum</i> peltatum
<i>Æsculus</i> pendula	<i>Crataegus</i> linearis	<i>Inula</i> glandulosa viscosa	<i>Polygonum</i> alpinum
<i>Æthionema</i> membranacea	<i>Cypripedium</i> pubescens	<i>Iris</i> aphylla	<i>Potentilla</i> hirta
<i>Agrostemma</i> cæli rosea	<i>Cytisus</i> secundus	<i>Gueldenstædtia</i> halophila	<i>Pyrenaica</i> pyrenaica
<i>Alisma</i> ranunculoides	<i>Delphinium</i> chinese and vars.	<i>lævigata</i> ochroleuca	<i>Pyrethrum</i> corymbosum
<i>Allium</i> baicalense ciliatum	<i>elatum</i> hybrid kinds	<i>Sibirica alba</i> spuria	<i>Raphiolepis</i> ovata
<i>fistulosum</i> polyphyllum	<i>Deutzia</i> scabra	<i>tenax</i> versicolor	<i>Robinia</i> hispidula rubra
<i>siculum</i>	<i>Androsace</i> villosa	<i>virginica</i> Jasminum	<i>Salvia</i> argentea
<i>Anemone</i> Hudsoniana	<i>Alpestris</i> deltoides & vars.	<i>multiflorum</i> revolutum	<i>officinalis</i> and vars.
<i>pennsylvanica</i>	<i>petraea</i> Diervilla	<i>Lathyrus</i> grandiflorus	<i>Saxifraga</i> caesia
<i>Anthericum</i> graminifolium	<i>trifida</i> Dryas	<i>Lavandula</i> pedunculata	<i>Willkommiana</i> Schizanthus
<i>Lilago</i> Aquiliegia	<i>octopetala</i> Echinopsilon	<i>Leptosiphon</i> androsaceus	<i>humilis</i>
<i>fragrans</i> nigricans	<i>diffusus</i> Elymus	<i>Lecanthemum</i> lacustre	<i>Scilla</i> peruviana and var alba
<i>Asphodelus</i> fistulosus	<i>glauca</i> Epilobium	<i>Ligularia</i> macrophylla	<i>Scorzonera</i> hispanica
<i>Astragalus</i> ponticus	<i>angustifolium</i> angustissimum	<i>Lilium</i> colchicum	<i>Sedum</i> brevifolium and var.
<i>Atropa</i> Belladonna	<i>eremostachys</i> laciniata	<i>monadelphum</i> Lithospermum	<i>dasyphyllum</i> glauca
<i>Baptisia</i> australis	<i>Erigeron</i> glabellum	<i>petraea</i> Lupinus	<i>stenopetalum</i> Sempervivum
<i>exaltata</i> minor	<i>Villarsii</i> Erythraea	<i>noctatensis</i> Lychnis	<i>arachnoideum</i> globiferum
<i>tinctoria</i> Brodiaea	<i>aggregata</i> Centaurium	<i>senna var.</i> Magnolia	<i>Senecio</i> artemisiaefolius
<i>congesta</i> Campauula	<i>Escallonia</i> macrantha	<i>Thompsoni-</i> anum	<i>Silene</i> quadrifida
<i>grandis</i> latifolia	<i>Fabiana</i> imbricata	<i>Mimulus</i> moschatatus	<i>Sisyrinchium</i> odoratissimum
<i>Medium and</i> vars.	<i>Festuca</i> gigantea	<i>Morus</i> nigra	<i>Spiraea</i> triobata
<i>pulla</i> Trachelium	<i>Francia</i> appendiculata	<i>Nymphaea</i> alba	<i>Tropeolum</i> polyphyllum
<i>alba</i> Carduus	<i>Gaillardia</i> Richardsonii	<i>Omphalodes</i> longiflora	<i>Verbena</i> venosa
<i>heterophyllus</i> Ceanothus	<i>Galax</i> aphylla	<i>Onopordon</i> acule	<i>Veronica</i> amethystina
<i>dentatus</i> rigidus	<i>Galega</i> montana	<i>Ornithogalum</i> pyramidele	<i>angustifolia</i> glabra
<i>seedling (white)</i> Calsia	<i>Genista</i> virga	<i>pyrenaicum</i> Oxalis	<i>grandis</i> incisa
<i>cretica</i> Centauria	<i>Geranium</i> anemonefolium	<i>Valdiviana</i> Pancratium	<i>maritima alba</i> montana
<i>Cyanus and</i> vars.	<i>Endressii</i> Glaucium	<i>maritimum</i> Papaver	<i>orientalis</i> pallida
<i>dealbata</i> speciosa	<i>Glaucium</i> luteum	<i>alpinum albus</i> nudicaule	<i>spicata & vars.</i> Vincetoxicum
<i>Cephalaria</i> lutea	<i>Gypsophila</i> dubia	<i>Philadelphus</i> coronarius and vars.	<i>officinale</i> Viola
<i>Cerastium</i> grandiflorum	<i>prostrata</i> Habrothamnus	<i>Phlox</i> paniculata var.	<i>pubescens</i> Viscaria
<i>Cerastus</i> lustranicus	<i>corymbosus</i> Hemerocallis	<i>Phlox</i> purpurea	<i>oculata</i>
<i>Chamaerops</i> excelsa	<i>Sieboldii</i> Heraclum		
<i>Cistus in var.</i>	<i>platytanium</i>		

HARDY PLANTS IN FLOWER ROUND LONDON.

BY OUR OWN REPORTERS.

THE following is a recapitulation of plants that have been given in our early lists, but which were still in bloom on the 5th of June. Retrospective lists of this kind, which we intend to give monthly, will enable our readers to ascertain the length of time any particular plant keeps in bloom. Where genera only are given, it should be inferred that all the species of such genera previously given were in bloom at the date just named:—

Abelia	Convolvulus	Iberis	Polygonum
triflora	Cneorum	Pruiti	Bistorta
Achilleas	Corydalis	Temorana	Brunonis
Aconitums	capnoides and	Ionopsidium	Potentillas
Adonis	vars.	acaulis	Primula
astivalis	huca	Irises	farinosa
Æsculus	Cotoneaster-	Jasminums	luteola
Hippocastanum	Crambus	Kalmias	Pyrethrums
Edmonemas	Crimm	Lamiums	Quercus
Agaricaptans and	capense	Lasthenia	Ilex
vars.	Cyclonia	glabrata	Ranunculuses
Allium	japonica	Lathyrus	Rhodola
narcissiflorum	Cytisus	pisiformis	rosea
Schenoprasum	præcox	Ledum	Rosa
Anchusa	scoparius	thymifolium	Rubus
italica	Delphiniums	Lilium	Salvias
sempervirens	Dianthus	immaculatum	Sambucuses
Ancone	Dicentra	Liuarias	Santolita
palmata	eximia	linums	alpina
sylvestris	spectabilis	Lithospermums	Saponaria
Andemaria	Dicentra	Loniceras	calabrica
alpina	Præmilla	Lunaria	ocymoides
dioica and vars.	Diervilla	biennis	Saxifragas
Anthyllis	corceusis	Lupinus	Scabiosa
montana	Dodecatheon	lychnis	amena
Vulneraria and	Jedreyii	Magnolia	Schizanthus
var.	Ericas	obovata	pinnatus
Antirrhinum	Erigerons	Menziesia	Sedum
Aponogeton	Erinus	polifolia and	asiaticum
distachyon	alpinus	var.	Sempervivum
Aquilegias	Erodiums	Meltingia	ciliatum
Arenarias	Euphorbia	muscosa	montanum
Artemisia	cypræssias	Moricandia	Sisyrinchium
frigida	Exochorda	arvensis	Suiliacina
Stelleriana	grandiflora	Myosotis	bifolia
Asperula	Galeas	alpestris	racemosa
setosa azurca	Genistas	azurica	stellata
olorata	Gentiana	Nemophilas	Sophora
Asphodeluses	acaulis	Nepeta	flavescens
Aster	vena	Mussini	Stylophorum
alpinus	Geraniums	Nothocordum	diphyllum
alticus	Geums	striatum	Symphitums
elongatus	Globularia	Omphalodes	Thalictrums
pendulus	medicandis	Lucilia	Thermopsis
saluginosus	trichosanthe	Onobrychis	fabacea
Astragaluses	Gnaphalium	petraea	Thymuses
Astrantia	arenarium	Ononis	Tiarella
major	Leonopodium	rotundifolia	cordifolia
Aubrietias	Gumma	Onosma	Tradescantias
Azaleas	scabra	taurica	Tragopogon
Barbarea	Heicima	Orobases	porrifolius
vulgaris plena	Hoopesii	Orontium	Trolliuses
and other vars.	Helianthemums	aquaticum	Celsiana
Bellises	Helleborus	Ourisia	Tulip
Calendula	lividus	coccinea	Vaccinium
officinalis and	Hemerocallis	Pæonias	corymbosum
vars.	flava	Papavers	Valerianas
Camassia	Heracleums	Pavia	Verba-cum
es-culenta	Hesperis	flava	phœniceum and
Campaulas	nationalis and	rubra	vars.
Carex	vars.	Pentstemons	Veronias
pendula	Henckras	Pernettias	Viburnum
Centaurea	Houstonia	Phlox	macrocephalum
montana and	cernua	divaricata	Opulus and
vars.	Hutchassa	Listoniana	vars.
Cerastiums	alpina	ovata	Vicia
Cheiranthus	Ilyæanthus	Plantago	sepium
Chenopl.	amethystinus	maxima	Vincas
Chrysanthemum	Hydrophyllum	Platystemon	Violas
speciosum	virginicum	californicum	Wildsteinia
Clematis	Iberis	Polemoniurus	geoides
Collinsias	corcefolia	Polygonatum	Weigelas
	Garreiana	multiflorum	Wistamas.

THE SIX OF SPADES.

CHAPTER XVI.

Mr. Oldmore's Story.—The Lady Alice (concluded).

Of course, we kept the secret sacredly; but Phyllis, my wife's sister, and maid to the Lady Alice, seemed to us to know as much as we did. She was ever sounding the Captain's praise, or speaking of his rival in anything but respectful terms, alluding to him as "that galvanised mummy," and expressing her belief that he had been placed as a boy in a petrifying well, and been imprudently taken out before the process was complete. "And though I dare not speak my mind to his lordship," she said, "I have had the pleasure of telling his valet that we don't intend to marry a snow man."

Nevertheless, we heard, to our great unhappiness, that the wedding-day was fixed. The announcement was painful to most of us, but it seemed to have the strongest and the strangest influence upon our sister, Phyllis. She would no longer speak of that which had been her one topic of conversation. She had a nervous manner and an anxious look. Sometimes she would laugh almost hysterically, and sometimes, my wife told me, she would come to her in a paroxysm of grief and tears, for which she would assign no cause.

Then another strange incident happened to me. The evening before our annual county flower show, I had been occupied until it was almost dark, in tying and packing a collection of stove and greenhouse plants, which I was going to exhibit, when, in taking a short cut from the kitchen gardens across the park to my home, I passed over the long walk, which is a continuation, as you know, of the grand terrace, and extends for nearly a mile through our woodland grounds; ten yards from me, but in such earnest conversation that they never heard my steps, I saw two figures, and, dim as the light was, I was quite certain that I knew them. I almost ran the rest of my way, and, in a fever of excitement, I whispered to my wife, "Lady Alice has sent him the leaf."

She received my information not only with disbelief, but derision, and next day she sent for her sister Phyllis, to assist her in disbelieving. They said it was simply impossible; that it was one of the housemaids and the underwhip; that Lady Alice was in bed with the toothache (Oh, Phyllis, Phyllis!), and that the Captain was in Windsor Barracks. And when I suggested that as I was there, with a brace of eyes in good working order, and they were not, I must respectfully take leave to differ; then they said, that if I had seen anything, which they did not for a moment believe, I ought to be ashamed of myself spying into people's houses (half-a-mile off) at that time of night, intruding into private walks, &c. I could only plead that up to that hour I had not been aware that after nightfall the duke's park was solemnly given up to the young nobility, paired off, and dying for love.

Finally, after reiterating for the (as nearly as I can guess) forty-second time, that I had seen nothing, they implored, they insisted, that I should never reveal to living creature that which I had seen; and I gave them at last my promise to keep a secret, which nothing upon earth could have tempted me to tell.

The marriage morning came. On the day preceding I had decorated the church as sorrowfully almost as though it had been for her funeral, and at sunrise I had arranged a bouquet; it was composed of Stephanotis, Pæoniatum, Gardenia, and white rose-buds, which I had mourned over as if for her coffin. "And so," I sighed to myself, "the leaf went, and the lover came, and yet there was neither help nor hope."

The events of the day, as we ascertained afterwards, were these: you will see that they require no commentary.

The party at the castle was to assemble in the library at 11 a.m.; to leave the castle at 11 15, and to meet the Viscount at the church.

At 9 a.m., Lady Alice's favourite cousin, and chief bridesmaid, went to see her, and was met at her dressing-room door by Phyllis, who told the young lady that her mistress had passed a restless night and had just fallen asleep.

At 10 a.m., on a second visit, the cousin was informed by the maid that Lady Alice would rather not see any one until she came down for the marriage.

At 11 a.m., the guests, with the family, met in the library.

Alton Towers.—The boon afforded to the public by the noble owner of Alton Towers was thoroughly appreciated during the Whitsuntide holidays. On the Monday over 2,000 visitors from Sheffield, Leicester, Derby, Burton, Stafford, &c., enjoyed the beauties of these unrivalled gardens. On Tuesday over 2,000 visitors from Birmingham and the Potteries were favoured, under glorious weather, with a sight of these charming grounds. On Wednesday a very large number visited them from Nottingham; and on Saturday a good number arrived from Manchester, Derby, Burton, &c. The Earl of Shrewsbury's land was in attendance on Monday, Tuesday, and Wednesday. We are happy to say that the first week of the Alton season has passed without there being the slightest cause for Lord Shrewsbury to regret his decision to open the gardens for the season of 1872. Lord Shrewsbury has set apart a portion of the park as a cricket ground, which has been specially prepared and fitted with tents; and can be obtained by visitors for friendly matches on application to the head gardener.

At 11 15, a dozen carriages, three of them having four horses, and two with outriders, drew up in front of the castle.

At 11 25, the duke sent a servant to inform the Lady Alice that he hoped she would come down at once.

At 11 30, the servant returned to inform the duke that *her ladyship was not to be found!*"

Then the duke calmly requested that her ladyship's maid should be sent to him in his morning-room.

And, after a long interval, the report was brought to him, that "*her ladyship's maid was not to be found.*"

Then some one discovered, on Lady Alice's writing-table, a note to her father, the duke. It was, so Phyllis informed us, to this effect: that she had pleaded in vain that she did not love the Viscount—that it could not be right that her whole life should be turned into a lie—that it should be a life of hatred when it might be a life of love—that she was gone with him, who had won her heart, to be his wife—and that she implored her father to forgive her for her mother's sake.

The duke turned very pale, and the duke sighed very heavily, when he had read the note, as well, with his views, he might. His only daughter was travelling as fast as four horses could take her, and had been travelling for six hours as fast as four horses could take her, to marry a younger son.

Then his grace wrote a few lines to the Viscount, who was waiting for his bride.

"The church was decked at even-tide,
The morn was bright and fair,
And priest and bridegroom wait the bride,
But ne'er a bride was there.
They sought her, baith thro' bower and ha'—
The ladye was ne'er seen,
For she's o'er the border, and awa'
Wi' Jock o' Hazeldean."

And once "o'er the border" (I may as well state here), they were married in conformity with Scotland's usage, that they might be man and wife, should pursuers overtake, according to secular law, and subsequently, that they might be so according to the laws of their Church and conscience, by an ordained priest.

Three hours after the Viscount had read his note, all the visitors had left the castle; and in it and around "grim silence held her solitary reign." The only person who passed through *our* entrance gates with a cheerful countenance (my wife informed me) was my Lord Evelyn. He was just as beaming with mirth and kindness as ever. "Sad business," he said, "Mrs. Oldacre; bad business—disgraceful business," with a broad grin on his face. And then he began to sing something (Mrs. O. continued) about a way they had in the army, or words to that effect.

Yes, they all fled from that stern and stricken duke, as though they were seized with a sudden fear that he was going to bark and bite them. True indeed it was that then, and for many after days, his grace was not good company. He was seen only by those who waited upon him, and their report of his melancholy was very pitiful. What think you happened next?

"My friends," said the good old gardener, with tears in his kind blue eyes, "it pleased God in his goodness, by that great humiliation to change, and, as I believe, to save one of His creatures. Some three weeks after the crisis, the duke left the castle for the first time, and went to the mausoleum. He remained there so long that some of the household were beginning to be alarmed, when he came quietly home, and sent a note to his chaplain, with whom shortly afterwards he had a two hours' interview. We have always thought that he made then a first and full confession. He was from that time, at all events, an altered man. He sent not only his pardon to his daughter, but a fatherly invitation to her old home; and she came with her husband, and with gladness for all our hearts."

This reconciliation, the first fruit of that victory which he had won over self, soon brought its great reward, partly in the fact that the handsome guardsman succeeded against all expectation to the headship of his house—a peerage, with large estates—but chiefly in his daughter's grateful love.

We will leave him, if you please, as I once saw him, and as ever since I have liked best to think of him, plucking an orange for his grandchild, little Alice, *from the very tree whereupon grew the truth.*

S. R. H.

(To be continued.)

RHODODENDRONS FOR CUTTING.

Who that looks on a dazzling mass of Rhododendrons but longs to cut some of the rich and variously-coloured blooms? Among the magnificent hybrids of our garden nearly all colours are found. Scarlets, crimsons, bright pinks, and whites are the most effective for cutting. Self-coloured flowers, as a rule, are the most useful for floral arrangements. Too many colours in flower, or leaf either, for that matter, are often fatal to distinct and striking combinations. As well try to paint well with a plurality of colours as to form effective combinations with many-coloured flowers or leaves. This rule of using self chiefly for cutting for artificial arrangements of flowers is applicable to other plants as well as Rhododendrons. But it is especially important in this family.

There is a wide range of size as well as colour in this distinguished family. From the tiny flowers of such dwarfs as ciliatum, ferrugineum, album, Daphnoides, gemmiferum, fragrans, myrtifolium, and others, to the regal grandeur of arboreum and its hybrids, we have a range of size such as hardly any other class of plants affords. The smallest are less than the pretty Azalea amœna, and the largest such that a single truss is furnishing for a flower vase. No bouquet can be too neat to be partially formed with Rhododendron. No room, nor church, nor hall, nor theatre, can be too large to be illuminated by their superb trusses. The flowers stand in water well if carefully gathered. They must not on any account be heaped together, as many of them are partially viscid outside, causing them to stick more or less to each other. They are also easily bruised, and soon flag unless placed instantly in water. The greater proportion of Rhododendrons are most suitable for large arrangements of cut flowers. A truss or two is often most effective as a central piece to other combinations. For instance, I have seen a large vase admirably furnished thus: a fringe of Caladium Chantini leaves on a blue or green vase, then six Calla æthiopica flowers, and finally the raised centre furnished with three large trusses of Rhododendron arboreum and a few of its leaves. High-coloured Rhododendrons and white lilac likewise look well together; or pale Rhododendrons and the highest-coloured lilac. There are comparatively few Rhododendrons fit for bouquets. For this purpose, single blossoms of the choicest colour and sweetest fragrance are employed. Mounted like azaleas, they stand as well or better. Such sorts as formosum, fragrantissimum, jasmminiflorum, and ciliatum, are admirably adapted for bouquets; while single flowers of the glowing scarlets, pinks, and whites form capital centres or building material, if used sparingly, and well padded with moss or other material, so as to avoid crushing or overcrowding.

But the place for the general mass of Rhododendrons as cut flowers is at some distance from the eye. As centre-pieces for large dinner-tables or public rooms few, if any, cut flowers can equal Rhododendrons in massiveness and magnificence. But Rhododendrons, like not a few other flowers, are much better surrounded by their own foliage; in some species the leaves are very fine.—*Field.*

Californian Wines.—It is certain, says the *San Francisco Press*, that the sunny climate of California produces wines surpassing those of France and Germany; it is also true, says the same authority, that the uniformity of quality, and the greater yield of our vines, year after year alike, and no such thing as failure, enables us to produce wine cheaper than in Europe. France wants lands for the staff of life; and it is predicted that ere twenty years have passed, it will be a national question, if it would not be policy to turn uncertain vineyards into wheat-growing lands, and to buy better and cheaper wines from California.

Killing Weeds on Walks (Vitriol v. Hand Picking).—*Apropos* of killing weeds on walks in the best and cheapest manner, I think your correspondent "R. B., Leamington" (p. 612) is but indifferently acquainted with the results arising from the use of oil of vitriol or its nature. In the first place, advising it to be mixed in a watering can is evidently a mistake, as its chemical properties would rapidly destroy the solder and render the can useless. As regards expense, I have given it a lengthened trial here, and I find it will kill weeds when mixed in the proportion of one part of vitriol to six of water, and even then only those that are saturated with the solution, whilst those that escape with only a slight sprinkling will not die. In all cases where I have used a weaker solution, the weeds have in three weeks been as green and rampant as ever. The proportional expense is as eight to one compared with hand weeding. What would cost £12 for hand weeding would amount to about £100 where the acid is used, to do the thing at all satisfactory.—CHARLES DENNIS, *Southwark Park.*

THE FLOWER GARDEN.

PRIMULA JAPONICA.

THIS lovely plant, a favourite with everybody, only reveals one whorl on each stalk at a time. Some have been disappointed at this; expecting it to unfold all its flowers at once. But it could hardly do so, as it goes on growing and flowering as it grows. The brilliant representation in the *Florist* for June 1871, is, therefore, not likely to be realised. In one sense this is all the better, as it prolongs the blooming period. The usual number of whorls on strong plants is about six deep, and the number of flowers in each whorl ranges from eight to twenty-four. It is a glorious plant and seeds freely, so that our outside beds and borders will soon be enlivened by this brilliant stranger, which at a distance looks like a bright pyramidal variety of *Phlox Drummondii*. As a pot plant it is superb, and has a fine effect as a star in a line of Chinese Primulas, double and single. In such a position it would also be well placed for cross breeding. There are already six varieties of it offered in as many different colours; and doubtless within a few years the *P. japonica* strain will be as useful and highly prized, and even more admired, from the fact of their hardness, than the Chinese. D. T. F.

THE BIRD'S-NEST FERN.

(*ASPLENIUM NIDUS-AVIS*.)

THIS is a remarkable fern, which may be placed out of doors in the garden in summer, from early in June to October; but it is not sufficiently vigorous or hardy to be generally recommended for this purpose. The leaves are rather broad, pointed, and undulating.



Asplenium Nidus-avis.

nearly three feet long, and form roundish, spreading, nest-like tufts. It is a favourite subject in places where large collections of tropical ferns are grown. It succeeds perfectly in a temperature of from 45° to 50° in winter, and is readily increased by means of spores.

A SIGN OF THE TIMES.

THERE are signs that the tyrannous and unmeaning formality of our gardens is becoming irksome even to those whom the common bedding system and its often equally formal surroundings have been wont to enchant. We find, for instance, the following leading article in an influential provincial paper, the *Birmingham Morning News* :—

"Our fathers had not learned the art of grafting roses upon broomsticks, nor would they have admired little bunches of foliage and flowers perched up on the top of tall sticks, and planted at regular intervals. With them at least, a flower was held to be part of a plant or a tree, and they delighted to see it grow naturally. They did not look upon flowers merely as 'specimens,' to be forced into an undue size, and then gathered and stuck into a bottle. Nowadays when anyone is told that such and such a person is a great gardener, the first question that is asked is, 'Has he much glass?' The great gardeners of the present day are those who have much glass. The great gardeners of the past day were those who grew the greatest number of trees having blossoms in the open air; trees that could stand a good downright English winter; trees that could hold their own during a frost, and then when the frost was over, and the warm weather had arrived, would put out their brilliant foliage, and their glorious clusters of white and purple, and scarlet, and gold flowers. Those were the men who made our towns so full of beauty in the spring, and surrounded them with groves of

laburnum and lilac, of pink hawthorn and stately chestnuts, and many another flower-bearing tree. The modern garden is a desert for three-fourths of the year, and during the other quarter shows, for the most part, ill-arranged belts of glaring colour. Thousands of 'bedding-out plants' are crammed together to get a line of scarlet, which is succeeded by a line of blue, and that followed by a line of white; or the ingenious combination is hoisted into a gardener's notion of a curve, and so we have our ribbon borders, over which it is supposed we ought to exult with delight. The old garden was at hardly any time destitute of flowers. It had flowers for each season of the year, growing in constant succession, and, best of all, it had that glory of our island, the tree bearing flowers. In these trees there is always a good proportion between the leaves and the flowers. The gardener cannot nip off the leaves of a lilac or a laburnum, and make the tormented thing grow flowers alone. He cannot play tricks of that kind with a horse chestnut, nor twine its branches round a wire frame. Nature does have her own way with those larger growths, and they escape the degradation which befalls every plant that can be got into a hothouse; and there is more true beauty in almost any spray of leafage growing wild than in any carefully fostered collection of botanical monstrosities growing tame. Before the last acre of garden ground is surrendered to our modern gardener, we do hope that there will arise a reaction against the modern system, so that, at the least, if the ribbon border still flourishes, the blossom-bearing trees may be permitted to flourish also."

Statements such as these call for a few remarks. It is a mistake to suppose that our forefathers had any advantage over us in matters of taste. They did not grow broomstick roses, because they did not know how; but they clipped the cypress and the yew into the shape of a coffee-pot or a bear, and gloated over the melancholy result. Living in a day when "free nature's grace" was much more evident than now, they fell victims to formality. The wild wood was near, and was often picturesque, and it was so novel to see the conventional patterns of the decorative artist wrought out upon the grounds. From our fathers we inherit the stupid notion that it is not only pleasing but necessary to run bits of architecture into the garden, and to otherwise violate what ought in nearly all cases to be the foreground of our garden pictures, by stamping it with a huge edition of a pattern, which may perhaps be found on the back of the fire-shovel. This demonstrably false dogma has been handed down to us by everybody who has written on landscape gardening. No! we have nothing to learn by going back. Our fathers as gardeners had one inestimable boon—an abundant variety of spring and early summer flowering plants. This anybody may see who looks into Parkinson or any other old book on gardening from before Shakespeare's time to the days of John Abercromby. We may well imitate them in this respect, but there stop. We have advantages tenfold greater than theirs, and should produce a result immeasurably higher, from the point of view either of art or nature. The gardener is naturally the scapegoat of the Birmingham editor, but he is not the person to blame. Most gardeners of our acquaintance have a real love for plants, and would gladly get out of the exaggerations of the bedding system if their employers would permit them. The bedding system, pure and simple, is the greatest labour that ever fell upon gardeners. Under it they have to devote nearly all their energies and time to the production of effects, which, however attractive, disappear almost as quickly as the flashes of an illumination. Of course there is, as a rule, little time or strength left wherewith to minister to the more legitimate objects of a gardener's care, and to extensive planting and happy arrangement of trees, shrubs, and hardy flowers. Any one of these may, for an hour's wise and gentle attention in happily placing and planting it, thank us with green shade and grateful blossoms for a hundred years. No, it is the master who is to blame. He, an educated being, annually visiting or traversing some portion of the earth, from which he can hardly fail to glean a fuller notion of the boundless variety and beauty of the vegetable world than from a ribbon border, finds fault with his gardener for not out-blazing some neighbour, happy in the glory of bedding out, what is commonly and very appropriately called "stuff," to the extent of seventy thousand plants. He it is, who, visiting the Academy every year, and perhaps thinking nothing of a few hundreds, or it may be a few thousands, for a representation in pigments of some fair

bit of tree and earth beauty never thinks of doing what is so easily done—form living pictures of the stateliest and loveliest tree-life. The treasures of the vegetable world brought round his home are probably limited to a barrowful of pelargonium cuttings, solicited from a neighbour richer than himself in such treasures. The result of course is one in which no man or woman of taste or feeling can find the least instruction or real beauty. Even those who think they enjoy it have no notion of how much true pleasure is lost by confining themselves to such few plants as furnish some desired colour. As for the effect on the general public the result is simply deplorable. They may stare at the border; but who is taught anything by it? Who is led to do any really good work in gardening thereby? On the contrary, it degrades the noble and gentle art, and consequently all devoted to it, in a manner to be deplored. But the system is not now in need of being either discussed or condemned. What is wanted by both amateurs and gardeners is to know how to mend matters, not by abolishing the too common system, but by modifying it, and by devoting ourselves more and more to the many other ways in which a garden may be beautified. To forward this good end in every way will henceforward be one of the main objects of THE GARDEN.

BUPHTHALMUM SPECIOSUM.

A HARDY, distinct, and vigorous herbaceous plant, the stems of which are stout, very slightly branching, and about four feet high, with broad leaves mostly clustered around the base of the plant, the lower ones falling gracefully towards the earth. The flowers which have a red or purple disk and yellow rays, are more than two inches



Buphtalmum speciosum.

across, and are borne in the axils of the upper leaves, and appear in June, July, or August, according to the season. The plant seldom flowers well before the third year. It is of easy culture in any soil, is increased by division in autumn, winter, or spring, and is best fitted for association with the more vigorous herbaceous plants in rough and half-wild places.

FUCHSIAS IN THE OPEN AIR.

IN our race after novelties we too frequently forget old favourites which get pushed to the wall to make room for new comers of less value. This is particularly the case with Fuchsias, and the consequence is that many which make splendid border plants are rarely seen. Passing through a nobleman's garden very recently I saw whole troops of those robust and nearly hardy Fuchsias, Ricartoni and corallina, the former a compact free-growing variety which only yields to the most severe frost, and the latter an admirable border, shrubby or wall plant, which will cover a large area in a short time, and, yield armfuls of its intense coral-coloured flowers for cutting quite late in the autumn. I was so pleased with them that I begged some plants of each, and intend to grow them on to mix with chrysanthemums in November. F. Ricartoni was raised at Ricarton, near Edinburgh, and in favourable situations, as, for instance, in the south or west of England, or near the seashore, it will grow into large bushes, make hard woody stems, and rarely succumb to the weather, unless there is some 15° of frost, and even then, if it should be killed to the ground, it will throw up the following spring a whole forest of shoots from the roots. Some

years ago, when calling upon the gardener at Baron Hill, near Beaumaris, I entered the garden in the dusk of the evening, and passing along the terrace I descried in the distance a huge bush, some twelve or fourteen feet high and nearly as much in diameter, feathered to the ground with glowing crimson. The sight was so unusual that for a time I could not conceive what it was, until approaching nearer I found it was a plant of the Fuchsia in question, studded with thousands of its brilliant flowers. The stem of this plant could not be less than a man's leg, and the side branches as thick as one's arm. It had grown unscathed for years, and at the time was certainly 'one of the finest objects I ever saw; but in the following severe winter of 1861 it was killed to the ground. In the cottage gardens in Anglesey, especially along the Menai Straits, bushes four to six feet high are quite common, and such a thing as protection is never thought of. Here, in the Midlands, I could not expect such results. I could insure the growth, but without protection the plants would be killed to the ground every season. If, however, I took the trouble to protect the plants through the winter—that is if I threw a barrow-load of leaf mould, littery dung, or even ashes over the roots, and then bound the branches together and coated them with a good thickness of thatch, making it quite waterproof—no doubt, not only this Fuchsia, but many other varieties might be had in the form of bushes or lawn specimens through the summer and autumn. No plant is better suited to cover a wall or the end of a cottage than F. corallina. Planted in good soil it will make six feet of growth in the season, and that growth may be readily protected by a waterproof covering of thatch, and some litter over the roots and around the stem. There are many other kinds of Fuchsia equally well suited for outdoor cultivation, but in our mania for scarlet and variegated Pelargoniums we have forgotten the graceful "Crimson Drop." All that Fuchsias require to insure perfect growth is a deep rich soil, and plenty of liquid manure in hot dry weather. So planted they will grow with the luxuriance of a common dock, and once established, with the protection I have recommended through the winter, there will be a splendid bed for a lifetime. The most suitable varieties for outdoor cultivation and bedding are the strong-growing ones, but for training upon walls, trellises, or pillars some of the more attenuated growers may be used, but of course, they will require careful and regular tying. Then the floral branches will hang in graceful folds, but untrained they will soon become very ragged. One of the prettiest sights in the way of Fuchsia-growing I ever saw was in a glazed narrow arcade, connecting a family residence with the conservatory and forcing houses. The arcade was about six feet wide. Up the back Fuchsias of various kinds and colours were trained with clear stems, but when they came to the roof, which was a span, they were allowed to branch and cover it, which they did most effectually. To see thousands of flowers, varying in colour from bright scarlet and crimson to white, some with violet corollas, some with white, and others with scarlet, mauve striped, &c., all intermingled, forming a mass of rich and elegant natural colouring, was indeed a grand sight. Those who are seeking for handsome climbers for conservatory decoration will do well not to forget the Fuchsias. Properly planted, and kept clean from red spider and thrip, they will find them beautiful for many months in the year, and, once established, of little trouble. I have had Venus de Medici, which makes a very effective climber, grow twelve feet in a season, and even so bad a grower as the double-flowered Sir Colin Campbell, eight feet in the year. Z.

Lychnis Lagasæ.—I obtained last spring a strong healthy plant of this beautiful Lychnis, which I planted in a piece of rock-work, properly made in the manner described in "Alpine Flowers," and in which it appeared to thrive satisfactorily, flowering profusely for several weeks in the summer. The foliage on the approach of winter withered off, as was to be expected, but no trace of fresh growth has appeared with the spring; nothing visible has yet come above ground, and I presume the plant must have perished in the winter. It is rather an expensive plant to buy, and before ordering another, I should feel obliged if you would inform me whether it is so thoroughly hardy as to be exposed without risk out of doors in winter. A colony of worms had evidently established itself in the neighbourhood, which possibly may have caused the mischief. Will you kindly inform me how I can best get rid of these worms? I thought of applying clear lime-water to bring them out, but fear it may be injurious to the plants. This place is at an elevation of just over six hundred feet above sea level, open to the south.—W. B. R. —[We believe the Lychnis to be perfectly hardy; lime-water will rid you of the worms and do no harm to plants.]

Allosorus crispus and other British Ferns.—In reply to Mr. Trench (p. 478), who states that this fern does not thrive well with him, I beg to say that I cultivate a number of hardy British ferns, and

I pursue one uniform plan with all of them. I procure them from their native habitats, and treat them, as nearly as possible, according to their natural requirements. The *Allosorus crispus* does well with me. I dig it up with a part of the earth about it in which it has been growing; if on a piece of rock or stone, which sometimes happens, I lift the whole if I can, and transfer it to my greenhouse, sometimes placing it in a pot, and at others on the top of a sandstone, with a little more earth of a sandy, porous character about it, giving just enough of water to keep it healthy, and it invariably does well. It, however, requires a little shade, and very little root moisture. I have several of the more fragile sorts of ferns growing outside, entirely shaded by bushes and trees. Such as I procure from the interstices of rocks, caves, gullies, and waterfalls, I treat thus, and the rain, as it descends through the branches, falls on them in the form of "spray," resembling what they receive in their natural habitats. It is worth observing, that I generally find them in a north-eastern exposure, and I plant them in a like situation. I protect several from snails, &c. *Hymenophyllums* require the same treatment as the *Trichomanes*, viz., moderate heat, a close atmosphere, shade, and a porous soil. They do very well covered with bell-glasses, or kept in a case. *Polypodium Dryopteris* does uncommonly well with me; it is an elegant fern. I have one in a pot edged with the *Allosorus crispus*, a combination which looks beautiful when covered with a bell-glass. About three weeks ago I came upon a fine plant of *Allosorus crispus*, about four hundred feet above the sea, embedded in a heap of stones and earth; in fact, it was adhering to a sandstone. The fronds are about four inches in length; but the general altitude is much higher. I plant high in the pot or ground, and on no account do I ever mix lime with the mould in planting.—S. K. ANDERSON, *Duncon Garden, Dumfries, N.B.*

Lawns of Savin Juniper.—At Odessa the climate in summer is often torrid, the soil is dusty, and dries up to a great depth. Lawns are impossible in these light and burning sands. Monsieur Cortazzi, a rich merchant, who possesses a charming villa on the sea-shore near Odessa, has found a most ingenious remedy for this difficulty, which I have only seen tried by him. A great part of his lawns are of the two varieties of Savin Juniper—*J. Sabina cupressifolia* and *J. S. tamariscifolia*. These shrubs are planted when quite young very near each other; they are laid down and trampled on, and each year they are rolled; they are thus forced to creep uniformly on the ground, and they form, during the greatest droughts, the most beautiful dark-green lawns imaginable.—Ed. André, in "*Ville-Horticulture*."

On Planting Asters.—I was walking through a nursery the other day and I saw two men preparing beds for Asters on a piece of soil that had been recently dug. They had formed eight beds, about four feet wide, and I should think they were fifteen yards long. Paths were dug between each bed about six inches deep, the soil from which was put on the beds and then raked level. Each had a piece of stick, eight inches long, to measure the distances and to make the holes. This was done all over the bed; and then they filled the holes up with water, which to me seems an expensive operation. Will some of your readers kindly tell me what advantage this has over the usual plan of planting?—AN AMATEUR, *Cambridge.*

Cheiranthus Marshallii.—Would any of your readers inform me if they have ever succeeded in seeding this beautiful spring flowering perennial? I have tried it under various conditions, but without success. It may be urged that seeding is of little moment, because it can be so easily increased by means of cuttings. I readily admit that, but if it could be got to seed perchance some additional colours might be obtained; and, what would be a matter of great importance, some that would flower earlier than the parent. There is no hardy perennial that carries in the spring such an effective mass of orange-yellow colour as does this *Cheiranthus*, but as the flowers do not expand before the end of April, it is too late for actual spring gardening. It is, however, most useful for cut flowers, as they are deliciously scented. The old pale yellow variety, *C. ochroleucus*, is I find much more common, but it is scarcely so effective as *Marshallii*; both, however, are deserving of a prominent place in every garden where a fondness for spring flowers prevails.—A. D.

The Wild Garden. I think it would be delightful to exchange wild flowers with each other. The woods in my neighbourhood contain various varieties, none of which I planted in my wild garden and house with greater advantage than *Dentaria bulbifera*, which abounds in a wood here. One great advantage attending the planting of rare wild flowers, is being able to study them in their various stages of growth. Nothing is more provoking than making an excursion to secure some floral gem and finding it out of blossom; the disappointment ceases, however, if the seeds are secured instead, from which can be formed a small colony in our own gardens. In

Dorsetshire, two summers ago, I found a *Helianthemum* in seed, the leaves of which did not appear to be those of vulgar. I secured some seeds, and sowed them last summer; they were scarcely ripe, but one has developed into a plant, and I am anxiously awaiting its blooming to determine its species. I should be delighted to have a few roots of *Epilobium angustifolium*, as it is a most lovely flower.—M. P., *Botany Cottage, Kent.*

Green Wild Flowers.—Lovers of native plants have been enthusiastic in describing the rich and varied tints of colour found in some of our spring flowers, but seem to have overlooked the many interesting and beautiful subjects that bear greenish-coloured blossoms. One of the prettiest and most delicate of these is the *Moschatel* (*Adoxa Moschatellina*), which is found abundantly in the hedgerows and copses of the Surrey hills, in the steep lanes of Kent, and elsewhere. In moist, shady situations, its green-tinted flowers, raised above its leaves of a darker green, are so beautiful that it seems a mystery why it has been so inappropriately named. First among spring flowers, however, we have the *Daphne Laureola*, a graceful little shrub that bears clusters of green blossoms. Perhaps the most lovely of all green-flowering plants, however, is the *Herb Paris* (*Paris quadrifolia*), which is remarkably beautiful in all its parts. Although not very common, I have found it this spring growing abundantly in a wood in Hertfordshire. The flowers, as they hang back their long thin sepals, look like some envious foreign spider or "daddy long-legs." Again, we have the *Spurges*, many of which are of a fine green colour, and others of a yellowish green, very interesting to examine though perhaps rather puzzling to beginners. There is, moreover, the *Dog's Mercury*, with its male and female flowers; and several kinds of trees also furnish us with good examples of beauty in the shape of green flowers.—M. A. D.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Banksian Roses (see p. 608).—I saw another glorious show of Banksian roses the other day at Linley Hall, near Broseley. They covered the face of the house to the apex, thirty-four feet high, and went, I don't know how far over the roof. What glorious ornaments for all high walls, houses, &c. !—W. R.

Aralia japonica.—In the London parks this fine *Aralia*, commonly, but wrongly, called *A. Sieboldii*, has proved a very hardy plant in various localities. I noticed a mass of it in the Regent's Park the other day, near the southern entrance to the park. It looked quite healthy, and seemed to have remained out of doors all the winter unprotected. As a fine-leaved hardy shrub it is far from sufficiently known.—H. V.

Wall Plants.—In Coventry the other day I saw an old gate pillar crested with a fresh and bloom-whitened tuft of the Mossy Saxifrage. It was quite at home in company with that old wall-haunter, the *Stonewort*, thus proving it a good wall plant. I excluded the Mossy Saxifrage from my lists of wall plants in "Hardy Flowers," thinking they could not exist on walls. Seed of the Mossy Saxifrage should be sown where there is a little soil, some decayed moss, or half rotten moist chinks, in which to root.—W. R.

Viola cornuta.—This *Viola* is now as lovely in our gardens as it soon will be on many a high mountain pasture in its native land, long covered by the snow. Few plants are so useful in the spring and summer garden. A belt of it at Combe Abbey, more than six hundred feet long, was one of the most striking things I have seen. The effect was very charming when the plants were viewed closely, or at a distance.—W.

Clematis montana.—This valuable hardy climber, and its fine variety, *C. grandiflora*, are not uncommonly seen on walls in our gardens hacked about and trained after the orthodox fashion, but they are not seen to anything like the best advantage in this way. If planted so that they may trail at will over bowers, old stumps, small dead trees, the walls of sunk fences, &c., they will form a most charming feature in the garden in May, and that without any aid from the pruner or trainer.—S.

The Germander Speedwell (*Veronica Chamædrys*).—This little wild plant, which forms such bright, soft masses of blue in hedgerows and by roadsides, is better worthy of culture in the spring garden than a good many exotics grown therein. It is a perennial, and also well suited for a place in the rougher parts of the rock-garden, and for rockwork, rough sunny banks, &c.—W.

Mildewed Roses.—I have a *Maréchal Niel* Rose under glass, and can perhaps give your correspondent (see p. 502) a word of encouragement. It is on a brier, and not yet four years old; it covers an upright trellis (which has light on both sides), fourteen feet by six feet, and produced upwards of three hundred perfect flowers within the last month, as many as fifty being gathered and counted one morning. It is an evergreen Rose in the house, its last year's leaves having not yet all fallen. Its treatment principally consists in cutting away all weak shoots, and such as have already flowered, and taking care of those that are strong and not likely to make laterals in the autumn. When mildew makes its appearance, as it often does, it is immediately washed off with a sponge and soft soap water, made with three or four ounces of soft soap to a gallon of water. This is quite as effectual as sulphur, and leaves no marks. The soft soap should always be dissolved in cold water, a hint for which I have to thank Mr. Tillery.—WILLIAM TAILOR, *Longford.*

The Pansy. What a glorious mass of early spring flowers the Pansy produces when grown in a suitable soil and situation! I have here, at the present time, a long border covered with its flowers, and it is hardly possible in April and May to find a more enjoyable sight in the way of hardy flowers. On looking at them on a bright sunny day, all their smiling faces seem looking at you, and their colour is strongest at that time. This border was sown some five or six years ago, with the seeds of some of the best Belgian fancy varieties, mixed with seeds of good named sorts. Every year since, in summer, after the Pansies have done flowering, asters, stocks, and gladioluses have been planted, but the Pansies still keep hold of the ground, and in the spring the seedlings erupt it with their flowers. I have been enabled to select some good bedding kinds of new colours from the immense quantity of seedlings grown every spring in this border. Every autumn, a top-dressing of rich rotten manure is given, which mixes amongst the seedlings and keeps them vigorous.—WILLIAM TAILOR, *Longford.*

A SKETCH OF THE LAWS, COURTS, AND OFFICIALS OF THE MÆDIEVAL FORESTS OF ENGLAND.

BY E. S. ROSCOE, ESQ., BARRISTER-AT-LAW.

AMONG the odd features of this transitional age, the earnestness which land reformers display in preserving commons and forests in their primitive condition is very marked—men who at every opportunity that presents itself endeavour to show that new social movements necessitate new tenures and divisions of land, yet move heaven and earth to revive old privileges and old forms of procedure, in order to prevent certain kinds of property from losing any of their ancient and almost forgotten attributes. The latest, and one may almost say the most remarkable instance of this spirit of renovation, was the assembling of the forgotten though not quite obsolete Court of Attachments of Epping Forest on the 26th of last September; a singular attempt to use legal machinery, which our ancestors employed chiefly to crush the lower classes, for the benefit of those very persons who in former days suffered most from its powers. And since this court was held much has been heard about various forestal courts, which are being revived at the instigation of the Corporation of London, for the object of preserving Epping Forest as a place of public amusement for ever; but shortly we may hope to see this end attained by an Act of Parliament.* It may be seasonable, therefore, to give a short sketch of the forestal laws and customs of the Middle Ages, the groundwork of the present game laws, which will soon be known only to the black-letter lawyer and the antiquary.

If the truth were known, we should probably find that most people form their notions of a forest and forest life from the opening scene in "Ivanhoe," where Gurth, the swineherd, is discovered among the green glades of Sherwood Forest, and from those peeps of outlaws' life which Scott gives us in the rude hut of Friar Tuck and the sylvan throne of Robin Hood, and that the elaborate and severe system by which the sixty-eight English forests were ruled is practically unknown.

Old writers† define a forest as "a certain territory or circuit of woody grounds and pastures, known in its bounds and privileges for the peaceable being and abiding of wild beasts and fowls of forest chase and warren, to be under the king's protection for his princely delight;" and this "circuit of woody ground" was surrounded by clear spaces called "purlieus," also within the jurisdiction of the forestal authorities, and could contain, as we see above, chases, parks, and warrens; for it was, to quote again the quaint language of the mediæval commentators, "the highest franchise of princely pleasure," watched over by special officers, who administered special laws in their own courts. A chase, on the contrary, when separated from a forest, was under the common law only; so also was a park or inclosed space, and a warren, which, however, was a home only for hares, conies, pheasants, and partridges, and not for larger game. And to perceive how important a part forests and hunting formed in the social system of our ancestors, we have but to glance at the Statute Book, which is full of laws upon the subject, most of them based upon the *Charta de Foresta*, passed in the ninth year of the reign of Henry III., which consolidated, or rather codified, the various unwritten rules and customs by which the forests had before been governed, and formed a less though still extremely stringent measure for the guidance of the tyrannical foresters; for, as a modern writer has it, there was—

"A noose for his neck who a snare should contrive;
Who skinned a dead buck was himself skinn'd alive."

The laws subsequent to this charter generally explain or modify it, or endeavour to restrain the rapacity and brutality of the keepers; while the most modern Acts have usually been passed to abolish the forestal jurisdiction, to destroy the forests themselves, and to vest the management of those which are allowed to exist in the Chief Commissioner of Woods and Forests.

But to pass on to the actual laws and officers of the forest, it may be stated that the lowest of the actual tribunals for the administration of forestal justice was the Court of Attachment, held every forty days, presided over by the Verderers, and very similar in its functions to a modern grand jury. When the judges had assembled, the Foresters and Rangers appeared and made their presentments *de viridi et venatione* as to the state of the "vert" and venison of the forest; the "vert" comprising in forestal language "hant bois," "sous bois," and "special vert" (pear, crab trees, and hawthorns), in fact, every green leaf, great or small, for not only must the deer have tender shoots to feed upon, and a refuge from the wind and sun, but it was also "a pleasant prospect for a prince to see stately trees which grace the forest."

When all the presentments had been given in, the Verderers proceeded to hear evidence as to the truth of the facts which they alleged, and in every instance, when the case appeared to be *prima facie* true, it was referred for more complete investigation to the tribunal which stood next in order—the Court of Swainmote. Here, also, the Verderers were the judges, but assisted by a jury consisting of those who held land or lived within the bounds of the forest—men of substance—and of certain of the forestal officials. The number was not fixed, but it was usually eighteen, twenty, or twenty-four. It assembled three times in a year, in June fifteen days before the Feast of St. John the Baptist, fifteen days before Michaelmas, and again about the Feast of St. Martin, in the winter, and there was scarcely an offence against actual woodland law which was not within its cognizance; the slayer of deer, the stealer of herons' eggs, the burner of gorse, the man who pastured his goats for too long a time on one piece of green sward, and the tyrannical forester especially, were

each and all amenable to its jurisdiction. Theoretically, every sentence upon any unfortunate offender which was pronounced by this subordinate court required a ratification by the High Forestal Court of Appeal, the Justice Seat. This was the court of the Chief Justice in Eyre of the Forest, who was a man of great knowledge of all the lore connected with forests and with the chase.* The first ceremony which took place when this high official had opened his court was an assembling of all the foresters, each of whom, humbly kneeling, delivered up to the justice his horn, who thereupon delivered it again to the suppliant upon the payment of a fixed fine. The jurisdiction of this high official was very extensive, embracing not only grants of licence to hunt,† appeals from the Court of Swainmote and direct offences—eighty-four in number—against positive forestal laws, but also indirect crimes, such as speaking disrespectfully of any court or official, a tyrannical jurisdiction which the judge did not fail to use, as the following example will sufficiently show.

In the year 1632, a certain Sir Charles Howard was charged before the Court of Swainmote with cutting timber in an unlawful manner. Like many who nowadays make use of or come within the power of the law, he was much dissatisfied with its operation, or with those who administered it. It may be rightly, or perhaps with the same amount of reason that Shelley had when he wrote his well-known lines to Lord Eldon, and painted that venerable Tory as the most heartless of villains; at any rate, he said openly that things were carried against him with a high hand, and that his case should be heard of in another place. Thereupon he was brought before the Justice Seat, was fined £100, and, being unable or unwilling to pay this sum, was committed to prison. And this happened long after the days when the administration of forestal law in its severest form had passed away.

Having thus briefly sketched the forestal courts, we will shortly mention the officials who administered the law, or acted, so to speak, as the police and guardians of the forest and its inmates. Highest in rank comes the *Justiciarius Itinerans Forestæ citra Trentam*, the judge of whom we have just spoken. The first was appointed by Henry II., A.D. 1184; and the last who filled this post, one much coveted in the Middle Ages, was the Earl of Holland in the reign of Charles I. There was also another chief justice for the parts beyond the Trent, but he was a man celebrated rather for his high rank than for his knowledge of the laws; indeed, it was almost an honorary post, and shows very clearly how little the authority of the kings of England was actually respected among the almost independent nobles of the North, each of whom governed his own domains, whether forest or village or cultivated land, much after his own will. Next was an official whose duties were light, and whose rank also seems to have been almost honorary—the chief warden of the forest. He was succeeded by the verderers, men of standing chosen by the county, who, as we have seen, chiefly acted as judges in the forestal courts; regards, twelve in number, whose principal duty was to inspect the forest and its purlieus, and take note of damage to the wood and of encroachments from without. But these are not all of the rulers of the forest. The foresters had more actual power than any we have yet enumerated; they held their post for life, or during their good behaviour, which often meant until the king saw fit to substitute for one baron another who had recommended himself by some courtly or knightly service. It was not only a personal office, but one which could be held in fee, that is, attached to land or to a barony, or even in right of a wife, and in the former case could be forfeited, as happened, to take one instance only, to Roger Bigot, Earl of Norfolk, and forester of the Forest of Pickering. But when we discover the power which belonged to these foresters, the elaborate machinery of the courts already described seems little better than a mockery, for they could summarily arrest any offender against the laws of the forest, then and there imprison him in the deepest dungeons of their strongest castle, with the knowledge only of their lawless servants, and then the unfortunate man could not be released except by a special writ from the King, or the Chief Justice in Eyre, before whom he was compelled to appear. It is not wonderful, therefore, that these forest laws appeared to our poorer ancestors solely as instruments to aid the great barons in schemes of robbery or revenge.

At length, in the reign of Edward III., these foresters carried things with so high a hand that their duties became the subject of further enactments; and to curb their power the statute of 1 Edw. III., c. 8, was passed, which defined the four occasions when a man was liable to summary arrest. These were, if he was taken in "manner" or "dogdraw," that is, if his bound was actually dragging off a wounded animal; when hidden with bow or greyhound behind a tree, with his quarry in sight.

The subordinate officials, whom it suffices merely to mention, were the Riding Forester, who rode before the king should he hunt in the forest; the Rangers and Bailiffs of walks, who may be best described as under-keepers of the game; and the Woodwards and Agistors, who, as their names respectively show, were the guardians of the trees and the pasturage in and around the forest.

Such is a brief sketch of the elaborate machinery by which our ancestral nobles governed the inhabitants of the forests and preserved their game; and all these laws and rules, and the minor matters connected with them, form an important feature in the social history of mediæval England, and deserve a more careful study than is usually allotted to them. But most strange it is to see, at a time when there is great difficulty in retaining even the very remnants of these laws, an endeavour to revive in a suburban hotel those ancient courts once held in wooded glades, and whose very names recall the great forests and woods of England.—*Field.*

* The Epping Forest Amendment Act, 1872. There is also a Bill introduced by the Corporation of London with the same object.

† Manwood's "Forest Laws," 11th edition, 1717.

* Case of Hundred of Wargrave, 1 Jones, Reports, 267.

† The Queen v. Conyers, 8 Queen's Bench (.S.16).

ASPECTS OF VEGETATION.

RIVER-BANK SCENERY IN MADAGASCAR.

MADAGASCAR, the coast surface of which is for the most part flat, has an interior richly wooded and mountainous, with here and there lakes, rivers, and well-watered valleys. To the Rev. Mr. Ellis we are indebted for the following account of river-bank scenery in that island:—

"The morning was fine and cool, the water smooth, and the scenery on both sides exhibited new forms of vegetation in great luxuriance. The country on the right was flat, in many parts planted with sugar cane. The banks on the opposite side were high and steep. Here the singularly rich and stately rofia palm, *Sagus ruffia*, was so abundant and conspicuous as to impart something of the character of its own graceful form to the surrounding scenery. While thus sailing smoothly

Lindley have thus spoken of *A. Wallichii*:—"One of the finest plants ever introduced. And when loaded with its magnificent flowers, we think nothing can exceed its grandeur." I had seen a good-sized plant growing freely at Mauritius, but here it was in its native home, luxuriating on the banks of the stream, its trunk a foot in diameter, its broad-leaved branches stretching over the water, and its large, pink, globular, composite flowers, three or four inches in diameter, suspended at the end of a fine down-covered stalk, nine inches or a foot in length. These hanging by hundreds along the course of the stream, surpassed anything of the kind I had seen, or could possibly have imagined. I frequently met with the *Astrapæa* afterwards, but always growing near the water, and its branches frequently stretching over a lake or river."

In further describing the scenery of Madagascar, Mr. Ellis states, in reference to forests, that they spread over the most unequal ground, covering mountain ridges, steep precipices,



River-bank Scenery in Madagascar.

along, we passed several patches of the beautiful *Nymphaea cærulea* in blossom; and I do not remember ever experiencing more deeply the feelings of admiration and delight produced by new, and rich, and beautiful aspects of nature, than during my excursion on this charming water.

"After proceeding about a couple of hours, and passing the high land on our left, we entered a narrow creek between high banks of clay. Several birds here attracted my notice. But my attention was chiefly arrested by the flowers on the banks of the narrow stream, amongst them a plant which looked like a variety of herbaceous hibiscus, with bright yellow flowers, and a gigantic arum, *A. costatum*, or *A. colocasia*, which grew by the edge of the water to the height of ten or twelve feet, and so near that I could reach them on both sides as we passed along. But the most magnificent objects were the fine trees of *Astrapæa Wallichii*, or *viscosa*. The name of this Malagasy plant was derived from the word for lightning, on account of the brilliancy of its flowers; and Sir Joseph Paxton and Dr.

and broad or narrow valleys. "Many of the trees," he says, "are of stupendous magnitude, apparently of hard wood and slow growth, excepting some of the *Dombeyas*, which were magnificent trees. I noticed but few orchids, or parasitical plants of any kind; but creepers were abundant. Amongst them, some singularly curious bamboos. Of one kind the cane was almost as small as a quill, with a circle of fine small branches or leaves around every joint, the joints being not more than five or six inches apart. The long slender canes were often nine or ten feet long, hanging pendent from the branches of the trees, or stretching in graceful curves from tree to tree along the sides of the road."

Some beautiful *Lycopodiums*, it is stated, grow along the margins of the water, and even in some places may be found our own royal fern (*Osmunda regalis*). A species of *Platy-cerium*, or Stag's-horn fern, also ornaments the stems of some of the loftiest trees, and ferns of other kinds are not at all uncommon in Madagascar.

THE INDOOR GARDEN.

CULTURE OF LUCULIA GRATISSIMA.

THIS is one of the most beautiful winter-flowering conservatory plants in cultivation, forming, when planted out in about equal portions of turfy loam and fibrous peat, large bushes eight or more feet in diameter, and filling the house with delicious fragrance in November and December. Some years ago, I had charge of a conservatory, in which several large plants of *Luculia* were growing beautifully in the borders; for, although it is rare to meet with a really good specimen in a pot, yet when planted out in good soil in a well-drained border, it grows as freely as a willow. The great thing is to prune well back after flowering; if this is not done, the plant rambles up, soon gets naked at the bottom, and does not flower so well. It often makes three or four feet of wood in one season, and the flowers are borne at the ends of the shoots, therefore it is important to facilitate the ripening of the wood as much as possible, by exposure to light and by reducing the supply of water in August and September.

The *Luculia* also makes a grand plant for covering the back wall of the conservatory, and there is scarcely any limit to the space it will cover. Liquid manure made from soot, and given clear during the flowering and growing period, adds to the strength and beauty of its flowers, and imparts a rich dark green tint to its foliage. The syringe or conservatory engine should be used frequently to keep the foliage clean. About the same treatment that suits camellias for blooming about Christmas will also suit the *Luculia*.

A really good specimen of this *Luculia* in a pot is not often met with, and the reason probably is, because the plant is usually encouraged to flower before a good foundation has been laid for the future specimen. And until it is well established in a good-sized pot, it seems rather impatient of being cut back; plants are, therefore, allowed to flower without being subjected to cutting, and it is somewhat difficult afterwards to induce a bushy habit. In commencing to form a specimen, begin with a young healthy plant, keep it growing in what is called an intermediate house, and persistently pinch or rub out the leading buds till a good foundation for the future specimen is formed. Do not allow it to flower till this object has been attained, and the plant will be longer lived in consequence. When potting is necessary, give a good liberal shift. What is termed among plant growers "the one-shift system" is well adapted for the *Luculia*, but then special care is required in watering and the drainage must be perfect. Although when making its growth the *Luculia* delights in liberal supplies of water, anything in the shape of stagnation at the root produces ill health, from which there is little or no recovery.

The best soil for pot culture is two-thirds turfy loam and one-third fibry peat, with a dash of fine charcoal. The soil should be well broken up, and rubbed through a coarse sieve without extracting the fibre. Pot firmly; loose potting encourages rapid growth, but this is often inimical to the formation of a good specimen.

It may be propagated by cuttings made of the young side-shoots taken off with a heel, and placed under a bell-glass in a cool place till callused, then plunged in a mild bottom heat. It may also be increased by means of layers. E. HOBDAV.

UTRICULARIA MONTANA.

AN arboreal or epiphytical *Utricularia* is a phenomenon as exceptional in the vegetable kingdom as are the flying-fish, tree-frog, land-crab, and similar anomalies in the wide domain of animated nature. Such a plant-wonder we have in the recently-introduced *Utricularia montana*—an acquisition to our collections, and worthy of extended cultivation, not alone for its botanical interest, but on account of the size and beauty of its delicate flowers. Any one seeing, for the first time, this plant in flower would be likely to smile sceptically if told it belonged to the same genus as the curious little Bladder-worts (*Utricularia*) of our pools and ditches. The fact is so, nevertheless, and our modest little aquatics have great reason to be proud of this exotic relative, which, ignoring the homes and habits of its kind, eschewing the pool and the marsh, finds its congenial feeding-ground

high up on the mossy trunks of trees in Trinidad, St. Vincent, and elsewhere. In habit, mode of growth, and the aspect of its flowers it simulates and rivals some of the prettiest of epiphytical Orchidaceæ—*Phalenopsis*, for instance. In fact, when seen, for the first time, in flower and growing in orchid-fashion, even an accomplished plantsman might be taken in, and tempted to exclaim, "What a pretty orchid!"

It is scarcely more than a year since this lovely and interesting little rarity found its way to Europe. Scarcely was it introduced than, thanks to the never-tiring energy of Dr. Moore, a plant was secured for Glasnevin, where we had the pleasure of seeing and admiring it in flower on more than one occasion during the past month. The plant is a stemless epiphyte, with pale green, entire, narrow lanceolate leaves, from four to six inches long. The leaves spring from a fascicle of oval, hollow, green, semi-transparent tubers, formed on wiry fibrils, which bear at intervals minute bladders or utricles, similar to those borne by our home species, and whence the name of the genus. The flowers are borne on a slender curved wiry scape, and may number from one to five or more. They are very large, nearly two inches in diameter, the pedicels about three-fourths of an inch long, the calyx lobes pale yellowish green. The corolla is white, with a large yellow blotch on the centre of the lower lip, the upper lip or hood is roundish, with a truncated base. The lower lip is twice the size of the upper, very full and prominent in the centre, closing the throat and concealing the anthers; the spur is a stout curved horn-shaped body, nearly an inch long, of the same colour as the corolla.

As regards multiplication and growth, both seem to be of the easiest kind. The former is effected by means of stolons, which are freely produced somewhat after the fashion of the strawberry. At Glasnevin it accommodates itself and flowers freely, treated either as an epiphyte, and grown in a suspended basket, or as an ordinary pot plant in light, open soil. The first mode, however, seems to commend itself as being the most desirable way of growing it; for, as we understand, that in its native haunts the plant shows to most advantage when growing on trees, so in our plant-houses its effect will be enhanced when grown as an epiphyte or in a suspended basket. With regard to temperature, it requires, we believe, the heat of the stove, but as it is found not alone in Trinidad and other islands of the West Indies, but in New Grenada and Peru, it may very probably be grown successfully in an intermediate house where the heat is very moderate.—*Irish Farmers' Gazette*.

A REVISION OF THE GENUS DRACÆNA.

BY DR. REGEL.

(Continued from p. 637.)

DRACÆNA LATIFOLIA (RGL.)

LEAVES broadly-lanceolate or elliptical-lanceolate, from 2½ inches to 3 inches broad, and from 1¼ foot to 1½ foot long. In other respects like *D. Rumphii*. Flowers unknown. Southern Africa.

DRACÆNA DRACO.

Stem thick, tree-like, branching at the top. Leaves sessile, concealing the internodes of the stem with their half-clasping bases, crowded together at the extremities of the branches and stem, linear-lanceolate, attenuated into a sharp point, without a midrib, from 1 to 1½ inch broad, and from 1½ to 1¾ foot long. Panicle terminal, very much branched, with leaf-like bracts; ramifications ternate. Flowers four or five together, stalked. Corolla tubular, whitish-green on the outside, white within; divisions three times as long as the tube. Canary Islands, and cultivated in the East Indies and other tropical countries.

Varieties—*D. strictifolia*, Hayne (*D. canariensis*, Hort.), has all the leaves erect-patent and closely-set. *D. laxifolia*, Hayne (*D. Draco*, Göpp. and Belg. Hort.), has the lower leaves recurved-patent and the rest erect-patent. *D. pendulifolia*, Hayne (*D. Boerhavi*, Ten., *D. Ombet Kotschy* and Peyritsch, pl. Tinn.) has longer leaves, all recurved-drooping at the extremities.

DRACÆNA SALICIFOLIA.

A low much-branched under-shrub, with the habit of *D. reflexa*. Stem and branches flexuose, about ½ inch in diameter, clothed with leaves from the base or from the middle up. Leaves recurved-patent, linear-lanceolate, not concealing the internodes of the stem with their half-clasping

bases, $\frac{3}{4}$ inch broad and from $3\frac{1}{2}$ to $5\frac{1}{2}$ feet long, undulated, and without a mid-rib. Flowers unknown. Java.

Synonyms—*Cordyline salicifolia* (Göpp); *Dracæna linifolia* (Hort.); *D. flexilis* (Hort.); *D. flexuosa* (Hort.); *D. reflexa* var. (C. Koch).

DRACÆNA SURCULOSA (LINDL.)

Rhizome emitting several slender, jointed, culm-like, half-shrubby stems, from 1 to 2 feet high. Leaves almost in whorls, oblong-lanceolate, or, less frequently, elliptical-lanceolate, narrowed at the base into a short channeled stalk 2 or 3 lines in length, acuminate at the point, with a mid-rib which is sunken in the upper surface of the leaf but prominent underneath, striated with veins, from $\frac{3}{4}$ inch to $1\frac{1}{2}$ inch long and from 3 to 4 inches broad; joints of the stem below the whorls of leaves covered with a clasping lanceolate acuminate scale which is leafless, scarious, marked with longitudinal veins, and very persistent. Raceme terminal, simple, corymbose. Flowers solitary, on thread-like stalks, $\frac{1}{2}$ inch long; bracts shorter than the pedicels; corolla of a yellowish-white colour, and sometimes an inch long; tube slender, cylindrical; divisions linear, as long as the tube. Tropical Africa.

A variety, *D. s. maculata* (Hook.), has the leaves marked with yellowish-white spots, and was found by Dr. Mann on the banks of the Old Calabar River.

DRACÆNA NIGRA (HORT. BEROL.)

Stem more or less flexuose, simple, short, covered with leaves at the top. Scales leafless, soon falling at the lower joints. Leaves oblong-lanceolate, $1\frac{1}{2}$ to 2 inches broad, and from 5 to $6\frac{1}{2}$ inches long, acuminate (sometimes oblong, elliptical, $2\frac{1}{2}$ inches broad and $5\frac{1}{2}$ inches long, and shortly acuminate), always undulated, attenuated at the base into a channeled stalk from $\frac{1}{2}$ to 1 inch long, with a slender midrib and more prominent longitudinal nerves and striated with veins.

Raceme terminal, nearly sessile, sometimes 3 inches long, thickly set with flowers, solitary or, more rarely, two racemes together. Flowers in pairs or three or four together, with a few scarious bracts, the lowest of which is longer than the pedicel. Corolla of a greenish-yellow colour; tube cylindrical; divisions linear, and of the same length as the tube. Native country unknown.

A variety, *D. n. maculata* (Cordyline Sieboldi, var. *maculata*, Fl. des Serres), has the leaves marked with yellowish spots.

Synonyms—*Dracæna Fontanesiana* (Rgl.), *D. elliptica* (C. Koch).

DRACÆNA SPICATA (RONBERG.)

Stem shrubby, erect. Leaves lanceolate, lengthened-acuminate, attenuated at the base into a channeled clasping stalk, which is sometimes 2 inches long, with a stout midrib, and striated with veins, $2\frac{1}{2}$ inches broad, and from 8 to 12 inches long. Scales leafless, solitary at the lower joints, herbaceous, lanceolate, acuminate, sometimes 3 inches long, often persistent for a long time. Raceme loose, stalked, terminal, about 2 inches long, exclusive of the stalk. Stalk ascending, 3 to 5 inches long, with a fascicle of herbaceous bracts at the base, and loosely set with other scattered acuminate bracts. Flowers solitary (sometimes three together), with scarious bracts which are shorter than the pedicels. Corolla becoming ultimately twisted; tube thread-like, cylindrical; divisions linear, shorter than the tube. I have seen specimens which were collected by Heyne in the East Indies.

Synonyms—*Cordyline spicata* (Fl. des Serres), *D. Wallichii* (Kth).

(To be continued.)

GARDENIA FORTUNEI.

Of the many fine plants for which we are indebted to Mr. Fortune, we think that, tested by a jury of ladies, this would be pronounced the finest; for to the size, purity, and doubleness of the white camellia this plant adds the delicious aroma for which the whole tribe of Gardenias are so much prized. The great market growers who cultivate Gardenias by thousands for the supply of bouquet-makers at Covent Garden, grow them principally by means of the heat of fermenting materials. The general plan is to have a pit filled with spent hops from the brewers' or tan for bottom heat, and

then linings of stable manure around the sides of the pit. The plants in the growing season delight in a brisk, moist temperature—indeed, from the commencement until near the maturation of the growth, they will grow in a vapour bath strongly impregnated with ammonia; but to mature the wood and set the flower buds it is necessary that they be exposed to a drier atmosphere and a free circulation of air. Cuttings of the Gardenia strike with the utmost freedom in a close, moist temperature, with some bottom heat. Though heat from fermenting material is the most suitable for the cultivation of this tribe of plants, it must not be supposed that they will not grow in ordinary plant stoves. I have plants so treated now of *G. Fortunei*, *G. florida*, and *G. florida intermedia*. During the growing season they are placed in the closest part of the stove, and are well supplied with manure water. When the growth is complete and the flower-buds forming, they are exposed to full air, and for months I keep them in a cool house with camellias. When we want bloom they will be removed to a forcing house, and there remain to make their growth. As a forcing plant, to come into bloom in March and afterwards, I know nothing so valuable as the Gardenia. It is a universal favourite with all who know it, and will ever remain so. The only drawback is that insect pests of every kind have a great affection for it. Mealy bug, white and brown scale, thrips, and red spider, each grow fat and multiply upon it. The best remedy for these pests is to lay the plants upon their sides, and then syringe them when in a dormant state with water heated to 120° ; then follow with a dressing of Abyssinian mixture of full strength, and the visitation will be subdued, if not eradicated. The kind mostly grown for flower-market purposes is *G. radicans*. It is a dwarf, free-blooming species, and, carefully managed, flowers most profusely. P.

PERMANENT SHADE FOR GLASS HOUSES.

The best permanent shade for plant houses is linseed oil and sugar of lead, in the proportion of about a teaspoonful of the lead to a quart of oil; but the exact tint must be governed by the amount of shade required. Therefore apply the lead gradually, and prove it upon a few pieces of waste glass until you get the tint desired. The *modus operandi* is this: first wash the glass thoroughly clean, and then (having previously prepared the oil and lead), on a dry clear morning, take the oil and paint as thinly as possible over the glass with an ordinary paint brush; then follow with what the painters call a dust brush, loose and quite dry, and, dabbing it gently on the oiled portion, impart a frosted or ground-glass appearance to it. An ordinary garden labourer, with a little practice, will do this very nicely. This shading will stand very well for a season, and if in the autumn it is desired to remove it, that may be readily done by washing with strong pearlash water. For some plants, such as camellias, oranges, and other strong-foliaged things, it is questionable whether it is desirable to remove the shading. Many years ago, when there was much bother about the scorching by foreign, sheet, and other inferior kinds of glass, the late Mr. Pince, of the Exeter Nursery, who a short time previously had put up a large camellia house, wrote to a friend: "I made short work of the scorching; I painted the glass all over with white lead paint, and I found where the paint was the thickest the plants did the best." There has been a good deal of misdirection about the light necessary for plants. We bring them from all parts of the world, and, without giving a thought as to whether their native habitat may be under the shade of larger vegetation, or in open positions, we stick them in the full light, and then grumble because they do not grow as we could wish. W. P. A.

Scottish Orchid Peat.—I wish to know if Orchid peat can be procured in Scotland as good as that used by the first English Orchid growers. If so, where? Also where the best silver-sand for garden use, is to be had in Scotland.—MELROSE.

Tobacco Smoke.—Tobacco smoke is a good servant but a bad master. There are some plants that never get used to it. Many Ferns (especially the young fronds), Gloxinias, Caladiums, &c., are among those that do not relish tobacco. Therefore, when Ferns get attacked by thrips it is safer to wash and dip, than to smoke them; and, if the latter must be resorted to, smoke before the young fronds are developed. As to Gloxinias they ought never to need smoking. When skilfully grown in a moist house, or pot-plunged in a general bottom heat, within two or three feet of the glass, and shaded during bright sunshine for a few hours on the early side of noon, they will continue clean. If thrip gets on them owing to their being grown in dry houses, their beauty will be greatly impaired. Aphides sometimes appear, and a gentle smoking will exterminate them without injuring the leaves. For it is a singular fact that the penetrability, if I may so express it, of green fly, is very largely dependent on the nature of its food. Let it feed on such wood as cherry, peach, or plum shoots, and it is almost indestructible by tobacco smoke. But let it eat cucumber or Gloxinia leaves, and a few puffs pierces its armour of defence, and it is dead. Hence it is not always needful to give all plants an equal dose of smoke, and it is even more certain that all plants will not endure the same strength with equal impunity. D. T. FISH.

FLORA IN TOWN.

WHAT sweet shepherd is this with the fur cap, the grimy face, the torn jacket, who stands opposite our window, crowned with a hundred wild and garden flowers? Crowned, perhaps, is not the correct word, for the superb regalia is in a wicker casket; but then some of the leaves nod over his brow, and, if you did not recognise the costermonger, might suggest a Roman diner-out. There is nothing pastoral or arboreal about this gentleman, however. "All a blowin', all a growin';" and on being asked from the area the price of a plant, he lodges his stock on the ground, and holding the flower-pot in one hand, he uses the other to give gesticulative force to its value and cheapness. It is a wonder how he contrives to keep alive the geraniums or more delicate azaleas in the awful lodgings to which he retires at night; and yet they survive apparently for several days, and may in the end have the honour of meeting death at a dinner party under the gaseliers, or in the bouquet that lies upon my lady's table.

Shall we find the traditional flower girl in the neighbourhood of a station? Scarcely. Where holiday-bound folk largely congregate, troops of worn, wretchedly-clad girls may be seen offering flowers for sale—but not as in the ballet. They are but unfortunate mendicants in disguise. Poverty and flowers you think ought not to be seen together. The hungry, pinched, wistful face appears more hungry and pinched when associated with the happy gathered children of the nurseries and the fields. And so from an instinct of compassion or sentiment, you give an alms to the flower-girl which you never thought of bestowing on her when she was otherwise engaged. She makes up pretty things for the button-hole of honest little Jones, who has escaped for a day from his office, and who has a necktie that would put the hottest poppy that ever flamed in an August corn-field out of countenance. Flora's alley in Covent Garden does not either present you with any nearer illustrations. The ladies in charge there remind you, perhaps, of the Rose of Sharon, and many of the names over the doors will contribute to the same idea. But you are oppressed with the riches of the place. It is Oriental in its aromatic spiciness and colouring. The sacrificial combinations to be employed at wedding obsequies are distracting to all but possible brides or bridesmaids. To what picturesque uses will these specimens of the art of the bouquetiste in yonder window be put? That bunch of gleaming flower jewels in the corner may be flung at the feet of Zelina, of Marguerite, of Maria, at the opera; or may be placed in front of a private box.

We alight upon our transcendental flower nymph at last. She is retained at the establishments to which those resort who would not think they were dressed without a yellow rose in the coat. She no more gathers flowers than she digs potatoes, and she contemplates them with as little sentimental regard as an apothecary entertains for a Spanish fly. She must, however, practise a certain amount of fascination in order to draw customers to the shop. She charges generally from a shilling up to three shillings for a button-hole flower, but two shillings is the average tariff. With care, a man may dine in the flower he has worn in the Row; but the ferns round the flowers are exceedingly fragile. Some of the bouquet shops have adopted the plan of sending a dozen or so of prepared little bouquets to the hall porters of the clubs. The hall porter disposes of them at a considerably reduced figure, but then it is supposed to be a different affair altogether to have the decoration attached to your lapet by a functionary in a scarlet waistcoat, and by a damsel who takes your florin after that service, with a smile as though she loved you.—*Daily News*.

The Shears in Old Irish Gardens.—The Huguenots of Dublin are credited with the first introduction of the shears, and it was used by them and their disciples with a vigour and a vengeance. Nature's loveliness and wildness was tamed, and an artificial wildness, a thousand times more wild, substituted. The Vandal shears began its sad havoc in the neighbourhood of Dublin, and there was scarcely a nobleman's or gentleman's seat through the kingdom that eventually escaped under its unrelenting usage. Box, palm, yew, evergreen, garden, and roadside hedge was not only docked, but these evergreen shrubs were cut into the shape of men, beasts, birds—wild and domestic. Streams were not let flow as they listed, but were taught to intersect each other, circumscribe islands, and expand into lakes. The Dutch mind of King William's followers had little discrimination or taste as to the effect or nature of landscape—they were not fond of the sunk fosse or fence. Like their countrymen, who beat back the sea, and built up their cities on piles, the Dutch in Ireland beat back the face of nature from their plantations, built up high walls around their gardens and improvements, and unkindly shut out a view of their grounds from the people, and in doing so shut out the view of the surrounding country. Long avenues all in shade, and shady groves all in gloom, were the approaches to their mansions, and heathen deities or myths did services in the form of flower-pots or pedestals on their parterres.—*Dublinensis*, in "*Irish Builder*."

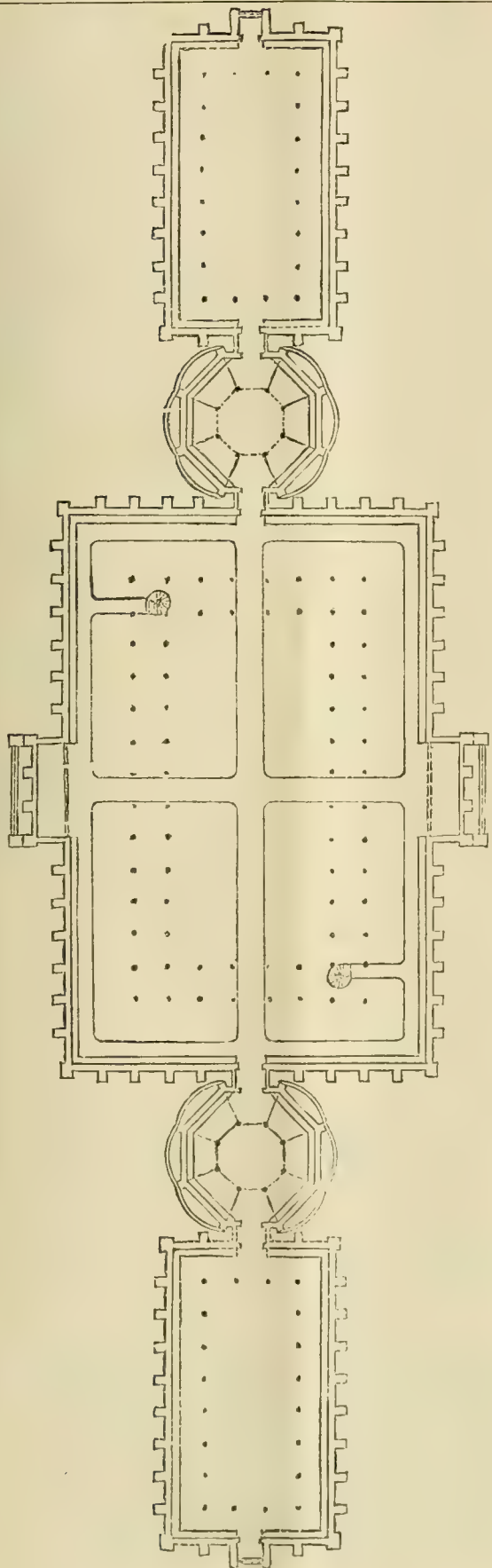
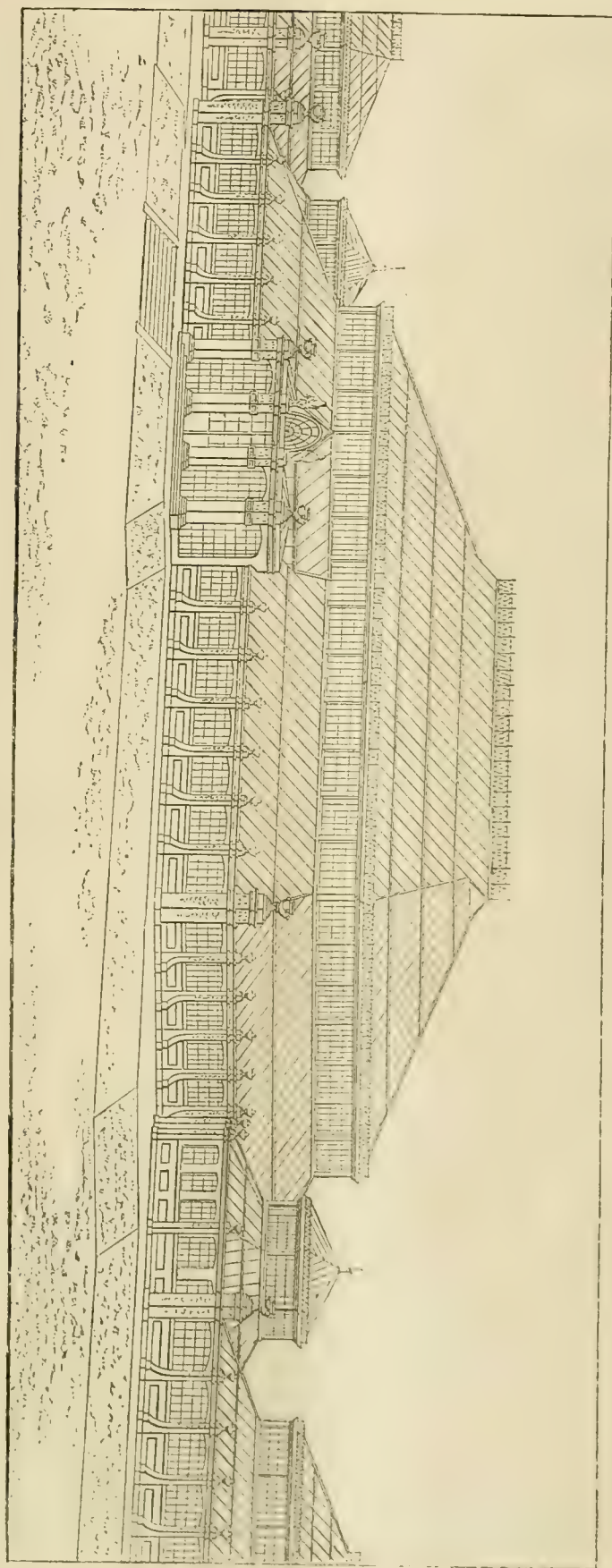
PUBLIC GARDENS.

THE ROYAL GARDENS, KEW.

THE GREAT TEMPERATE HOUSE.

THIS is undoubtedly one of the finest and most satisfactory features of Kew, and one of the noblest garden structures yet erected. The almost unequalled collection of temperate-country plants which it contains, many of them of an ornamental character, and most of them in prime health, planted out in borders, makes it particularly interesting and instructive to all classes of gardeners. In fact, were it not for the awkward arrangement in the central parts of the house, one might point to it as a model of the largest class of winter gardens; but the huge mass of iron pipes piled up along the central walk completely spoils that air of repose which a noble conservatory ought to possess. Indeed, the great number of exposed pipes looks more like what one might expect to see in a factory-yard than in a garden. Of course, there was not the least occasion for thus obtrusively placing these pipes, which might easily have been concealed. In 1859 the Government granted the sum of £10,000 towards building this conservatory. Mr. Decimus Burton was directed to prepare the designs and Messrs Cubitt & Co. were appointed to carry them out. The site is on the west side of the great avenue leading to the Pagoda. The building, as the accompanying plan and view explain, stands on a terrace about four feet high, approached by wide flights of steps at the sides and ends; and consists of a centre and two smaller conservatories, octagonal in shape. The wings beyond these octagons, though we have thought well to show them as part of the plan, have not yet been built. The internal dimensions of this house are respectively as follows:—The centre portion, 212 feet 6 inches by 137 feet 6 inches. Each wing will be 112 feet 6 inches by 62 feet 6 inches. The intermediate octagons, 50 feet in diameter. The total length of the building will be 582 feet, and its superficies, 48,392 feet—about 1½ acres. The Palm House at Chatsworth contains about 15,276, that at Kew, 24,200, and the conservatory at Sion, 7,785 superficial feet. The building presents an ornamental continuous façade, having wide glazed openings and stuccoed piers, on a stone plinth two feet high. The centre roof is 60 feet high, and is constructed of wrought-iron framed arch principals, springing at 36 feet 6 inches above the floor from cast-iron standards three feet wide, which are bolted down to granite blocks, bedded in brickwork and concrete. The standards are connected together, at the springing of the principals, by two sets of cast-iron longitudinal arched girders. A gallery-floor of rolled plate-iron forms a continuous bond at this level. A portion of each standard is continued 8 feet above the gallery-floor, to support the curb and rafters of the upper roof. These rafters are of wrought-iron, 52 feet in length, with feathering rolls on each side to receive the sliding lights. There are three tiers of iron purlins, secured to the principals and rafters, and wrought-iron diagonal wind-bracing riveted to the under side of the latter, and vertical bracing on the upper portion of the principals. The upper ridge is of rolled iron, and receives the end of the rafters and an ornamental ridging of cast-iron. A bold cast-iron cornice gutter conveys the water of the upper roofs to a hollow portion of the vertical standards, whence it is conducted through underground iron pipes or tanks under the terrace.

The proposed wings will be 37 feet 9 inches high in the centre, the roofs formed by wrought-iron arched ribs springing from cast-iron columns, which serve as rain-water pipes, as in the centre house; cast-iron spandrels support the rafters on which the lights traverse. Straight instead of curvilinear rafters are necessarily adopted, to allow of the roof being uncovered during several months of the year. An apparatus for moving the sliding roof-sashes has been devised, by means of which the three upper of the four tiers of lights covering the sides of the roof of the centre house are passed one over the other, and rest on the lowest tier. The power employed is that of the wheel and endless screw, worked at the level of the gallery, and is such as will enable one man to cover or uncover each bay of five hundred feet superficial area in about five minutes. The vertical sashes throughout are hung on centres. Those on the ground floor and gallery are opened and shut by hand,



VIEW AND PLAN OF THE GREAT TEMPERATE HOUSE IN THE ROYAL GARDENS, KEW.

and the remainder, together with the lights of the lower roofs, by machinery. About 63,848 superficial feet of glass have been used. There are vaulted basement stories to receive the heating apparatus under the octagons, in which the trees and plants which require most warmth are placed. The temperature of the other compartments is only about 40° in winter. The heating is effected by hot water circulating in four cast-iron pipes placed under the filleted tables around the sides of the house throughout. The centre contains four thousand yards' run of pipe, the wings will have two thousand yards, and the octagons have seven hundred, or collectively about seven thousand yards ($3\frac{3}{4}$ miles). There are gravel paths and beds for plunging trees and plants throughout, except in the octagon buildings. The water tanks contain upwards of 130,000 gallons collectively, from which the water is drawn by means of pumps placed in convenient situations in the building.

THE FRUIT GARDEN.

THE BEST HARDY FRUITS.

VERY recently Mr. D. T. Fish suggested, in the pages of the *Florist and Pomologist*, the desirability of gardeners in different parts of the country giving their opinion of the fruits most desirable to be cultivated in our gardens. This invitation has been responded to by sixteen of the most experienced gardeners in Britain, and the result has been tabulated, giving the names of all the fruits enumerated, and the number of votes for each variety. Of course, each reporter speaks from his own source of observation, and hence, though the winning fruits are indisputably excellent, it is not too much to say that many of the unsuccessful varieties are not less deserving of cultivation, though not so generally esteemed.

The most remarkable result of the selection is that, notwithstanding the wide amplification of our trade catalogues, the parade which has been made of "magnificent new varieties," and the certificates awarded to them, in no single instance does a new fruit of the last quarter of a century advance to the front position; if it does, it is the Victoria Plum, which gains thirteen votes, against twelve for Greengage, eight for Coe's Golden Drop, seven for Early Rivers, the same for Jefferson, and five for Kirke's, which are the six selected. Still, twenty-four other varieties are named, among which are several of great excellence, as Reine Claude de Bavay, Autumn Compôte, Washington, Pond's Seedling, Prince of Wales, &c., while some, looking to seasonable supply no doubt, recommend Damson, Prune Damson, and even White Bullace.

Beginning, however, at the beginning of the list, for the best two Peaches, Royal George leads with ten supporters, and Barrington follows with five; Bellegarde, Grosse Mignonne, and Noblesse occupying third place, each with three supporters. Of new kinds, Early Alfred is the only variety named, and that with one supporter only. Téton de Venus and Walburton Admirable rank in the same category, though in their season both are first-rate.

In Nectarines, Elruge occupies the place of honour, with ten votes; Downton and Violette Hative having four each for second place; Victoria (Rivers) ranks with Pitmaston Orange for the third position; while Pine-Apple (Rivers) and Rivers' Orange have each only a single supporter. Mr. Baines, I see, supports Balgowan, and I share his appreciation. As I knew it twenty years ago or more upon the peach wall at Chiswick, it was one of the finest and best nectarines I ever saw, though I have shown some of them weighing eight ounces each.

For the best two Apricots, I might almost say there is only one candidate, and that is Moorpark, with fourteen votes; Kaisha and Orange following with four each, though the latter, except for preserving, is not worth wall room.

For the best three Cherries, May Duke is first, with thirteen votes; Elton follows with six votes; and Black Tartarian holds third place, with five votes. Of course, these are all summer cherries, and though good in their way, are not, for general usefulness, to be compared with Morello and Kentish, as these, properly managed, are all-the-year-round cherries.

In Red Currants, Raby Castle holds the first place, with twelve votes; Red Dutch is second, with nine supporters; while

all the rest may be said to be nowhere. In blacks, Black Naples has fourteen supporters.

For the best four Gooseberries, Red Warrington has fourteen votes, Whitesmith nine, and Red and Yellow Champagne four votes each. Twenty-one additional kinds are named, among which, as a dessert fruit, Greengage is an excellent variety, not so well known as its suggestive name and superior flavour demand. Of the best four gooseberries for size, London is first, with seven votes; Antagonist and Thumper have equal second places; Crown Bob, Roaring Lion, and Stockwell stand third; while Green Overall and Wonderful are equal for fourth place, fifteen others being named.

In Pears, Louise Bonne of Jersey is first, with twelve votes; Marie Louise second, with eleven votes; Williams's Bon Chrétien has the third place; while Beurré Diel and Winter Nelis share fourth honours; Beurré d'Amanlis, Josephine de Malines, and Jargonelle the fifth place; and Bergamotte Esperen and Jersey Gratioli the sixth place. Twenty-seven other varieties are named, among which Doyenné du Comice and Beurré Rance are not the least meritorious. What surprises one, looking to supply, is that the last-named should only have one supporter, seeing that as a spring pear it has no rival. Thompson's and Knight's Monarch are in a similar predicament, and so are many other fine kinds. For many years in the early part of my life, Beurré Diel was found worthless; indeed, the first time I ever tasted it really good was in North Wales, on the sea-board, and I have since found it excellent in this county.

In Apples, Dumelow's Seedling, or what in the Midlands we call Normanton Wonder, and in other places, Wellington, holds the first place, with eleven votes; Blenheim Pippin, which is here called Blenheim Orange, the second place, with ten votes; Cox's Orange Pippin has the third place, with nine votes; Lord Suffield is fourth, with nine votes; King of the Pippins is fifth, and Cox's Pomona sixth. In addition to these, thirty-seven other kinds are named, all more or less good, and some super-excellent. What surprises us Notts folks is, that two of our favourite kinds, the Eve, or Pomme de Paradise, and Bess Pool, are altogether ignored. The Eve, as an autumn dessert apple, is scarcely inferior in flavour to the American Newtown Pippin as imported, while in fruitfulness and beauty it has no superior. In our markets it will always command twenty-five per cent. more than any other kind, and when scarce, fifty per cent. The same may be said of Bess Pool for quality, but it is an uncertain bearer, and given to crack.

In Strawberries, Keens' Seedling stands pre-eminent. Dr. Hogg is second, while Sir J. Paxton, President, and Sir Charles Napier are equal for the third place. Thirteen other varieties are named but only four of them got a single vote each; that best of all strawberries, where it can be grown, the British Queen, being in that predicament.

In Raspberries, Fastolf is first, with ten votes; Red Antwerp second, with five votes; and Prince of Wales third; while for the remaining varieties scarcely a dual vote is recorded.

So far, then, as this appeal to the country is concerned, the result is decidedly conservative; our old institutions are in the main supported, and though many radical changes have been forced upon us, this test vote is not in their favour. More than ever, then, I say to fruit-growers, Look to selections, not collections, for though among the "novelties and new things" there are, undoubtedly, some sterling acquisitions, their number is few and the difficulty of selection great.

Newark-on-Trent.

W. P. AYRES.

Mexican Bread Fruit or Chayota Plant.—Dr. C. Naphegyi lately read a paper, at New York, descriptive of a plant which he said had been introduced from Mexico. It was there called the Rima or Chayota plant, and bore a fruit covered with a thorny skin, containing a juicy pulp and one seed. Besides this fruit, it produced a crop of tubers similar to potatoes on the roots, and so far as he knew, was the only plant that thus produced a double crop. He believed it would be a valuable acquisition to that country. The fruit was pleasant and nutritious when cooked, and the roots were much like potatoes when boiled, and furnished a farina or flour similar to arrowroot. It was productive—bearing eighty fruits and three to five bushels of tubers on a single plant. It could be grown in New York by being started in a hotbed in the fall and protected until May, when it might be planted in the open ground. It required eighteen feet of ground for each plant.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Orchards of Seedling Trees.—As regards seedlings, or, as many call them, kernel trees, I find that some plums will reproduce themselves from seed without much variation, such for example, as the German Prune. I believe it is propagated throughout Germany in this way. The Greengage I have also had from seed without much variation. Apricots, too, come pretty true from seed.—J. P.

Monstera deliciosa.—I wish to fruit this noble-looking plant, and shall be glad of few hints to that end.—J. S.—[Nothing can be easier in any stove or structure in which a pretty high temperature is kept. It is best planted out in rich loam, and afterwards merely requires plenty of water and heat. It grows freely in any shady position, but when we desire to perfect the fruit thoroughly in this dull clime, it is certainly much better to give it the full sun, and not keep it too far from the glass.]

Orange trees in Vineries.—I should like to see the good (if old) fashion of planting out orange trees against the back walls in vineries once more revived. There is no more ornamental covering for the wall; the trees thrive and fruit well in the shade of the vine, and with very little trouble to the gardener. The flowers as well as the fruit would prove very acceptable, and many a back wall now bare would be rendered both beautiful and useful by covering it with orange trees.—H. V.

Best Dessert Pears.—Kindly give me a selection of the best dessert pears, as I am planting a fruit garden.—*EMILY.*—Jargonelle, Louise Bonne of Jersey, Urbaniste, Flemish Beauty, Marie Louise, Williams's Bon Chrétien, Beurré d'Amanlis, B. de Rance, B. Diel, B. Superfin, B. Hardy, B. Sterckmans, B. Easter, Knight's Monarch, Bloodgood, Baronne de Mello, Bergamotte Espéren, Winter Nelis, Josephine de Malines, Thompson's Pear, Duchesse d'Angoulême, Glou Moreau, and Fondante d'Automne.]

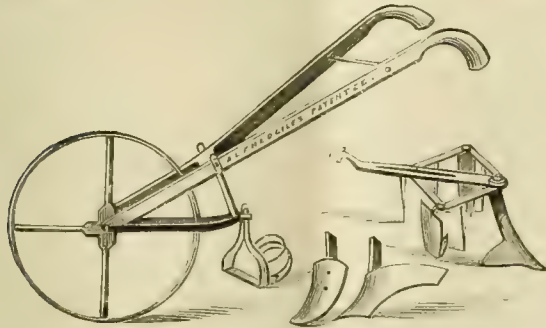
Cause of Bunches Dropping off Vines.—I beg to inclose for your inspection two bunches. The vines broke well, and the bunches formed perfectly, but before they came into complete bloom every one decayed and fell off. The vines are in pots, well established; they are in a temperature varying by day from 65° to 70°, and by night from 55° to 60°. The house is kept moderately moist; all the bunches go in the same way; some on which the berries are only just formed are gone.—J. A.—[This frequently happens also with pot vines which have been forced on in advance of the roots, or whose roots are in some loose, rich material, such as rotten manure or leaf mould.]

TOOLS, IMPLEMENTS, &c.

GILES'S PATENT HAND GARDEN PLOUGH AND GENERAL CULTIVATOR.

This is a very handy and effective little implement, especially adapted for manual operations for the cultivation of the soil on a small scale, as in gardens, nursery grounds, and market gardens, cottage gardens, or allotments, &c. It is the patented invention of Mr. Alfred Giles, Rugeley, Staffordshire.

This novel cultivating appliance has not long been introduced, and has gained reputation as a labour-saving machine, being well



Hand Garden Plough and General Cultivator.

adapted for hoeing and scarifying between root-crops, drills, or ridges, in garden or field, and entirely superseding ordinary hand-hoeing. As will be seen from our engraving, it consists of a single light wheel, carrying a light and strong wrought-iron frame to which a variety of implements can be affixed, which conjointly make it a most economical, complete, and useful machine. A light but strong steel shovel is adapted for marking out rows for planting, or for loosening up the soil after the young plants are up. There is also a small steel plough, which can be used for the purpose of ridging up the rows when desired; and a weed-cutter, with rake attached, for hoeing out and exterminating weeds and generally pulverizing the ground and obtaining a good clear tilth. All these pieces are made separate, and can be easily and readily affixed or detached, by the aid of a small iron wedge. When in operation this implement can be pushed by hand through the ground, stirring the surface soil, to the depth of six inches, whether light or heavy. It is exceedingly light, strong, and neat in construction and appearance, and adapted to the purposes designed.—*Mechanics' Magazine.*

A PRUNING CHISEL.

THE use of a heavy chisel in pruning has often been advocated in these columns. We give below a description of one used by Mr. J. S. Needham, West Peabody, Massachusetts. The drawing is one-fourth the real size, which is, including socket, 9½ inches long, and from the point to the shoulder, 4½ inches. Width across the point, 2½ inches; narrowest part, near the socket, 2½ inches. The cutting edge, which is alike on both sides, is bevelled back to a distance of five-eighths of an inch from the edge. The chisel is three-eighths of an inch thick near the shoulder, and tapers gradually to a strong point. A somewhat similar tool is made in Pennsylvania, and the manufacturers would do well to place it more prominently before the public. In a note accompanying his drawing, Mr. Needham says:—

"I find that by standing upon the ground I can see much better what limbs ought to be removed to preserve the balance of the tree, as well as those that are soon to interfere and chafe each other. I could make but slow progress with a long-handled saw; and by using a common chisel a portion of the bark on the stub would be



New Pruning Chisel.

started up. This chisel, having a concave edge, cuts drawing; the outer edges entering first, operate as a wedge, leaving the dead cut at the centre, with very little friction. By having a handle four or five feet long, most of the branches of any orchard of less than twenty years of age can be reached. By placing the chisel drawing-wise, branches 1½ inch and less in diameter can be cut off by four or five blows with a common mallet. The stub is left smooth, slightly convexed in its centre, with the bark unbroken. The work has a finished look, and is done in less than one-fourth the time in which it could be done with a saw. The cost of this chisel, made to order (by a pattern), was one dollar."—*American Agriculturist.*

The Best Kind of Garden Trowel.—I have tried to get the trowel you figured and praised so highly at p. 181, but have not succeeded. Will you kindly tell me where it is to be got?—S. S.—[It is manufactured by Messrs. Wm. Hunt & Sons, Brades Steel and Edge Tool Works, Oldbury, near Birmingham. The letters marked upon the trowel (W. H.) are their initials, and the crown signifies that the trowel is of best quality—all solid cast steel. These trowels may be obtained of any respectable ironmonger in the United Kingdom.]

THE PROPAGATOR.

LITHOSPERMUM FRUTICOSUM.

This singularly beautiful little plant is a real gem on outside rockeries in spring and early summer, the intense blue of its flowers being quite equal to that of any of our alpine gentians. It is a compact-growing, old-fashioned, little plant, and the freedom with which it may be increased, places it within the reach of everybody. It may be propagated either by means of division, or by cuttings inserted in a warm border under a hand-light in summer, and shaded for a few days with a piece of mat or other material. The following is, however, the best and most certain mode of increasing it:—A few of the plants should be lifted and potted early in autumn, so that they may have time to get well established before the winter, and have the protection of a cold frame after the middle of November. The sashes should, however, always either be drawn completely off, or tilted up on the side opposite to the direction from which the wind blows, unless the weather is too severe to permit of such being done. Towards the end of February these plants should be looked over, cleaned, top-dressed, and introduced into the propagating pit. This sudden change induces them to make young growths rapidly, which may be taken off and inserted as ordinary cuttings. They strike root readily, when they should be potted singly into thumb pots, and again plunged in bottom heat, where they soon establish themselves, and, after they make another two inches of growth, their points should be cut off for a similar purpose. A week or so after being deprived of their tops they should be lifted out of the plunging material, and, after being levelled, set for a day or two on the top of it; then they should be placed on a side-shelf near the light.

Unless it is necessary to obtain a large stock of this plant, it is not advisable to take more than one cutting off each cutting; but the old plants, from three weeks after they are brought in until a sufficient quantity of young plants has been obtained, will, if properly treated, continue to yield cuttings abundantly. No flowers should be permitted to develop themselves during the season of propagation, as their

presence only hinders that work, as well as exhausts the plants. Thus treated, compact little plants may be had in about two months, and before planting them out they should be gradually but thoroughly hardened off; indeed, I do not think they can ever be safely trusted outside before May. Six or eight good plants started in this manner in February should, by the end of April, furnish at least three hundred good young plants.

W. F.

Primula japonica.—This seeds freely; a fact which many will be pleased to hear. The seeds should be sown in light soil, mixed freely with silver sand, in pans, placed in cold frames, where they should be allowed to remain until they germinate. Two years may probably elapse after sowing before the young plants appear. Several pans of this seed sown in September 1870, and treated as I have described, are only now showing signs of vegetation. The young plants are now, however, coming up nicely. The first of them appeared about the beginning of last month, and were pricked into other pans, which are kept in a little heat; since then they have made considerable progress. The seed pans from which the first lot was obtained have since then produced another supply, and others may also continue to come up in succession, until all have germinated. Hitherto many good seeds have, doubtless, been thrown away ere they came up, a circumstance that happens too frequently with other things besides this primrose. Another cause of failure is placing the seed pans in heat; they should be kept cool. After the young plants are pricked off and potted, they are sometimes benefited by a little heat, just to start them afresh; but they must afterwards be carefully hardened off.—W. F.

Striking Cuttings of Bedding Plants.—Allow me to contribute a small item to Mr. Gardener's excellent plan (see p. 431) of striking bedding plants, which I think will render it still more simple. If the small pans which he mentions are filled with sand, and sufficient water is then poured on from a rose to just cover it, the most delicate cutting (that is not flagging), may be easily stuck in without the aid of a dibble, which is certainly a saving of time. I may also add that in propagating such things as, *Verbenas*, *Ageratums*, *Iresines*, &c., in spring, it is not at all necessary to cut to a joint, or to remove the leaves at the base; the cuttings may be inserted just as they are taken off, provided the first joint is placed below or on a level with the surface.—A. BRIDGEMAN, *Whitfield, Dover.*

Raising Ferns from Spores.—Can you or any of your correspondents give me a few hints about raising ferns from the spores or seeds? How am I to know when the seed is ripe for planting, and what is the best mode of effecting it? Can it be done out of doors, or must the ripe fronds be picked off and put into a pot for the winter?—P. W.—[You will know when the seed is ripe by the rich brown colour of the spore cases on the back of the fronds, the lower ones always ripening first. If gathered dry, and placed in a paper bag, the seeds will preserve their vitality for a very long time. You can sow them as soon as they are ripe, in the open air if you choose, but your chances of success will be greater if you sprinkle the seeds on the surface of moist soil in a seed pan, in a cool pit devoted to ferns, &c., not covering them with soil, but placing a sheet of glass over the pan, and keeping it there until the seeds have germinated. The seed pan should be kept moist by standing it in a water pan.]

Paramelle's Researches in Reference to Subterranean Water.—Allow me to direct attention to a modern, and yet imperfectly known, science, the application of which has considerable practical importance. I refer to the science of studying subterranean waters, the kinds of ground where they are to be found, their flowing, the physical laws that govern their abundance or scarcity, and their depth. The circumstances accompanying the circulation of water on the surface of the earth have been thoroughly studied, but few persons have surmised what becomes of the rain-water absorbed by the earth, and still fewer have tried to account for its disappearance. A Frenchman, however, named Paramelle, resting his researches on sound geological knowledge, devoted himself to the solution of this problem, and to the application of principles which he had discovered by long experience. The science is now complete, and has received the name of "hydroscapy," or subterranean hydrology. Its applications are perfectly definite, and among them we must place in the first rank the discovery of springs and selection of well-sites. The immense practical benefits it is possible to reap from such a science should be well considered, for many towns, villages, and private estates, at the present time are deprived of water, or obliged to get it from remote places at an enormous expense; but so grave a deprivation is no more irremediable. Within easy access of every village, almost of every house, and generally at a little depth below the surface of the soil, there exist subterranean streams of water. By a simple digging (indicated after a thorough survey of the place, and not by the aid of those clever divining rods that have made so many dupes) one can channel out these hidden streams, and make them flow on the surface; or else, a well can be sunk on their course, and the place formerly deprived of water will become abundantly supplied with it. No science deserves more to be studied, yet it may be opposed that these are promises of theory, and that practice may considerably lessen such expectations. To this I will reply, that the applications are not to be made, that Paramelle has discovered in France over 9,500 springs, and that he has disciples, who are not less successful than he was, who continue to illustrate by facts the excellence of the method.—LEON JOURD'NUI, *Twickenham.*

THE ARBORETUM.

PICEA AMABILIS.

THE Californian silver fir tree, of which the annexed is an illustration, is that known to arboriculturists as *Picea amabilis*. It is taken from a photograph of a view in California, in the Yosemite Valley, in which a fine specimen occupies the central position in the landscape.

We have had to use the qualified expression of "known to arboriculturists as *Picea amabilis*," because, although generally known by that name, it is not the name by which it would be known if the laws of priority were respected. But this is just one of those cases which show how powerless all laws are against any practice to which common consent has given permission and currency; and there is justice in the disregard of law here, because it adopts the course desired by the original discoverer of the tree (David Douglas). It is surprising that there should be any confusion in the synonymy of this species, for of all the Californian flat-leaved silver firs, *P. amabilis* is the most easily recognised; and is, indeed, at once distinguishable by its foliage alone. There are three types of foliage among silver firs in California. There is the curly-leaved type, as *P. nobilis* and *magnifica*; then the flat-leaved type, in which the leaves are disposed on each side of the branchlet, with few or none along its upper side, as *P. grandis* and *Lowiana*; and, lastly, the flat-leaved type, with the leaves liberally and flatly applied to the upper surface of the branchlet as well as to its sides. This is our tree—*P. amabilis*.

It is between it and *grandis* that the confusion has arisen. *Lowiana* and *lasiocarpa* (if there be a *lasiocarpa* different from *Lowiana*) were then unknown, but Douglas sent home to the Horticultural Society specimens and seeds of two kinds, which he proposed to call respectively *grandis* and *amabilis*.

Lambert first described one of these (our tree), but he inverted Douglas's names, and described his *amabilis* under the name of *grandis*, and, most unfortunately, he either figured the foliage from a stripped branchlet, from which many of the leaves had fallen, so that it looked more like *grandis* than *amabilis*, or he mixed up the specimens, and took the cone of the one and the foliage of the other. But the description and the other details leave no doubt that *amabilis* was the tree which he meant to describe. A year later (1832) Dr. Lindley was engaged in writing the botanical part of "The Penny Cyclopædia," and when he came to *Abies grandis*, he, having to give a description of it, referred to Douglas's specimens, which were then in his hands, and although he apparently did not know that Lambert had inverted the names, he probably observed that his description of Douglas's *grandis* was not a correct description (which of course, not being meant for it, it could hardly be); and so, taking the original specimens ticketed by Douglas himself as his guide for *grandis*, he described it from them under that name. That description, of course, does not apply to our present tree.

Next came Loudon, who took one half of his figures from Lambert's figures (which were *amabilis*), and the other half from Douglas's specimens of *grandis*, and his description entirely from Lambert. The evidence of all these circumstances will be found given at length in one of Mr. Andrew Murray's papers on the synonymy of conifers, published in the *Proceedings of the Royal Horticultural Society* in 1863. Strictly speaking, therefore, the rule of priority would reverse our present names; but amid so much misconception and blundering we apprehend that, on the whole, the common sense of arboriculturists has done wisely in sticking to the names originally proposed by Douglas himself.

The name *amabilis*, given by him to this tree, is well chosen. It is truly a lovely fir; it is the American type of *Nordmanniana*, darker and greener in the hue of its foliage, but not more lovely. Of course, we have no large trees of it in this country, and can only form an idea of what it will grow to by means of drawings or photographs taken from specimens in its native country. But we have already observed one thing with regard to these, as compared with the result in this country, wherever Californian trees have already attained some size with us, and that is that they are turning out much handsomer trees



PICEA AMABILIS IN THE YOSEMITE VALLEY.

here than the Californian photographs would lead us to expect. All the coniferous trees, especially the fir trees in North-West America, as they appear in the photographs sent home, have very much the same port; drawn-up, narrow, and confined, like a grenadier at attention. Such is the Douglas fir in California and British Columbia. But not such is its port here. There it has grown hedged in by a close growth of other trees of the same kind, and so has been drawn up. Here, where it has not been so dealt with, where it has been "trained abroad its arms to wield," it sends out immense branches on every side, like great trees thrusting themselves obliquely to heaven, from the trunk. So, no doubt, will it be with others, and so may it be with *amabilis*; we admire its beauty in the plate on the opposite side, but that may not be the beauty which we shall find on our lawns. We may fairly look for "another beauty and an added grace," when dealt with by our gardeners here.

GREAT MORTALITY AMONG EVERGREENS IN AMERICA.

THE winter's frost has caused wide-spread disaster. From Virginia to the Canadian shores, and from the eastern slope of the Rocky Mountains to the Atlantic, evergreens are everywhere dead or dying. Millions of dollars' worth of hardy plants, says an American paper, that have for years withstood the northern winters, now show the ravages of the zero weather of the last season. Norway spruce, pines, arborvitæ, junipers, rhododendrons, dwarf and standard roses in public parks and private gardens have "put on the sere and yellow leaf," their symbols of decay. Long Island has suffered severely. In the gardens at Astoria, where immense numbers of evergreens were growing for sale, the loss is estimated at hundreds of thousands of dollars. Rows of arborvitæ, containing thousands of plants, are absolutely valueless. Prospect Park and the private gardens in Brooklyn have not been spared in the general disaster, and the gardeners at the Central Park, New York, pronounce the loss in those grounds almost irreparable. At Flatbush, and in Westchester county, the loss has been very great. Some of the nurserymen have lost their entire stock. In other places the effect has been peculiar. Plants of the same age and apparent health, growing in long rows, have been touched at intervals of a few feet. The first dozen in the row are dead, and the next half dozen are well and thrifty. In Brooklyn, the plants on the north and east side of the houses have suffered most. In New Jersey it has been noticed that plants which were shaded from the winter sun have escaped the worst effects of the season, and may be saved with much trouble and time. The reports from the vicinity of Boston and further east confirm the sad tidings of what was only rumour a few weeks ago, and from the great nurseries at Rochester, the Ohio Valley, and even further west the words come to us, "Our evergreens are dead." The causes assigned for this unexpected loss are various, but from among them the following may be taken as having in them most of probability: First, it is said that the warm days of February gave the plants an early start, as if the spring had really opened, and then when all were swelling with new life the weather changed again to hard winter freezing, with cold March winds. Another view is that the plants were killed very early in the winter. There was not a gradual diminution of the temperature as in former years, but the season came suddenly upon them before they were properly shielded or prepared for it. Their colour changed slightly, but not enough to cause alarm, and although the plants remained green they were dead. Only when the warm weather of the last few weeks started the other plants into general activity was the damage to the evergreens visible.

Mr. Sargent says, in reference to the effects of the severe frosts of March on the trees and shrubs at his place on the Hudson, that "it would be difficult to give with certainty the cause for the severe damage inflicted upon almost every sort of vegetation without first recapitulating the beginning of the evil two years ago, in a very severe drought, so severe as to denude many trees of their foliage in August and September; a mild and wet and somewhat protracted autumn followed, during which many trees made a late growth and had not sufficiently ripened their wood at the commencement of cold weather. This was especially true of the late-growing conifers, such as Sequoias, *Cryptomerias*, *Cupressus* of various sorts, as well as pears, which in many instances were in blossom in October. Fortunately the winter, with one or two early exceptions, was a mild one, and the injury done to the immaturely-ripened wood was comparatively unimportant. Another dry summer, that of 1871, followed, causing irregular and imperfect growth, in many cases late into the autumn. On the 20th of September there came a

sudden and severe frost, late in the evening, cutting everything in the least tender to the ground, and even browning some tender tips of the late-growing evergreens. This was followed by mild weather for several weeks. But no doubt unusual disturbance took place in the circulation of many trees at this time, so that they went into their winter quarters not well prepared to resist hard weather. Unfortunately a very unusual condition of weather came on the 4th and 5th of March in the shape of hard dry cutting winds, with the mercury only four degrees above zero—at this time the ground, entirely unprotected by snow, was frozen to the depth of from three to five feet, and of course perfectly dry, thus entirely preventing all plants, during this fearful evaporation from the excessive cold winds, from obtaining the slightest assistance in the way of moisture from the roots. For the next two days there came a surface thaw and some snow which melted soon after it fell, but the ground was so hard and the frost so deep that the water remained on the surface as on a floor, freezing at night and melting by day for a week, but totally unable to penetrate the ground. The roots of the trees were held all this time as in a dry iron vice. This coming upon plants so enfeebled by the condition of the preceding two years, caused the severe damage which seems to have extended over all the middle and eastern States. The most perplexing thing is the extraordinary irregularity of the injury. Plants and trees heretofore considered tender even in the mildest winters, are uninjured, while others perfectly hardy are killed. An old beech hedge here is completely riddled; so likewise a hemlock and Norway spruce hedge; a large *Acer campestre*, twenty-five years old, killed; so is a large deciduous cypress, twenty-five feet high; another by its side uninjured; three large *Abies Menziesii* killed, though heretofore hardy in the worst season; beds of English ivy on the ground, having the protection of the warmth of the soil, killed; immediately adjacent, on a wall, hardly touched; rhododendrons generally killed back though with some green wood—those protected by wooden houses have suffered quite as much; evergreens as well as deciduous trees, standing side by side, of equal size, age, and apparent health, one taken and the other left, and yet peach trees are not only an exception, but the amount of bloom upon them is greater this year than I have ever known for twenty-five years. *Berberis*, many killed, some only partially injured; half the wood and all flower-buds of hardy azaleas killed; ledums, hardy heaths, rhododas, and similar plants, killed; the dwarf forms of *Abies excelsa* are all killed; while *Abies Kämpferi* is uninjured; most of the pinuses have escaped; the deodars have been killed, while Cedars of Lebanon are uninjured; cypresses and junipers are generally safe, as is also the umbrella pine; *Thujopsis borealis* and *Thuja aurea* are unharmed; among things that have wholly escaped are magnolias, honeysuckles, oaks, &c. To add to our perplexity we have not only lost our trees, but we have not learned any lesson from our misfortunes. We can only regard it as an exceptional year which, like an earthquake or deluge, may never occur again, but if it should, I do not see how we can prevent the devastation, even if we knew it was coming."

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE ELONGATED CYTISUS (*CYTISUS ELONGATUS*).

THIS forms a wide-spreading bush, from three to four feet high on its own roots, with many long, slender villous, twig-like shoots, which, in April and May, are completely weighed down by the numerous bright yellow flowers put forth along nearly their whole length; and when grafted standard-high on the Laburnum, none of the pendulous species are more beautiful. In winter it requires to have the branches that bloomed the previous season more or less cut out, as they often get completely exhausted; but numerous young ones are produced from the base to take their places the following season, none of which should be shortened. The leaves are trifoliate, with the leaflets obovate, and clothed beneath with closely-pressed hairs. The flowers are lateral, pea-shaped, somewhat tubular, bright yellow, and usually produced in fours on short footstalks along the shoots, pods straight, compressed, nearly black, and ripe in September.

This *Cytisus* is a native of Hungary, where it grows in woods. It succeeds in any good garden soil, and is easily increased by grafting, or by means of seeds. It was first introduced in 1804.

There are numerous suburban gardens with lawns too small to be cut up with clumps, yet capable of accommodating a few select small trees dotted about them, and for such a purpose nothing can be more suitable than this *Cytisus* grafted,

standard high, on the Laburnum; it then forms a highly ornamental object on the grass, and the surface round the stem need not be left bare. *Cytisus multiflorus* and *ruthenicus* are mere varieties of this species.

Pyrus Malus floribundus.—This will be found to be a valuable addition to spring-flowering shrubs. Seen, as I have seen it to-day (April 13th), in the sheen of a spring-day sun, it is indeed "a thing of beauty," and if not "a joy for ever," at least a joy for some weeks. In the bud state the flowers are a rich blood colour, passing to earmine pink, and as the bloom expands to delicate pink and white. The foliage, which appears with the bloom, is a rich dark green. When I say that the flowers are chaste enough to be employed in bouquets or as table decorations—that the plant is perfectly hardy, suitable alike for the forcing house, or the open air, and that it may be grown as a bush, a pyramid, or a standard, I presume I have said enough to induce those interested in such plants to see it and judge for themselves.—W. WALTERS.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

The Umbrella Pine.—Will any of your readers oblige by telling me where I may see the largest specimens of the Umbrella Pine (*Sciadopitys verticillata*) of Japan, and, if convenient, furnish me with the size of the largest specimens?—DARTMOOR.

—In reply to "Dendrophyllos" (p. 573), I may assure him that this pine is perfectly hardy in the latitude of London. I am not sure where the largest specimens are, but there are good ones at Coombe Wood Nurseries.—J. S.

Noble Cedars of Lebanon.—I lately visited the long-famed Cedars at Pain's Hill, and was very much struck with their dignity and beauty; but more so by the rather uncommon form of one or two of the trees. We all know how grandly diversified in habit the Cedar of Lebanon is, but its tendency generally is to spread. This makes the tree all the more valuable, because almost every other pine rushes straight to the sky, and is symmetrical in habit. One or two of the trees at Pain's Hill, however, are like the big Californian pines in the height and straightness of their enormous trunks, while not losing that picturesqueness of outline which is so marked a feature of this Cedar.—H. V.

Euonymus japonica as a Seaside Plant.—I can endorse what is said with reference to this matter at p. 573, but about its hardness otherwise, my experience is against it. In dry places, upon rockwork, or on very gravelly soils, it will do, but a very severe winter will even then hurt it much. For cold places I do not think it at all adapted. Here, in one of the most salubrious valleys in England, a severe winter destroys it. I have grown thousands of the gold, silver, and green kinds, but all fare alike, when Jack Frost pinches hard. I therefore invariably protect most of my plants in winter. I find the gold, green, and silver kinds of *Alaternus* about the same in hardness as the *Euonymus*—but by all means let them all be grown near the sea. I am fifteen miles from it, due north.—J. SCOTT, *Merriott, Somerset.*

Loranthus europæus.—In No. 17, p. 373, of THE GARDEN, Mr. Gordon suggested that some one should endeavour to introduce this singular parasite from the south of Austria to our oak woods in Britain. It was stated that Von Martius had succeeded in growing it artificially. If Mr. Gordon will be kind enough to state the name of the work in which any account can be got of this Loranthus having been propagated artificially, he will greatly oblige an Old Friend.—[Mr. Gordon, to whom your query has been submitted, says that Dr. Von Martius rearranged and defined the genus *Loranthus* in De Caudullo's "Prodromus," and adds that no doubt his experiments on the propagation of the Austrian Loranthus is to be found in some of the Bavarian publications. His own knowledge in reference to its nature and propagation was derived, he states, from a private correspondence which he had with the late Baron Jacquin, of Vienna, several years ago, when he was endeavouring to have the parasite introduced into England, but in which he failed, owing to the great length of time the berries were in the transit, a circumstance that will not arise now in these days of quick locomotion.]

FLOWER-VERSES.

BY CHRISTINA ROSSETTI.

The lily has an air,
And the snowdrop a grace,
And the sweet-pea a way,
And the heartsease a face;
Yet there's nothing like the rose
When she blows.

Where innocent, bright-eyed daisies are
With blades of grass between,
Each daisy stands up like a star
Out of a sky of green.

The rose with such a bonny blush;
What has the rose to blush about?
If it's the sun that makes her flush,
What's in the sun to flush about?

O Wind, where have you been,
That you blow so sweet?
Among the violets
Which blossom at your feet.

The honeysuckle waits
For Summer and for heat;
But violets in the chilly Spring
Make the wood-path sweet.

THE KITCHEN GARDEN.

THE CUCUMBER—ITS CULTIVATION.

(Continued from p. 628.)

THE CUCUMBER UPON WALLS.

Those who have walls facing south, south-east, or south-west, and in a tolerably sheltered situation, may grow Cucumbers very successfully by training them upon such surfaces. Of course this will be more trouble than growing the plants upon the ridge, inasmuch as the training and nailing must be regularly attended to; but in such situations we have generally found we could grow the finer kinds of frame and house Cucumbers with considerable success. If the wall is devoted entirely to this kind of cultivation it will be wise to take out a trench three feet wide, and a foot deep parallel with the wall, and close at the foot. In this make a hot-bed as previously directed for the ridge, eighteen inches to two feet deep, making the dung quite firm. When the heat has subsided place a ridge of fresh soil one foot deep and eighteen inches wide close to the wall, and then fill in the excavated soil, so as to cover the dung entirely, leaving it sloping to the ground. Upon this, at three feet apart, plant properly-prepared plants, the stronger the better, and protect them for a time by a length of oiled calico or tiffany stretched out in a slanting direction against the wall. This may be supported by stakes placed so as to protect the ridge from cold rains as well as the plants from cold. It will be wise to use this protection for the first month or six weeks, in fact until the plants are thoroughly established. The after-treatment will be much the same as that given to plants upon ridges, but the training must not be neglected, or should strong winds prevail the plants will soon be irremediably injured, if not destroyed. We have omitted to mention that it will be wise to mulch the soil with short grass, and also to thatch it as directed for the ridge.

CUCUMBERS FOR SEED.

In the above manner the Cucumber used to be very successfully grown for seed, but of late years the seasons and the habits of the plants have been too precarious to insure satisfactory results. For seed-growing, the preparation and planting will be precisely the same as before directed, but in dealing with the fruit it will be necessary that each be carefully impregnated by hand, and even then the production of seed is by no means a certainty. Impregnation is performed in this manner:—The flowers produced by the Cucumber and similar plants are sexual, that is, the flowers produced without fruit are male, whilst those produced at the end of the fruit are female. In the centre of the male flower will be seen a small mass of stamens and anthers, the latter being the parts which contain the pollen or impregnating dust. In the centre of the female flower is the pistil or female organ, through which the pollen passes, impregnating the fruit, and seed is the result. Therefore, for the purpose of impregnation, take a male flower, and stripping off it the flower proper, place it firmly upon the pistil of the female flower, and there let it remain. This operation is best performed about midday, and the flowers should be those which have opened the previous day.

Some people imagine that Cucumbers will not swell unless they are impregnated, but that is a mistake, as we have cut hundreds upon which the female flower never opened at all, and consequently there could not have been any impregnation. Besides, if impregnation was indispensable to the fruit, it would be fair to conclude the production of seed must be a necessary consequence, and yet we find thousands of Cucumbers that never produce a seed at all; in fact, it is notorious that the finest formed and most perfectly-grown fruits are the least likely to do so, while, on the contrary, deformed, thick-ended fruits, not unfrequently produce seed. Reasoning from this fact, it is not unusual for growers to tie ligatures around the fruit from which seed is desired, with the impression that such cramping of the parts may tend to the production of seed. But that is a mistake. Seed, if it is produced at all, must proceed from the original impregnation of the flower, and no after external treatment of the fruit can influence its production of seed in any way. On the contrary, however, if we wish to produce seed of extra fine

quality—in fact, to improve the race of Cucumbers—we may do so by concentrating the full energy of a strong plant upon the production of three or four finely proportioned fruit. In that way increased vigour may certainly be insured to the seed produced, and it is more than probable some improved varieties may be the result of such treatment. To that end it is necessary that the seeding plant be in vigorous health, that a sufficiently healthy foliage be kept upon it, and that it be denuded of both fruit and flowers as fast as they are produced. Thus managed, good seed may be grown upon the open wall; seed, if it can only be matured upon the plant, may be superior to that ripened under glass, inasmuch as the energy of the plant being confined to the production of seed only, the seed so produced must be more vigorous than when a quantity of fruit for use is grown at the same time.

PROPAGATION OF THE CUCUMBER.

The Cucumber is propagated by seeds, by cuttings, and by layers. The first is the most general practice, but when it is desired to perpetuate a particular variety, to increase it by cuttings or layers is the most certain way of doing so. The best way of raising plants is certainly in the dung frame or dung pit, and to that end it is necessary to form a hot bed or dung pit as directed upon a former occasion. A small one-light frame is generally sufficient for the purpose, and care must be taken that the hot-dung be perfectly sweet, and the bed of sufficient capacity to insure a fine growing temperature for a month or six weeks from the time of sowing the seed. For this purpose a mixture of dung and leaves is preferable to dung alone, for they are less likely to heat violently, and consequently they retain the necessary temperature for a longer period. The bed being formed, the dung quite sweet, and the frame fixed in its place, it will be necessary to wash the glass perfectly clean, so as to command all the light possible. Then fill the frame to half its depth with sifted leaf mould, old tan, or cinder ashes, and as soon as that has attained the proper temperature, 80° to 85°, it will be fit for use. The seed must be sown in a pot of light soil, say loam and leaf-mould in equal proportions, then place it upon the soil about an inch apart and cover it half an inch deep with soil. Plunge the pot in the bed and cover it with flat glass, partly to increase the temperature, but more to protect the seed from the depredations of mice or other vermin. In three or four days, according to the age, the seed will be up, and then it will be necessary to raise the plants to within a few inches of the glass, and to keep, night and day, a gentle circulation of air. The temperature should not fall much below 70°, and may rise to 80°, with bright light and plenty of air. In raising plants it is always desirable to keep them as short and strong as possible, and this cannot be effected except by a free exposure to light, and an equally free exposure to air. When the seed-leaves, or cotyledons, have attained their full size will be the right time to single the plants out and place them in separate pots. For this purpose some warmed compost and clean warmed pots must be provided, and one or two plants, according to the kind, must be placed in each pot, the pots being of pint or half-pint sizes. Drain each pot with a little moss and some flaky leaf soil or dung, so that it may not be necessary to remove it at the time of planting. After the plants are potted they may be plunged in the frame, watered, and kept close for a day or two, shading them also should the weather be very sunny. So soon, however, as the plants have taken root, increase the quantity of air, and keep a gentle circulation by night as well as day. The plants will require washing occasionally, but the frame and plants must be lightly sprinkled once or twice a day according to the weather, and shut closely down for an hour or two, but air must be given before leaving the plants for the night. When three weeks to a month old the plants will be fit to ridge out, but if the bed should not be ready, they may be shifted into a larger pot with advantage. Be particular that they do not receive any check, as upon that much of the future success of the plants will depend.

In propagating by cuttings it is necessary to choose pieces of short, stubby growth, and not exceeding three to four inches in length. These should be cut out from the main branch, with a heel if possible, and if the main leaf be taken with the cutting it will be none the worse. Place these in

single pots, with a pinch of sand around the base of each, plunge in the hotbed, and cover with a small hand-glass. The success of a cutting depends mainly upon its being surrounded with an atmosphere which is sufficiently charged with moisture to prevent its drooping or flagging until it has formed roots which, under favourable circumstances, will generally be in from a week to ten days, sometimes much sooner. At the same time it will be necessary to dry the condensed moisture upon the glass once a day, and in very bright weather a slight shade of tissue paper will be an advantage for a few hours in the middle of the day. When the cuttings are rooted, gradually remove the hand-glass, and expose the plants to the air of the frame, until such time as the external air may be freely admitted. The shifting of the plants into larger pots, or planting them out, must be governed by circumstances, only do not on any account allow the plants to become stunted.

Propagation by layers is not much practised, but as it may be a means for the amateur to procure a few plants when he has not the means of striking by cuttings, we may describe the *modus operandi*. It consists in cutting a slight gash close to a joint on the under side of a branch, and then placing it in a pot of soil, the cut part being surrounded by sand. The layer may require to be shaded for a few days at the first, but if all goes on well it will be perfect in a fortnight. Then it may be taken off, that is severed from the parent branch, and with a week or ten days' nursing will be fit to plant out.

The value of seed plants and those prepared from cuttings—layers for the present purpose being a synonymous term—are variously estimated, but it is not too much to say that cuttings come the most quickly into fruit. This is not, however, a very great advantage, as where strong plants are required early fruiting, except to a very limited extent, should never be allowed. Plants from seed, especially from new immature seed, are generally more luxuriant than plants from cuttings, and consequently do not come so quickly into fruit. For this reason it is always advisable to sow seed which is several years old, and if you have not this you may follow the custom of old gardeners and wear the seed in your trousers' pockets some weeks before sowing. This has the effect of assisting its maturation and thorough ripening, and anything that tends to that will promote its fruit-bearing properties. The question of stopping or not stopping the plants in their young state must be governed by the purpose for which they are required. If for frame cultivation trailing upon the ground, stopping is indispensable, but even then we should not stop until the young plants had made their third if not fourth rough leaf. The longer a plant goes without stopping the stronger it will get, as it will be making roots at the time it is making leaves, and will be prepared to throw strong shoots if stopped at the third or fourth leaf, but if you stop at the first leaf then there is not sufficient force in the plant to throw out a strong branch.

It should, however, be recollected the Cucumber is not a trailing plant, though we compel it to grow in that manner. Naturally, as the tendrils upon the young shoots indicate, it is a climbing plant, and therefore should be trained upon a trellis or to stakes or wire trainers. For this purpose therefore it is not advisable to stop the plants until they have attained their utmost limit, whether that limit be five feet or twenty feet. We claim to have been the first to have made this fact known when we published our first treatise upon Cucumber culture nearly thirty years ago. Since then the practice has become so general as to have formed one of the customs of all intelligent cultivators.

(To be continued.)

A.

Damage done by Trees.—At a recent agricultural discussion at Cirencester, Mr. Snowsell exhibited some swedes, showing the damage done by trees to the crops. Those which had been grown under the trees were stunted in appearance, and scarcely so large as the first; others grown in the same field, but a few paces farther from the trees, were of the usual size. These swedes were grown in a field in which there were four trees—one oak and three ash—which on an average stood seventeen yards apart. Measuring out into the field from the line of these trees, a space 77 links broad by 185 long, one perch of swedes growing in the middle of the space was found to weigh 34 lb., and there were 14 lb. of tops. Stepping eight yards farther out into the field, another perch of swedes was weighed, and found to yield 196 lb., and 32½ lb. of tops—showing nearly as much weight in tops as the other in swedes. The space under the trees covered 22 perches, and as it was measured on one side only, it represented half the damage of three ash trees; so that for every twelve ash trees on a farm one acre of land would only yield 5,440 lb., or 2 tons 8 cwt. and 64 lb. instead of 31,360 lb., or 14 tons weight cleaned ready for sheep feed. Consequently for every twelve trees there was a loss of 11 tons 11 cwt., without reckoning the tops, or speaking roughly, a ton to every tree.

NOTES OF THE WEEK.

— FEW seem to grow any other kind of fragrant hawthorn than our own common one and its varieties. Mr. Gordon has just brought to our office blooms of the following kinds, all deliciously scented:—*Crataegus Celsiana*, odoratissima, *tanacetifolia*, and *Aronia*. These are all fine distinct sorts, and merit a place in every garden.

— THE famous *Rhododendron* walk in Windsor Great Park, says the *Globe*, is now in full bloom.

— *SYRINGA EMODI*, a noble white Himalayan lilac, is now in fine bloom in Victoria Park, at the Hackney Wick side. Like many other hardy shrubs it is far too little known.

— LOCUSTS, it is stated, have appeared in large numbers in Bourbon county, Kentucky, and it is feared they will do great damage to fruit and other crops.

— THE deliciously-scented *Magnolia Thompsoniana* is now in bloom at the Fulham Nursery, where its noble white flowers fill the air for some distance around with their delightful fragrance.

— WE are informed by Mr. Wm. Thompson, of Ipswich, that he bloomed *Aquilegia aurea* (referred to in our last week's "Notes") last year for the first time in England.

— LAWS for the protection of timber trees in the United States were called into existence forty years ago to save the then rapidly disappearing live-oaks. They are needed now, says *Heath and Home*, to save our diminishing timber of all kinds.

— THE Edinburgh Museum has just received a collection of vegetable products of an instructive character. It is intended to illustrate the ravages of destructive insects against which agriculturists, horticulturists, and foresters, have to contend.

— DR. NAPHEGYI, says *Heath and Home*, recently presented to a meeting in New York a prospectus of a botanical garden for that city, which he was endeavouring to bring into existence. The idea was warmly received, and hopes of its successful accomplishment were indulged in.

— ONE of the hardy species of Lady's Slipper (*Cypripedium pubescens*) is flowering at the Wellington Road Nurseries, St. John's Wood, planted in the open border. Two other rare plants, *Cortusa Matthioli* and *Primula luteola*, are likewise flowering in the same border.

— A good specimen of the hardy palm (*Chamaerops excelsa*) is now flowering out of doors in the Royal Botanic Gardens, Regent's Park. It is planted out on a slightly raised bank, facing south, a position in which it has stood the test of several severe winters unprotected.

— A NEW botanical journal, under the title of *Journal de Botanique*, has lately made its appearance in Paris, edited by M. G. Huberson. This will appear fortnightly, and will contain original communications, translations, extracts, and abstracts of botanical papers.

— THE very curious Californian Pitcher Plant (*Darlingtonia californica*) has lived out through the winter in Messrs. Backhouse's nursery at York, and is now healthfully pushing up the quaint buds of its pitcher leaves. That it should endure our winters we quite expected, from having found it in a region where severe frost in autumn and deep snow in winter are the rule. But it is not to be expected that our summer heat is sufficient to fairly develop the plant.

— NOTWITHSTANDING the severe frosts experienced in the neighbourhood of Glasgow in the mornings during the latter half of last month, present appearances betoken a good fruit season in the west of Scotland. The strawberry, for the successful cultivation of which that district has long been famous, has this year been most prolific in blossoming, and as far as can be judged at present, there will be a very good crop. In the middle of the season as many as 700 pints of this fruit are forwarded to the Glasgow market daily. Apples have also blown freely, but pears are scarcely so vigorous. Currants were also well flowered, but the frost has considerably thinned them.

— PRIZES amounting to £30 are offered for the decoration of the luncheon tables at Birmingham, on the occasion of the Royal Horticultural Society's show there. There will be five tables to decorate. Epergnes, &c., will be supplied by Mr. Quilter, and placed by him so as to secure harmonious arrangement. The exhibitors will consequently be required to supply only (1) flowers; (2) plants; and (3) taste in their arrangement. The tables will be ready for the exhibitors at nine a.m. on the morning of Tuesday, June 25th, and the decorations must be completed not later than twelve o'clock. The tables will be allotted in the order of application, consequently the first five will be accepted. On receiving notification of acceptance, the applicants must, as a guarantee of good

faith, deposit the sum of £2, which will be returned immediately after the tables are ready for the judges. The latter will be empowered to withhold prizes in any cases where the decoration is considered unworthy, and their decision will be final. They will be instructed to regard taste in the arrangement as the first consideration. Length of each table, fifty feet, by three feet six inches wide. The number of epergnes or flower-stands on each table is not quite settled, but will, we believe, not be less than five. There will be room on each table for about seven plants, which must be in pots not exceeding six inches in diameter. The first prize will be £10; the second £8; the third £5; the fourth £4; and the fifth £3—in all £30.

— A LARGE number of the market garden labourers of Fulham Fields, says the *Daily News*, have struck for higher wages.

— THERE is now to be seen, says a country paper, in the vicarage garden of Baldhu, near Truro, a pear tree with more than 800 pears growing upon it, looking exceedingly well and healthy—indeed, quite a picture. There are three different sorts of pears on the tree—viz., Marie Louise, Prince Albert, and Dunmore.

— THE cold and heavy rains and chilly weather which have occurred since our last, have had a bad effect on various tender crops and flower-garden ornaments, and have seriously interfered with outdoor garden work of all kinds. Many of the hardiest subjects are, however, growing vigorously, and herbaceous plants never looked better.

— MR. STEVENS, of Trentham, has got some Lady Downe's Seedling grapes preserved in bottles of water. They were cut before Christmas. The bunches that have remained longest in perfect condition are on stems of which a small portion of the base was cut away now and then. This experiment deserves to be tried on a large scale.

— AN American paper says:—"The first executive action of Mr. Greeley as President will probably be the official transformation of the White House grounds and Congressional gardens from their present superfluous subservience to aesthetics into a potato patch and field for the cultivation of all kinds of useful and palatable 'garden sass.'"

— THE committee of the House of Lords, to whom Mr. Ayrton's Epping Forest Bill was referred, after hearing the first witness, expressed a strong opinion that the proceedings of the Corporation of London against the lords of the manors should be allowed to continue, and amended the Bill accordingly. Epping Forest, therefore, appears likely to be saved, in spite of the First Commissioner of her Majesty's Works and Public Buildings.

— ANTHEMICUM HOOKERI, a somewhat rare plant of the Lily family, is at present flowering freely in several places round London. The flowers are produced in a raceme from four to six inches long, and are of a showy orange yellow colour. The plant appears to thrive in ordinary soil, but the finest specimen we have seen this season is in the clayey soil of the Regent's Park.

— WE are glad to learn that Dr. Asa Gray, of Cambridge, Massachusetts, the distinguished author of that charming little book, "How Plants Grow," and of many important works and papers on botany, has lately brought out another little book, entitled "How Plants Behave," which deals with the climbing and other habits of plants, and is as likely to prove interesting to young people as the first-mentioned work.

— THE wretched weather we have recently had has somewhat interfered with the preparations for the great exhibition at Birmingham; but the work is now being carried on so vigorously there that we have no doubt everything will be ready in good time. Mr. Harlow, who lays down the pipes for the great boiler trial at his own expense, had commenced laying them down when we called on Wednesday, and hoped to have them ready for the first trials on Friday. The great exertions of the honorary secretary, Mr. E. W. Badger, of the Messrs. Quilter (father and son), and of all others connected with this show, bid fair to be crowned with success.

— AN interesting statement was made by Mr. Fallows at the monthly meeting of the Tees Conservancy, the other day. In moving the adoption of the minutes of the Works Committee, that gentleman stated that the dredging operations had been very much impeded during 1870 and 1871. From the bed of the river, twenty-seven oak trees, of sizes varying from five feet to fourteen feet in circumference and from twenty feet to forty-five feet in length, had been taken. Those trees were on the south side of mid-channel, on a clay bottom, with about two feet of sand around them. The largest tree weighed eleven tons. In answer to Mr. Hopkins, Mr. Fowler, the engineer, said that he believed the trees had grown in pre-historic times, and had drifted down from some place in the upper reaches of the river.

— WE have received from Messrs. Carter & Co. flowers of the lovely blue and white *Aquilegia glandulosa*, produced true from seeds. Though it is now many years ago since this fine Columbine was first brought permanently before the public by Messrs. Grigor, of Forbes, few have yet surpassed it in beauty. When obtained true to name it is certainly one of the handsomest of all hardy border flowers.

— At a sale of Orchids which took place at Stevens's the other day some of the lots fetched the following prices, viz., a finely grown plant of *Masdevallia Lindenii*, £8. 8s.; *Odontoglossum speciosum*, £7. 7s.; *Cattleya gigas*, £6. 15s.; a *Cattleya* from the Pacific side of the Cordillera of New Granada, with white flowers edged with purple and orange, distinct in form, £6. 6s.; *C. Wagneri*, £5. 5s.; *Mesosopidium sanguineum*, a fine plant set with flower-buds, £6; other lots, of which there were in all 214, fetched from £2. 2s. to £4. 4s. per lot; the total amount realised being about £490.

— THE movement for supplying flowers to the sick, to which attention has recently been paid in this country, seems to have its counterpart across the Atlantic. With the coming of the flowers, says an American paper, the charitable ladies of New York are reorganising their "Flower Mission." The intention is to supply poor patients in the hospitals with flowers during the summer months. For this purpose a depot has been established in First Avenue, between Nineteenth and Twentieth Streets, to which the ladies ask that donations may be sent. Believing the mission of flowers is to bless and cheer, these ladies carry their fragrant gifts to the bedsides of the afflicted, thus infusing pleasant thoughts and a fragrant surrounding to their otherwise dreary lives.

— THE magnificent chestnut trees in the Tuileries garden are, says the *Temps*, dying, owing to mistaken treatment which they have received from the engineers in whose charge the trees of the French metropolis are placed. The *Temps* convicts these gentlemen of two gross heresies in forest-lore. One is the neglect of lightening the earth sufficiently above the roots. The other consists in the violent remedial measures that have been employed to restore the vigour of unhealthy trees. Trenches were made round them, and filled with fresh soil, but the most important roots were cut in the process. Works of this kind have within the last few years been undertaken on behalf of the lime trees of the Luxembourg, and the plane trees near the Madeleine, which are dying as fast as they can. The moral of this is: do not employ engineers when gardeners are wanted.

London Bird-Catchers.—I have endeavoured, says the Baroness Burdett Coutts, to induce the nightingale to build its nest in my garden at Highgate with success, and it would shortly have been a welcome visitant in the neighbouring gardens; but as soon as the poor things began to sing they were trapped. Not caring to breed nightingales for bird-fanciers, I have given up the attempt; but the other pretty denizens of the air who come for shelter and roost in my trees, are equally snared by trappers; and, owing to this circumstance, my garden will shortly be left in possession of superabundant caterpillars and other insect life, a result which has unhappily been prevalent on the Continent, and has caused serious injury to agricultural and garden produce there. I ascertained from my gardener that these bird-trappers come mostly on Sundays, during church time; and he also told me that many of the revolting practices attributed to them are founded on fact.

Vegetation in the North of Ireland.—We learn from our Belfast correspondent that the weather in the province of Ulster, and in the north of Ireland generally, has for many months been so unsuited for outdoor garden operations that the prospects of growers are anything but promising. Incassant rain, cold winds, and occasionally severe frosts, have altogether rendered the present an exceptionally bad season. The planting of potatoes, which forms so prominent a feature in the horticultural resources of the country, was delayed fully six weeks beyond the ordinary time, and even then the sets were planted under discouraging circumstances, as it had been found impossible to prepare the ground properly for their reception. The early potatoes, however, came up vigorously, but the severe frosts towards the end of May seriously affected them, and a very indifferent yield must result. If a comparatively favourable season sets in now, the later plants will not suffer from the continued rains, as the system of ridge planting adopted in this country, admits of the soil being very perfectly drained. Fruit trees, particularly apples, currants, and gooseberries, started unusually early, and consequently the young fruit was tolerably well formed before the late frosts; they have, therefore, suffered no material injury; gooseberries are very plentiful, and most other outdoor-grown fruits promise a good yield. But the entire appearance of the gardens compares unfavourably with that of former years, as the rains have precluded the possibility of bringing them under cultivation with any approach to neatness or prospect of advantage.

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

BY OUR SPECIAL REPORTER.

PRIVATE GARDENS.

Indoor Plant Department.—Conservatory climbers require more attention at this season than at any other. Fuchsias trained on rafters are being thinned, and their borders occasionally watered with manure water. The beautiful *Clianthus Dampieri* is now in bloom in some places, and the greatest care is taken in watering it; some raise the soil a little around the neck of the plant, so as to prevent its getting wet; others feed with water from saucers placed under the pots. Seed-pods on Azaleas are removed as soon as they appear; the latest flowered ones are repotted if necessary, and are placed in well-shaded vineries. Camellias, Orange Trees, &c., are still kept in warm well-shaded houses and syringed early every afternoon. Pelargoniums, as they advance in growth, are staked and brought into the conservatory. In stoves, Caladiums are now in great beauty. A little weak manure water is given them now and then, and they are also kept well shaded and in a nice moist temperature. The first flowered Gloxinias and Achimenes are now about over, and are placed on back shelves in warm houses; water being partially withheld. Such as are now in flower, are kept near the glass, shaded from sudden outbursts of bright sunshine, and in all cases the foliage is kept dry. They are also brought into cool or intermediate houses to prolong their beauty. Gardenias are kept well watered, syringed, and shaded. Aristolochias and a few other stove creepers are apt to harbour mealy bug; occasional syringings with weak tobacco water will, however, clear them of that pest. Similar applications are also effectual in preserving the young shoots of *Diospyros*, *Medinilla*, *Cyanophyllum*, &c. *Cycas*, *Encephalartos*, and other plants of that class are frequently examined, in order to liberate and keep in proper order the young fronds, that sometimes become entangled with other plants with which they are associated. Orchids receive liberal supplies of water, but no more shading in this comparatively dull weather than is absolutely necessary, unless it be to prolong the beauty of the flowers. *Calanthes*, which are growing strongly, are kept on shelves near the glass. Filmy Ferns, under hand-lights, enjoy a steady temperature; they are kept in the darkest parts of the fernery, and receive extra shade. Every morning, the glasses under which they are kept are rubbed dry with a cloth, and the plants are then gently watered through a fine rose or syringe.

Pits and Frames.—These are now nearly cleared of bedding plants, and as sufficient time has not yet been spared to refill them, *Alternantheras* and *Coleuses* still under cover, are therefore allowed more room. *Dracenas*, variegated *Abutilons*, &c., are also still retained in frames. Early-flowered *Calceolarias*, turned out of the conservatory, if good, are likewise placed in frames to ripen seed; if desirable to retain some of the best for next year, the flower spikes are cut off, and the plants are placed in frames in front of those kept for seed. Plants of *Amarantus salicifolius* are repotted as they advance in growth. They are kept in cold pits rather close, and are encouraged by weak applications of manure water. *Petunias*, both single and double, are being trained into form, and are not allowed to bloom until they have attained the required dimensions. Japan Lilies, as they form their flower-buds, are removed from pits to larger houses; they are top-dressed with decayed cow-dung and turfy loam in equal proportions, and securely staked. Plants of *Erythrina Crista-galli*, as they make sufficient growth to require stakes, are also removed from pits to larger structures.

Flower-Garden and Shrubberies.—Coniferous trees with contending leaders have all removed but the strongest one. Roses and other small shrubs affected with green-fly or thrips, are frequently syringed. Planting out summer bedding-plants has been so vigorously proceeded with for some few days back, that in many cases it is all but finished. Some of the more tender plants, however, are not yet trusted outside, but are kept well exposed in cold frames. Delphiniums and other strong-growing herbaceous plants are timely staked and secured with strong matting or rope yarn. Herbaceous borders are frequently gone over with the hoe, mulching at the same time the best plants with leaf-mould or well-decayed manure, which is afterwards covered with a little soil to give all a neat appearance. Pyrethrums required for late flowering are cut over, and are allowed to grow afresh. Annuals for late flowering are sown in shady borders in time to be transplanted where they are to bloom. Brompton, Queen, and Emperor Stocks are sown to stand through the winter. Lawns are regularly mown once every eight or ten days; weeding and cleaning walks and borders receive punctual attention. Surfacing the walks in pleasure

grounds and in geometrical flower gardens with new clean grave is being done, and afterwards well rolled.

Indoor Fruit Department.—The earliest of the Queen Pines are now colouring, the second lot is fully swelled, and others are advancing towards these stages. Suckers are taken off, potted, and plunged in the front of the beds. Where tan or other fermenting material is used, the beds are either wholly or partially renewed as the heat begins to decline, and before the next successions are introduced. Where fungi make their appearance in the beds a little fresh air-slacked lime is mixed with the fermenting material. Inside vine borders occasionally receive thorough waterings, and to those in pots waterings of weak manure are given. A little air is kept on night and day when the grapes are colouring, and a little fire heat at the same time. To Peaches and Nectarines ripening a steady gentle heat is maintained, and air is given on every favourable opportunity. The syringe is freely used in the case of late crops; thinning and tying in the shoots also receive attention. Strawberries in full bearing occupy the top shelves on the back walls of vineries and early peach-houses; the next in succession have set their fruit, but are kept in cooler houses, and the last crop for this season's forcing are placed outside in front of walls with a north aspect, or on the sides of shady walks. French Beans producing crops in early vineries are kept near the glass, but not in close proximity to the pipes, as that would induce red spider. They are frequently syringed, plentifully watered, and top-dressed as they come into bloom. Melons ripening fruit are freely supplied with air, and have all the light possible. Plants in frames are thinned and the flowers fertilized; fruits swelling are placed on slates, pieces of wood, or tiles. Cucumbers for succession are potted off singly from the seed pots, and as the old plants become exhausted, they are replaced by young ones.

Hardy Fruit and Kitchen Garden.—Fruit trees on walls are frequently syringed by means of the garden engine, and they are kept constantly tied. Young standards have all useless wood growing about their centres and on the stems removed.

Cabbages.—Some seed of these is sown for Coleworts, and as space permits fresh plantations are made. Cauliflowers are planted out as required; where the heads come too quickly for use, one of the side leaves is broken over the flower to preserve it for a few days longer. The main crop of Brussels Sprouts is being planted out two feet apart. A few Savoys are also being planted.

Spinach.—Successional sowings are made broadcast on empty spaces, or in lines between rows of Peas. New Zealand Spinach is planted out in lines two feet apart, and fifteen inches between the plants.

Peas and Beans.—For late autumn use, a sowing of tall Marrow Peas is being made, six feet between the lines, in deeply-worked soil. Another main crop of Beans is sown as required, and advancing crops are earthed up and topped. As the last sowing of French Beans appears above ground, another sowing is made.

Celery.—Plants in frames have the sashes removed, and those in beds are never allowed to become the least dry.

Root Crops.—These are hoed and thinned as they advance in growth. The main crop of potatoes is being earthed up. A sowing of Onions is being made to succeed that sown a few weeks since, for salads.

NURSERIES.

Indoor Plant Department.—Young Palms are being shifted as they fill their pots with roots; seed of the various kinds is sown as soon as obtained. Crotons enjoy a moist temperature; they are plunged in cocoa-nut fibre, and are kept near the glass; where good colour is more aimed at than rapid growth, the roots are kept somewhat confined as regards pot-room. Where *Sonerila margaritacea* is grown in pans, the young growths are pegged down; thus treated, they form roots freely at the joints, and are in due time separated and potted singly. They are kept in moist shady stoves or in Orchid houses. Various kinds of *Eranthemums* and other plants of that kind receive similar treatment. Pitcher Plants are kept in moist warm houses, frequently syringed, and well supplied with water. Unless the soil is of a very porous character, Pitcher Plants soon exhibit signs of debility; therefore, as soon as such becomes visible, they must be shaken out and potted in a mixture of rough fibrous peat and chopped sphagnum. Marantas are kept in moist, warm, shady houses, and in some instances on stages over water tanks; as they fill their pots with roots they receive another small shift. Seedling *Anthuriums* of different kinds are potted singly into thumb pots, and the weakest are pricked out into pans. Poinsettias are shifted into four-inch pots. *Rhododendrons* and *Azaleas* in pots have their flowers removed as

soon as they begin to fade, and every encouragement is then given to the plants to induce good growth. New Zealand plants in flower are removed to the front stages of show-houses, or any other place where they can be kept cool and well aired. Where Succulents require to be increased, well-matured leaves are separated from the parent plants and are inserted in pots of light compost surfaced with silver sand. Four small pegs are stuck into the pots near the edges, and a piece of matting is tied round, so as to serve as a support to the leaves; the pots are placed on shelves in intermediate houses, or in cold frames kept rather close. Orchids in flower are removed from the house in which they were grown, to a cooler and drier atmosphere. Imported plants are spread out for a time on shelves, where they are allowed to break naturally; those that have made considerable advancement are either potted or placed on blocks, according to their requirements. *Anaethochilus* are now growing freely, and great attention is bestowed on them in the way of shading and maintaining a steady temperature. The bell-glasses placed over them are tilted up a little throughout the day, and taken off and wiped every morning. Young Ferns as they require it are shifted into larger pots. In order to allow the young fronds more fully to develop themselves, some of the oldest ones are removed. The finer kinds of *Selaginellas* are being increased by means of pieces, to which rootlets are attached; they are inserted in pots or pans of light sandy soil, and are kept well watered and shaded.

Outdoor Department.—Cleaning the ground now constitutes the chief part of outdoor work. Beds of seedling Conifers are frequently gone over, and cleared of weeds. Beds occupied last year by seedling Elms, which were transplanted this spring, are producing another crop, which will be left in the beds until next spring. Elms generally keep coming up for two years after being sown. Young fruit trees receive timely attention in the way of training. Rose stocks for budding on have the young shoots shortened and regulated. Herbaceous plants are being increased by means of young shoots, which are slipped off, placed in frames, and well shaded for a time. Hollyhocks are also increased by means of young shoots inserted in cold frames. Double-flowering Rockets have their shoots layered, fixing them down with pegs, and covering slightly with soil; thus treated shoots soon spring up from every eye, and when a few inches long they are either separated and treated as cuttings, or their rooted stems are cut into as many pieces as there are joints, preserving a short piece to each cutting.

MARKET GARDENS.

NOTWITHSTANDING the unfavourableness of the weather, vegetable crops still look flourishing. Lettuces this season have been excellent, and there has been a great demand for them; they fetch about eight-pence a score. Old crops of Leeks are being cleared off the ground, the flower spikes and the points of the leaves are cut off before sending them to market. Hyacinths and other bulbous plants grown for cut flowers are now forked out of the ground and the bulbs laid on mats prior to storing them away. On the space occupied by these bulbs, lines are drawn two inches deep, in which Gherkins are sown, the seeds being placed four inches apart. In warm sheltered situations where the earlier crops of Lettuces had been raised, the ground is loosened by means of a three-pronged hack, and is cropped with Gherkins. New Zealand Spinach is planted a foot apart in shallow drills, between the rows of young Rhubarb. Fresh air-slacked lime is scattered over the plantations of French Beans and Lettuces, as slugs are this season rather troublesome.

Red Cabbages planted early in the season, in lines from three to four feet apart with intervening crops, now require all the space, and the crops are being removed. Ground occupied by early crops of Spinach has all the refuse removed to the rubbish heap, the soil turned over, and Brussels Sprouts planted in lines two feet apart each way. In rather open spaces under fruit trees, lines of Potatoes have been planted 2½ feet apart, and are now earthed up. In the hollow lines between the potatoes, rows of Savoys and Brussels Sprouts are planted fifteen inches apart. The third Cauliflower crop, planted 2½ feet apart, with a line of Lettuces between each row, now requires all the room it can get; the Lettuces are therefore removed for market. Seedling Cabbages, &c., are securely tied to stakes.

Spinach sown broadcast under trees, where coming up too thickly is gone over and thinned. This crop under shade seldom, however, requires any thinning or weeding. The last sown Onions are being cleaned, thinning is not much resorted to in this crop, as the plants are drawn young. Lines of the same sown between Moss Roses and young newly-grafted trees are being cleaned and thinned the second time. Transplanted ones have all flower-spikes removed. Leeks grown between lines of Strawberries are removed for market, and the ground is being thoroughly cleaned and some litter placed around the Strawberry plants.

SOCIETIES, EXHIBITIONS, &c.

THE GREAT BIRMINGHAM EXHIBITION.

THE visit of the Royal Horticultural Society to Birmingham bids fair to be a most successful one. It is to be opened, as our readers are aware, by Prince Arthur, who is a member of the Council of the Society. The official programme for the show week is now nearly complete, and will, we believe, be found to be very much as follows:—The exhibition will be opened for the public at one o'clock on Tuesday, the 25th instant. Holders of tickets will be admitted to the ornamental gardens at the Lower Grounds before that hour, probably at eleven o'clock, but not to the show grounds, as the work of judging will be in progress.

At half-past one o'clock, the Prince will be entertained at a public luncheon, which will be served in a large marquee, to be erected on the bowling-green, near the hotel, over which the Earl of Bradford, chairman of the local committee, will preside. A raised table will occupy one end of it, and there will be five others at right angles thereto. The tables and places will all be numbered, and, as each ticket will correspond with one of the seats, the guests will experience no difficulty in finding the places allotted to them. The charges for the luncheon are, gentlemen, twenty-one shillings; ladies, sixteen shillings. In order to insure the tables being decorated in a suitable manner, the local committee have offered five prizes, amounting to £30, for the floral adornments of the tables. Applications for luncheon tickets, accompanied by remittances, must be sent to Mr. A. Forrest, 10, Cherry Street, Birmingham, not later than the 15th instant. As the number to be allotted is limited, early application on the part of those who desire to secure places is necessary.

It is hoped that Prince Arthur's engagements will allow his Royal Highness to visit the exhibition on Wednesday, the 26th, and present the gold medals to the recipients. At four o'clock in the afternoon on Wednesday, the Horticultural Congress will commence its sittings. It will be presided over on the first day by W. Wilson Saunders, Esq., F.R.S., and the proceedings will be commenced with an address "On Recent Progress in the Scientific Principles of Horticulture," by Professor Thiselton Dyer, F.L.S. Afterwards various papers will be read, and discussion on them will take place. There will be no charge for admission to the congress, which will be open to all visitors to the show.

On Thursday, the annual Birmingham show of roses will take place; there will also be a fresh competition in the fruit classes. In the afternoon the second and final sitting of the congress will take place, under the presidency of the Earl of Bradford. The introductory address on that occasion will be delivered by Thomas Moore, Esq., F.L.S., the subject being "The Recent Progress of Practical Horticulture." As on the former day several papers, each limited to a quarter of an hour will be read, and will be followed by discussion.

On Friday and Saturday there will be additional competitions in cut flowers and bouquets. Of course it is at present impossible to give any idea of the number or extent of the entries; all that we are able to state is that they are most numerous, as may be inferred from the fact that in one class alone they necessitate the erection of a special tent 160 feet long by 20 wide.

The department of horticultural implements, ornaments, and appliances will be very extensive and interesting. The placing by the committee of three gold medals at the disposal of the judges for horticultural buildings has had the effect of stimulating competition, and there is good reason to anticipate a display in which many descriptions of structures will find a place, and in which, moreover, some novelties will be included. A number of them are now in course of erection, and the whole must be completed, ready for inspection, by Tuesday next, the 18th instant. Garden furniture, wirework, and decorations, for each of which a gold medal is offered, will also constitute a prominent feature. The committee undertook an arduous task when they resolved to subject the heating apparatus to practical tests upon the ground; but owing to the friendly advice and support accorded to them, the arrangements are proceeding satisfactorily. The estimated expense was, in the first instance, so considerable as to present obstacles well-nigh insurmountable to the carrying out of this portion of the programme; but through the liberality of one intending exhibitor, who was anxious that the trials should take place, those difficulties have been surmounted. In this respect the committee will, no doubt, confer a great benefit upon the horticultural public, by whom the results will be eagerly looked for, more especially as several newly-patented inventions will be exhibited for the first time. One thousand feet of piping has been provided; and twelve boilers, capable of heating that quantity, with others of only half the capacity will be tried; while gas stoves, and other portable contrivances for effecting the same purpose will also be shown. The makers of garden machinery will muster strongly, and although garden implements will not be so plentiful as they ought to be in a district where they may be reckoned among the staple industries, they will, nevertheless, be efficiently represented. As we have before explained, the committee having no experience to guide them in the preparation of their programme, it is, necessarily, of a tentative character; but we would fain hope they will succeed in the object they have in view—that of laying the foundation of a department which will hereafter bring the manufacturing skill of the country into more intimate relations with horticulture.

RAILWAY ARRANGEMENTS.

The railway companies have been most liberal in their arrangements. Excursion trains will run as under:—

The London and North-Western Railway Company from London to Birmingham, on Saturday, June 22nd, returning on Thursday, June 27th.

From all principal Northern stations in Lancashire, Cheshire, and Yorkshire, on Monday June 24th, returning on Friday, June 28th.

On Thursday, June 27th (One Shilling day), day trips from Northampton, Blisworth, Weedon, Rugby, Stamford, Market Harborough, Leicester, Nuneaton, Coventry, Leamington, Kenilworth, Derby, Burton, and Lichfield.

On Friday, June 28th (One Shilling day), day trips from Liverpool, Warrington, Hertford, Crewe, Manchester, Stockport, Alderley, Chester, Beeston Castle, Shrewsbury, Wellington, Newport, Stafford, &c.

On Saturday, June 29th (Sixpenny day), day trips as follows:—By the Great Western Railway Company, on Thursday, June 27th (One Shilling day), from Shrewsbury, calling at principal intermediate stations to Altringham, inclusive; from Leamington, Warwick, Kingswood, and Knowle; from Stratford, Wilmore, Bearley, Claverdon, and Hatton; from Worcester, Droitwich, Kidderminster, and Stourbridge.

On Friday, June 28th (One Shilling day), from Oxford, and all intermediate stations, to Harbury inclusive.

On Saturday, June 29th (Sixpenny day), from Worcester, Droitwich, Kidderminster, and Stourbridge; from Leamington, Warwick, Kingswood, and Knowle; from Stratford, Wilmore, Bearley, Claverdon, and Hatton.

By the Midland Railway Company, day trips, from the following stations, on days to be announced:—Bath, Bristol, Stonehouse, Gloucester, Cheltenham, Tewkesbury, Worcester, Droitwich, Bromsgrove, Evesham, Alcester, Redditch, Rotherham, Sheffield, Chesterfield, Belper, Manchester, Buxton, Bakewell, Matlock, Lincoln, Newark, Nottingham, Derby, Burton, Tamworth, Peterborough, Stamford, Oakham, Melton, Bedford, Wellingborough, Kettering, Market Harborough, Leicester, Hinkley, Nuneaton.

By the North Staffordshire Railway Company:—An excursion train from the Potteries, on Thursday, June 27th.

The particulars of dates, times, and fares, will be set forth by the several companies in advertisements and bills, in course of issue.

Ordinary return tickets to Birmingham, issued by either of above-named companies, on Saturday, June 22nd, and following days, will be available for returning on any day up to and including Monday, July 1st.

While, as will thus be seen, ample arrangements have been made for the accommodation of visitors, the comfort of exhibitors has also been carefully considered. The railway companies will convey all plants, &c., to and from Birmingham at a single rate for the double journey. Small packages of plants and flowers, &c., sent as parcels, will be delivered from the several railway stations to the show grounds free of charge. A breakfast will be provided for the exhibitors on the Tuesday morning. Daily, during the continuation of the show, except on the first, a hot dinner will be served, at a time to be announced, the charge for which will be moderate; the chair to be taken each day by some well-known horticulturist. A cold dinner will be provided in the assembly-room (which will be converted into a coffee-room during the show) for those who prefer it. Mr. Quilter has set apart one of his rooms for letter-writing and appointments, and the local committee will supply them with stationery and newspapers.

It now only remains to again draw attention to the arrangements as to admission. The charges for the first day will be 10s. 6d.; or by tickets purchased not later than June 22nd, 7s. 6d.; second day, 2s. 6d.; third and fourth, 1s.; last, 6d. For one guinea may be purchased three for first day, and four for second, which are available on either of the subsequent days. For 10s. 6d. may be purchased a pass entitling the owner to admission during the whole of the week. Fifteen 1s. tickets may be purchased for 10s. 6d.

MEETINGS FOR THE ENSUING WEEK.

WEDNESDAY, JUNE 19.		THURSDAY, JUNE 20.	
Royal Botanic Society.—Summer Exhibition (19th and 20th), 2 p.m.		Linnean Society.—Meeting.	
Royal Horticultural Society.—Exhibition of Flowers.		FRIDAY, JUNE 21.	
Brighton Horticultural Society.—Roses, Fruits, and Pelargoniums (19th and 20th).		Royal Botanic Society.—Lecture in museum, 4 p.m.	
Horticultural Club.—Meeting in Anderson's Hotel, Fleet Street, E.C., 6 p.m.		SATURDAY, JUNE 22.	
		Royal Botanic Society.—Meeting for Election of New Fellows and general business, 3.45 p.m.	
		Crystal Palace.—Annual Exhibition of Roses.	

Land in Texas.—A Texan tells this story of lost opportunities:—"Now, you see," said he, "land was cheap enough at one time in Texas. I've seen the day when I could have bought a square league of land, covered with fine grass and timber, for a pair of boots." "And why didn't you buy it?" asked his companion. "Didn't have the boots," answered the Texan.

The Weasel the Gardener's Friend.—Of all people in the land gardeners have most reason to protect the weasel. They have not one single word of complaint against it, not even for disturbing the soil of the flower-beds. Having no game to encourage, they may safely say to it, "Come hither, little benefactor; take up thy abode amongst us. We will give shelter to thy young ones and protection to thyself, and we shall always be glad to see thee." And fortunate, indeed, are those horticultural inclosures which can boast the presence of a weasel; for neither mouse, nor rat, nor mole can carry on their projects with impunity whilst the weasel stands sentinel over the garden-ordinary, and of little cost are the apartments required for it. A cart-load of rough stones heaped up in some sequestered corner free from dogs, will be all that it wants for a safe retreat and a pleasant dwelling. Although the weasel generally hunts for food during the night, it is by no means indolent in the day-time, if not harassed by dogs or terrified by the report of guns. Whilst all is still around you, it may be seen coming out of a hole in the ground, with its head particularly erect at the time, and it starts and stops at intervals as though afraid to advance.—*Charles Waterton.*



"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE SIX OF SPADES.

CHAPTER XVII.

Mr. Chiswick on "Bedding Out."

GENTLEMEN, said Mr. Chiswick, *Æsop* does not tell us whether thirteen respectable frogs held a coroner's quest over the remains (which must have been collected and arranged with difficulty) of that ambitious sister who, foolishly essaying to represent to her family the grand proportions of the ox, induced a sudden disruption of the cuticle, or, in the vulgar parlance, *bust*. If such an inquiry was made, the frogs—our esteemed progenitors according to the Darwinian theory—may probably have enjoyed, as we do, the rich blessing of trial by jury, and they could only have anticipated the verdict which the colliers in a wild mining district pronounced more recently upon a terrible virago who had fallen down a shaft, with the assistance of her husband—to wit, that it "served her right." Although the bereaved family—the brothers and sisters, for anything we know to the contrary of the ill-fated flirt, who perished so suddenly in the bloom of her youth and in her opera hat—had pleaded with tears for a verdict of rancide, and a big deodand on the ox, no honest frog could have forgotten for a moment the plain demands of duty.

And yet, my brother Spades, it has been not seldom affirmed in my hearing by several horticultural frogs, who have burst themselves, that is to say, have completely ruined their gardens by extravagant efforts to reproduce, for their neighbours' astonishment, the outlines of a certain modern ox, known to us by the name of "Bedding Out," that their dissolution was murder, and not suicide. "See," they have cried in the crisis of evisceration, in their anything but happy dispatch, "how this detestable monster has ruined our little plot, broken down our flowering shrubs, crushed our herbaceous plants, and left us nothing, in place of our sweet unfailing beauty, but a brief and scentless glare." The very men who backed down and uprooted their Laburnums and Lilacs, and Weigelas and Pyrus, and Berberis and Ribes, with all the energy and exultation of backwoodsmen, who sentenced their old herbaceous favourites to transportation for life, and rejoiced to consign them, packed like convicts in crowded wheel-barrows, to penal settlements in the kitchen garden—I have heard them, and so have you, plaintively protesting against their own free act and deed, as though it had been done at point of bayonet, and as though every hesitation and entreaty of theirs had only been answered by an extra *prod*. The fact is, that in this matter of Bedding Out, a large number of our brotherhood have felt, with good reason, ashamed of themselves—ashamed of having sacrificed and slighted so much that is beautiful, from a foolish ambition, which they could never realize, to produce sensational effects, and, like naughty dogs, who deserve, but dislike, castigation, they will creep through any hole in the fence to keep out of range of the whip.

I mean, in plainer English, that the system of Bedding Out is a grand discovery, a charming ornamentation and additional grace where it can be appropriately introduced and amply provided for; where it can be well done in a suitable site, and where it comes, without trespass or ejection, as an ally and not as an opponent; but that in a small garden, where it destroys, or even interrupts the natural succession of hardy plants and shrubs, it is a very sad mistake—a mistake, which, by abusing and misapplying a beautiful branch of horticulture, has brought it into disrepute.

Where shall we find, for example, a more pleasing conformity than in the tasteful bedding-out of those terrace gardens which surround so many of our great castles and mansions, and in which architecture and horticulture are combined in such graceful unison; the stone walls and balustrades, and edgings of the beds, contrasting so effectively with the bright colours of leaf and flower? and this, moreover, for eight months in the year, from March to October, if the gardener be an artist, with means and with men to realise his art, and to maintain in continuous beauty that bright mosaic basement.

What, on the other hand, more dreary or wasteful than a small garden, treeless and flowerless for two-thirds of the year? A garden did I say?—a grass plot the rather, diversified by patches of bare brown earth, the work, it might be, of a school of moles who were studying geometry beneath.

I may be asked here, why assign eight months of beauty to the garden on the rich man's terrace, and only four to the garden on the poor man's lawn? The answer is, because when the garden is small, the resources, as a rule, will be small also, restricting the supply to those plants which flower during the summer months. Bedded out in May, these will attain their charms in July, and retain them probably for the period named. But where the material is unlimited and the culture skilled, the spring flowers will be gay in March; and on their removal the introduction of blooming and foliage plants, more advanced than those which are grown where glass is less abundant, will produce an immediate and effective display.

And chiefly, I would protest against the exclusive appropriation of a small garden to that which may be termed the summer system, not only because it brings with it the miserable nakedness, the long, dreary, dirty desolation, to which I have referred, but withal a result yet more deplorable. It destroys the poetry, the sentiment, the teaching, the associations, the memories, and the hopes, of which a garden should be the haunt and home. Great poets have written tender poesy upon the brightness and sweetness, the grace and the peace, of a garden, as it used to be. They rejoiced to watch, here in cool grot, or there from the sunny walk, the natural development of its beauty—from the first snowdrop in spring to the last rose of summer, so varied, so ample, and so sure. They sang, like the birds, heart-music, from its fragrant bowers; but who has sung or can sing in or concerning those treeless, shrubless, exposed and shadeless squares, to which the blackbird comes only for his worm, and flies to seek in some more favoured garden a twig on which to chant his grace? The Muse can only weep and wail, because the Muse must be aware that Flora, whom she loves, is here but decked and exhibited to catch the public eye, and behind the scenes she is starved and beaten? The Muse is aware that for a considerable portion of the year herbaceous ghosts, arboric apparitions, and bulbous bogies, haunt this now gaudy ground. She is not to be deceived, my brother, no more than you or I when we see some silly wench on a Sunday with half a year's wages on her back, and a month's ditto on her shining hair, as full of oil as a salad, and know that to-morrow she will be a slipshod sloven, indolent, morose, and grimy.

I have one more gun to discharge against this abuse of the bedding-out system, and then I will cease firing, and speak in commendation of its use. I denounced it, where it has a monopoly, as destructive of sentiment and of amiable associations. Let me tell you an incident which happened within my observance, and which condemned it in my eyes and in the eyes of one yet more nearly interested, as the desecration of an English home. Some years ago, I held the situation of undergardener at a country place, where an old-fashioned garden, full of beautiful shrubs and plants, was suddenly sacrificed to the fashion of the day and the bad taste of the owner, cleared, levelled, laid out in an elaborate design, and dedicated to the summer system. In the following year, a sailor-son of the family, who had been at sea as a midshipman, came back from his voyage, and soon after his arrival was brought into the garden to see "the improvement." I happened to be there at work; and as the beds were very gay, and glowing with scarlet, purple, and gold, I expected to hear great admiration. Only a sigh came from his lips, and I saw in his face a sore distress. Afterwards he came to me, and confided, for we were mates in the cricket-field, and I had carried his landing-net many a time: "Frank, I couldn't have believed that they could have shaved,

and hacked, and tattooed, and daubed the dear old place like this. I loved every tree and shrub in it, and I've dreamed of them, and been looking for nests, and playing hide-and-seek among them, a thousand miles away, with nothing but salt water all around. Why, they have taken away the very fuchsia which I saw poor Mary" (his dead sister) "plant!"

And now I have only to repeat, before I speak of "Bedding Out" descriptively, that, while I denounce the system in its exclusive usurpation of the garden, I heartily admire it as an auxiliary grace and gain; nor would I restrict its application to the grand terraces and the extensive grounds, of which I have before spoken. If I may suggest to you a rule for our guidance, it is this—wherever there is a goodly supply of the best hardy shrubs and plants, and space to spare, there let us have the bedding-out system, providing always that this space shall be occupied not only in summer but in spring. No part of a flower garden should consist of brown earth during those eight months of the year in which our climate permits, and we gardeners can provide, a covering of flower and leaf.

S. R. H.

(To be continued.)

HARDY PLANTS IN FLOWER ROUND LONDON.*

(FROM JUNE 13TH TO JUNE 19TH, INCLUSIVE.)

BY OUR OWN REPORTERS.

Aceras	Catananche	Leptosyne	Salvia
anthrophora	cærulea and	maritima	viscosa
Achillea	vars.	Ligusticum	Santolina
dentifera	Centaurea	pyrenaicum	viridis
moschata	babylonica	Lilium	Scutellaria
Aconitum	macrocephala	candidum	alpina
Lycoctonum	Cineraria	Linaria	minor
Acroclinium	alpina	purpurea	peregrina
roseum	Clematis	triornithophora	Sedum
Agrostemma	angustifolia	tristis	Aizoon
coronaria and	Flammula	Lonicera	annuum
vars.	lathyroides	flexuosa	corsicum
Agrostis	hybrid kinds	iberica	dentatum
pulchella	Colutea	macrophylla	Forsterianum
Aira	haleppica	pubescens	Nevii
caespitosa vivi-	Coronilla	sempervirens	pallidum
para	coronata	Lolus	pruinatum
Allium	Crinum	sericeus	rupestre
Andersonianum	albiflorum	Lychnis	sexangulare
azureum	Cypripedium	chalcodonica &	Stephani
Murrayanum	spectabile	vars.	villosum
Alyssum	Digitalis	Mazus	Semprevivum
coriaceum	Buxbaumii	Pumilio	Funkii
Anchusa	criostachys	Menispermum	hirtum
officinalis	Dracocephalum	canadense	piliferum
Aquilegia	argemone	Mimulus	Sideritis
jucunda	nutans	cardinalis	syriaca
pyrenaica	Echium	Emothera	Silene
Arum	salmanticum	marginata	Armeria
italicum and	Erica	stricta	Sisyrinchium
vars.	Tetralix and	Ophrys	convolutum
Astragalus	vars.	apifera	iridifolium
asper	Erodium	Orobis	Solanum
Cicer	Reichardii	atropurpureus	pseudo-capsi-
Astrantia	Eutoca	lathyroides	cum
intermedia	gloxinioides	Oxalis	Spiraea
Bartonia	Festuca	articulata	Aruncus angus-
aurea	glauca	crenata	tifolia
Bellium	viridis	lasiantra	carpinifolia
minutum	Gemista	versicolor	cratægifolia
Betonica	procumbens pl.	Pentstemon	decumbens
orientalis	tinctoria	gentianoides	digitata
Bobartia	Gentiana	var.	Humboldtii
aurantiaca	cruciata	gracilis	indica
Briza	gelida	pubescens	japonica
gracilis	Gypsophyla	Phlomis	(Astilbe)
Calophaca	glauca	fruticosa	opulifolia
vulgarica	sabulosa	Samia	palmata
Calycanthus	Stevenii	Pulmonaria	salicifolia
occidentalis	Heliophila	rearitima	Ulmaria
Campanula	araboides	Primula	Stellaria
collina	Helonias	Stuartii	pungens
Elatines	asphodeloides	Prunella	Syringa
fragilis	bulbatus	grandiflora	Emodi
garganica	Hemerocallis	Ptilomeris	Thalictrum
hirsuta	fulva	Pyrethrum	speciosum
Hostii	Hordeum	alpinum	Thymus
latifolia, var.	jubatum	macrophyllum	Seryplum
macrantha	Hypericum	Willmotti	albus
nifida	orientale	Rhaponticum	Tropeolum
Rapunculus	Lagurus	ovatus	canariense
rhomboides	ovatus	Salvia	Weigela
rotundifolia	Lathyrus	lanceolata	multiflora Van
Saxifraga	latifolius and	patula	Houttei
Speculum	vars.	ruthenica	Savallii
strigosa	odoratus and	Sclarea	Yucca
Van Houttei	vars.		gloriosa var.

* Plants in this list are almost without exception such as have come into bloom during the past week.

GARDEN BEAUTY IN JUNE.

HARDY HERBACEOUS PERENNIALS.

To speak of garden beauty in June is to call up a vision of roses in the days of their own special month of high festival, the time when—

"The wings of the zephyr, oppressed with perfume,
Wax faint o'er the gardens of Gul in her bloom,"—

when our English flower-beds are as rich with the hues and perfumes of roses as that "land of the East" itself, of whose groves and flowers poets have sung in their most glowing words.

The present season, however, has not been favourable to the blooming of the earlier roses, and July will probably witness the true rose festival of the year 1872. Therefore, although the bloom of the Queen of Flowers is by no means absent even from this unfavourable June—that is to say the greater portion of its first half—it will, in their partial absence, be an act of floral justice to speak of those beves of lovely flowers which are so often completely overshadowed by the regal splendour of the rose at this period of early summer. Let us thus try for a moment to forget the superb beauty of the rose, and turn towards some of our hardy and beautiful herbaceous plants; and first to a group of homely, old-fashioned flowers, which are none the less attractive because they are homely and old-fashioned—I mean the Aquilegia family—the columbines—those light and graceful *figurantes* of the garden pantomime, whose gay presence is always welcome. White and pink, and crimson and purple, double and single, with their quaintly-beautiful forms poised, nodding and trembling, so lightly upon their slender stems, they are the true elfin beauties of the garden. Not only in the grand flower borders of the mansion, but equally so in the little flower-decked patch beneath the cottage window, the old-fashioned columbine is an equal favourite. The monks of the old time, who lavished upon the margins of their holy books sweet pencillings of interwoven flowers, mingled with golden spangles, lovingly adopted the columbine as one of their favourite models, though they only seem to have known the common purple kind in their monastic gardens. Long cultivation has, however, produced in that pretty floral family an endless variety both of form and colour; and besides the original species, we have the grand *Aquilegia glandulosa*, from Persia, and the exquisitely beautiful *A. cærulea*, from the Rocky Mountains of North America; a magnificent specimen of which I have just seen at Tooting, growing as hardily and lavishly as the old garden kinds. To these should be added in every collection the noble scarlet-flowered *A. Skinneri* and the beautiful *A. canadensis*.

The Larkspur tribe (*Delphiniums*), too, are now in all their glory. Towering in massive spikes of many shades of azure and purple, they at once arrest the attention as veritable aristocrats among our hardy herbaceous plants. What can surpass the splendour of Barlowii, with the metallic purple of its double blossoms, except, perhaps, the rival charms of one of its own tribe, namely, the deep, dazzling azure of *Formosa*? And then there is the new grand variety, *Mastodon*, sent out only last year by the veteran florist Van Houtte, not to mention a galaxy of Larkspur beauty which I noticed among some promising beds of seedlings raised by Mr. Parker. Before dismissing the Larkspurs, let me not forget the distinct scarlet species (*D. nudicaule*) which has flowered throughout the month of May, and is yet in full beauty and still a very attractive object.

Now is the high summer of the *Pyrethrums*, which, as grand and perfect flowers, are quite recent results of careful hybridisation. This genus is decidedly one of the grandest recent additions to our ornamental herbaceous plants that are perfectly hardy. It challenges to floral combat the dahlia, the anemone, the Chinese aster, and, taking all its qualities into consideration, comes off an easy victor. The great variety of colour, the exquisite regularity of the more perfect flowers, and the graceful habit of growth and neatness of foliage, establish it in a very high place among the very choicest of our hardy herbaceous plants.

The Lilies, that is to say a very large section of the family, are in all their glory in June. From the stately white lily,

the effect of which can never be overrated, to the deep crimsons and scarlets of new varieties of that section of the family to which the old favourite "orange lily" belongs (say *Lilium fulgens* Sappho, for instance), there is a wonderful variety of beauty to select from, especially when the Martagons are included, among which none surpass the grand old "Scarlet Turk's Cap." What a June garden might be contrived of lilies only!

The *Dianthus* tribe—our pretty pinks, and their congeners the *Lychnis*es and *Silenes*, are now putting forth all their floral power. In the *Lychnis* family, what can be more attractive than the double varieties of *L. Viscaria*, from pale pinky lilac to deep crimson? and what new plant, however beautiful, can surpass the splendour of the grand old garden favourite, *L. chalcedonica*?—it was one of the garden glories of the olden time; its heads of flower form a mass of brilliant scarlet, which, when the sun is shining upon it, is too dazzling for the eye to rest upon. Of the distinct species and garden varieties of pinks, what shall I say, except that they are all charming, and that the Sweet William division forms as grand masses of rich colour as any flowers in cultivation?

The grand Oriental Poppy now forms gorgeous patches of black and scarlet, and well replaces the pæonies, which are on the wane. Other members of the *Papaver* family are nearly as conspicuous; as *Papaver pilosa*, for instance, with flowers of orange-vermilion, and *P. lateritia*, with smaller flowers of similar hue. To these might be added several others of the family, not forgetting the pretty yellow one popularly known as the Welsh Poppy.

The later Irises of many kinds must be classed as among the most elegant of the floral beauties that grace the June garden with their presence—some of which are, indeed, strikingly beautiful. The division of the tribe commonly known as the Spanish Iris, with its crisply-formed flowers, quaint in form as Gothic carvings, is now just entering upon its flowering season, and will last for some time after the glories of the true broad-petalled kinds of the more graceful flower-de-luce, or fleur-de-lis, have passed away for the year. Though not nearly so elegant in form, the quaint, and at the same time dazzlingly rich mixture of colouring of the hundred varieties of Spanish Iris, render it a charming feature in a June garden.

The *Allium* family, notwithstanding that they are "garlics," must, from their beauty and variety, be perforce admitted, as bright-hued and attractive flowers in our June garden. The brilliant masses of profuse bloom of pure canary yellow, which *Allium Moly* puts forth so lavishly, should have a conspicuous place in every border, where they may be left to do duty, and not be gathered for the bouquet, as their somewhat too high-flavoured odour is not intended for close appreciation. The beautiful blue-flowered *A. azureum* is an extremely pretty plant; its subdued azure being of a very peculiar tone, and I noticed half a score other species in flower in that portion of the Botanic Garden at Kew devoted to the genus, several of which are well worthy of cultivation as attractive garden flowers.

The Campanulas, their colour being chiefly confined to tones of blue, with white varieties, are most of them in all their pride of bloom in June, and many of them are extremely handsome. Conspicuous among the taller kinds may be named the fine old peach-leaved kind, known as *C. persicifolia* and the clustered one *C. glomerata*, and the broad-leaved harebell *C. latifolia* and its large flowered variety, while among the dwarf ones are such gems as *C. pulla* (which is flowering freer in the open border than I ever remember to have seen it), *C. fragilis*, and *C. garganica*. *C. punctata*, which forms a deep cream coloured bell, is very remarkable, and there are many fine species which ought to be in cultivation and are not.

The Lupines and their near relatives the Baptisias are nearly all June flowers. That noble herbaceous perennial, *Lupinus polyphyllus*, is none the less superb for being common in every garden, for it forms such compact masses of purple spikes of flower as no other plant, not even the Larkspur, gives the gardener the opportunity of producing. *L. arboreus*, a shrubby kind with yellow flowers, should be in every garden, while the Baptisias, *australis*, and *alba*—blue and white, or *Thermopsis fabacea*, yellow—should never be absent where an

effect produced by varieties of the Lupine and its congeners is intended.

The Pea tribe from the Tangier to the common everlasting pea afford us many effective plants; and there are scores of other fine things scattered through a great variety of genera, some found in one garden some in another, but never met with collected in a single garden, however profuse in its aggregation of floral riches; and for a very good reason, namely that no single garden could offer sufficient space for a fitting display of all the flower-beauty that is in the full flush of blossom in this climate in the month of June.

I have confined myself, in the present instance, in describing my impressions of garden beauty in the present month, to the mere naming of a few of our best known hardy herbaceous plants, which, though well known, and indeed common, are in many instances much neglected, notwithstanding their beauty and the glorious effects which, when massively employed, they may be made to produce in our gardens.

In concluding I cannot help noticing the determined effort of Mr. Parker, of Tooting, to bring some of our grand herbaceous plants into greater prominence and estimation by means of pot culture. A pot of Iris, for instance, and one of *Pyrethrum* (among many others recently accepted), struck me as truly superb. The pot of Iris, with judges unaware of the relative rarity and value of plants, would most certainly have beaten any stove exotic, even had it been a *Cattleya labiata*.

On another occasion, should time and space permit during the busy floral month of June, I intend to notice the wonderful beauty of alpine plants in full flower on rockwork at this season; and also to say something concerning the fine flowering shrubs that have succeeded to the lavish blooming of the lilacs and laburnums of May.

NOEL HUMPHREYS.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.

THE FORTHCOMING ANNIVERSARY DINNER.

THIS charity, like so many others, may be said to have three sources of regular income—subscriptions, donations, dinners. Besides these there are two others that are accidental—the special gifts once for all of the living and the legacies of the dead. Considering the objects which this charity has in view, it is not too much to add that the whole of its sources of revenue ought to be increased—doubled, trebled, or more. Few charities can have a stronger claim to public support; while it has special claims on the employers of gardeners, who are the wealthiest and the most generous class in the community. The charity is, moreover, wisely and carefully administered, while the objects of it are the unfortunate and the disabled, and not in any case the imprudent or the reckless. It can hardly be said of the recipients of this charity that they have had the opportunity of providing for themselves. The majority of gardeners spend nearly half their time at labourer's wages learning the mysteries of their ever-changing profession. It has been facetiously remarked that gardeners take out part of their income in kind—in the pleasures of their business, the beautiful sights and scenes that surround them, and exceptional healthfulness of their pursuits. To say nothing of the impossibility of feeding, clothing, and educating a family on the beauties of nature or the more polished productions of art, the list of applicants for pensions from the Gardeners' Benevolent Institution is a bitter parody on the extreme salubrity of gardening. The fact is, the sudden and extreme changes of temperature to which gardeners are exposed, lay them open to the attacks of rheumatism in all its hydra-headed cruelties of development. This disease is the natural enemy of gardeners—"pursuing them fast through every lane of life, nor missing once the track," until it strikes them down by hundreds, comparatively in their prime, premature wrecks of helplessness and suffering. The men's hearts are still in their business, their heads are as clear, their experience more valuable than ever, but their hands, their feet, their backs are set fast in worse than iron fetters. It is bad enough that such have to suffer, but the question is, Are they to be allowed to starve as well? or, are those who have adorned the higher walks of horticulture or

lighted its commoner paths with the light of a good and brave life and a pure character to be permitted to sink to what many of them dread more than lack of bread—the Union? and end their days, begun amid so much hope and beauty, on pauper's fare and on a pauper's hard, lonely, and friendless bed? No. Never; surely, while the horticulturists of Britain can prevent it. It is but little that the Gardeners' Benevolent Institution offers to its pensioners—£16 a year to men, and £12 a year to the widows of gardeners. Let us at least see to it that this little is forthcoming to all who need it. May the forthcoming be the last election at which we shall read of "second, third, and fourth applications." Did the funds permit, the committee would only be too happy to relieve every applicant that comes within the stringent rules, some of which seem designed rather to bar out than bring in the helpless and the suffering.

The Rev. Mr. Reynolds Hole is to take the chair at the dinner on Monday, the 2nd of July. Let that announcement be passed round as the summons to action among all true gardeners. We have had a gardener in the chair before—Sir Joseph Paxton; but he was more than a gardener, he was an architect, a statesman, and much more besides. Mr. Hole is a gardener from head to foot (six feet—we know not how many inches more—of horticulture), crowned with roses. He is likewise a worthy clergyman, a brilliant writer, and an admirable speaker; his prose being better than some people's poetry. Now, therefore, is the time to prove our fealty to our leader, by rallying to the support of the charity which he has been pleased to honour and serve by presiding at its anniversary dinner. If this charity is not all that it might be, it is, nevertheless, good as far as it goes, and does good work in ministering to the necessitous and distressed among us. Besides, it is the only one. We have no other means of helping our brothers and sisters in the time of need. No one knows better than Mr. Hole how many hearts will be with him whose faces will be unseen at the festive board. It is not many gardeners who can afford a guinea for a dinner and another for travelling expenses. And if they could, perhaps a donation to the charity would prove more serviceable. Most of us can do something, however little, to extend its usefulness: we can canvass for new subscribers, give an extra donation, bring its claims before employers, and make a special effort to secure life members.

NOTES OF THE WEEK.

— VISITORS to Birmingham who wish to see the gardens or country seats in the neighbourhood of that town, will find excellent aid in "The Birmingham Saturday Half-Holiday Guide."

— THE plan and view of the great temperate house at Kew which appeared in THE GARDEN last week were engraved for us from drawings kindly lent us by the architect, Mr. H. M. Burton.

— MESSRS. GRIMBLY, HUGHES, & DEWE, of Oxford, closed their establishment to enable their *employés* to visit the flower show that lately took place in that town.

— M. BELHACHE reports, in the *Revue Horticole*, having found the fine *Saxifraga pyramidalis* growing freely on the thatch of a house in Normandy. It is one of the many plants we have pointed out as not only suitable for old walls, roofs, &c., but which thrive much better in such positions than in the garden proper.

— A NOVELTY in Bath, a flower sermon, is announced by the teachers of Percy Sunday Schools, as about to be preached by the Rev. R. P. Macmaster, of Bristol. Each young person attending this special service is requested to carry a bouquet or wear flowers, which request will no doubt be universally complied with.

— A FINE bush of the laurel-leaved *Cistus* (*C. laurifolius*) is now in flower in Messrs. Rollisson's nursery at Tooting. The plant is about three feet high, and is literally covered with large white flowers, many of which are nearly three inches across, causing it to appear at a distance to be a perfectly white bush. This distinct species is perfectly hardy at Tooting, plants of it having stood out for several winters uninjured, whereas plants of the common laurel planted near have often been killed. It is well worthy of a place in any shrubbery or on the rougher parts of rockwork, pleasure-ground banks, and similar places.

— MESSRS. SUTTON, we understand, will not withhold the special prize offered by them at Birmingham for the best collection of six sorts of peas in the event of its not including their new late pea "Best of All," which may not be ready in time owing to the backwardness of the season.

— A CORRESPONDENT of the *Country Gentleman* says he has preserved his garden stakes—made of pine—by boiling them for a short time in a solution of blue vitriol, and after long use they are as sound as the day they were made, while other stakes, coal-tarred, have failed.

— We are informed that two fine specimens of the Hardy Palm (*Chamaerops excelsa*) are now flowering out of doors in the nurseries of Messrs. Backhouse & Son, York. Planted on a lawn facing the south, they have stood the test of several severe winters unprotected.

— THE Pyrenean Columbine (*Aquilegia pyrenaica*), a rare dwarf species, is now in flower at the Royal Horticultural Society's gardens at Chiswick. The plant there is scarcely six inches high, and its flowers are a deep purplish blue. It is worthy of a place in any collection of alpine plants.

— SEDUM NEVII, a new and distinct North American species of stonecrop, is now in flower at the Hale Farm Nurseries, Tottenham. The flowers are white, and are produced in somewhat the same manner as those of *S. pulchellum*.

— THE *Wine Trade Review's* Bordeaux correspondent writes, under date June 10th:—"Up to the present time the vines have not suffered much from the cold and rainy weather of the past month, none but the vineyards on heavy or low ground being affected. A period of warm sunshine is, however, now indispensable for the proper flowering of the vine."

— THE magnificent *Rhododendron Falconeri* is now in bloom in the temperate house at Kew. This, although rather a shy flowerer, appears to thrive admirably planted out in borders, along with others of its class, in this conservatory. Its blooms are of a creamy-white colour shaded with pink, and are larger than those of any other species of *Rhododendron* in cultivation.

— WE understand that the Marquis of Bute—from a desire to prevent modern roses from entirely supplanting the older sorts familiar to us in days gone by—has kindly offered for competition at the forthcoming West of England Rose Show two special prizes, viz., one of £3 for the best collection (twelve) of the oldest known and most attractive garden roses, and another of £2 for the best collection (twelve) of the York and Lancaster variety.

— MR. AYRTON states that steps have been taken to obtain an adequate supply of fresh water for the bathing ponds in Victoria Park by means of boring, and that the necessary work will be completed within a short time. It would not be desirable to empty the lakes during the present warm weather; but when the proper season arrives they will be cleaned out.

— THE fine weather which we have experienced during these past few days has induced growers of sub-tropical plants to trust many of their treasures out of doors. Prominent amongst things put out may be named *Ficus*, *Cordylines*, green-leaved *Dracænas*, *Wigandias*, *Polymnias*, *Verbesinas*, *Senecio Petasites*, *Cannas*, *Aralia papyrifera*, and some of the hardier palms.

— THE Dowager Marchioness of Westminster lately invited the whole of the tenantry on her estates in Wilts and Dorset to a garden party at Fonthill Abbey, one of the most beautifully situated residences of her ladyship. A capital luncheon was served up in a marquee on the lawn in front of the old abbey tower—the only portion left standing of Beckford's princely mansion—for three hundred and fifty guests.

— THE London correspondent of a provincial journal tells us that never was the business of the horticulturist so flourishing as it is now. The demand for flowers is extraordinary, and the prices given for them amazing. Belgravian dinner-tables are now regular bowers of flowers and ferns. At a recent dinner in Harley Street (by no means one of the most fashionable streets in London), the flowers and dessert cost £200, the peaches alone being twelve guineas a dozen.

— THE excessive heat which has prevailed in London during the last few days has not been felt in all parts of the British Islands, as the returns to the Meteorological Department show. At two p.m. on the 18th, the shade temperature in London was 85°, while at some stations it was below 60°. The highest sun temperature noted on the 18th at the Royal Observatory, Greenwich, was 145°. A Yorkshire telegram says that a heavy thunderstorm broke over the Yorkshire Wolds on that day. A young gentleman was killed in a field near Mowthorpe; two women close by escaped. There was a perfect hurricane on the south side of the Wolds, and trees were uprooted.

— IN the south of Ireland the weather is still cold and wet, more like that of early April than June. The frost of the 22nd ult. very much injured fruit crops. Scarcely any pears remain, either on walls or standards, except very early ones, such as Citron des Carnes, which have escaped. Fruit of gooseberries, which were frozen, have dropped off. Of strawberries, two-thirds are destroyed. Cherries set well, but got frozen, and are a poor crop. Apples, too, are indifferent. Altogether this is a bad fruit season. Potatoes have likewise suffered terribly in low-lying places; those in high, exposed situations are best; new potatoes will not be in for another week yet. Vegetable crops are greatly injured by slugs.

— WE believe there is now flourishing in the grounds belonging to Sir John Taylor Coleridge, at Ottery St. Mary, a small plantation of trees transplanted from the Tichborne estates, and christened the Tichborne knoll, in commemoration of the great case. These trees were given to the Attorney-General for the purpose described, by the ladies of the Tichborne family, as the only expression of their appreciation of his services which he would receive. This incident proves that whatever the outside world may think as regards the Attorney-General's compensation, the family itself felt that no amount of money could adequately represent their sense of his successful devotion to their cause.—*Law Times*.

— THE owners and leaseholders of land abutting on the Upper and Lower Malls at Hammersmith, where it is proposed to form an embankment on the foreshore of the river, extending from the pier of the Hammersmith Suspension Bridge to the Upper Mall, have intimated to the Fulham Vestry that they entirely concur in the proposed embankment. They say that in consideration of the great improvement likely to follow, they will be quite willing, without pledging themselves to any specific sum, to contribute a substantial and proportionate amount towards the cost of the embankment. All they stipulate for is, that any rights they may possess shall not be injuriously affected by the proposed works.

Babianus.—On Tuesday last Mr. Gumbleton brought us one of the most charming bouquets of early summer flowers we have ever seen. It consisted wholly of Babianus, a lovely race of plants, too much neglected in our gardens, although endowed with the richest and most delicate hues. Probably some difficulty in cultivating them makes them so rare in collections, but Mr. Gumbleton grows his with his other hardy bulbs in his garden at Queenstown. He has kindly promised to say a few words on their culture some day in THE GARDEN. The following are the varieties brought to our office:—
1. Angustifolia, good purple with brown spot at base of each petal.
2. Atrocyanæa, light lilac purple with faint spot. 3. Cælia, beautiful deep rose-shaded carmine. 4. General Scott, white shaded lilac.
5. Kermesina, good clear rose. 6. Rosea grandis, fine deep purple rose. 7. Pallida, pretty clear lilac and white. 8. Speciosa, large deep lilac faint-shaded white. 9. Lady Carey, shaded white pink rose. 10. Villosa, lilac and white.

THE PROPAGATOR.

THE ART OF GRAFTING.

(Continued from p. 643.)

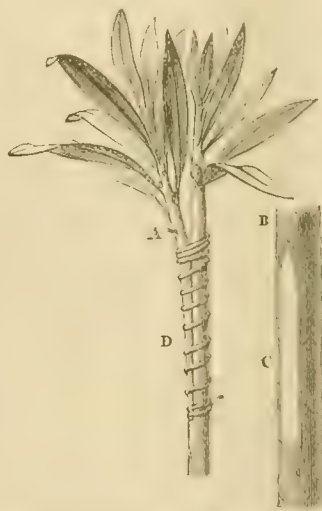
GROUP 3.—GRAFTING DE PRECISION.

GRAFTING *de precision*, or precise grafting, implies that the stock and scion are so accurately prepared and fitted to each other, that when they are put together they will coincide perfectly, without using any force, and without leaving any vacuum. The rigorous exactness which the operation demands, has led to the invention of special implements, such as the combined grafting-knife and the metro-grefte. Spring is the proper season for precise-grafting. It succeeds also in summer, if care is taken to select the woody part of young branches for scions, to shade them, and keep them from getting dried. Towards the end of summer, when the flow of the sap is diminishing, this method may also be employed, observing that the sap should be sufficiently active to produce immediate cohesion, but not so active as to cause an autumnal development of the buds. Experience accustoms one to perceive the moment when the sap begins to thicken, when the functions of the leaves are at an end. Under this new title of "precise-grafting," we class veneer-grafting and grafting by inlaying.

VENEER-GRAFTING.

GENERAL DIRECTIONS.—This method is principally employed in grafting a certain number of trees and evergreen shrubs, and for grafting under glass with the air excluded. Nurserymen and florists practise it in the open air or in the propagating house, in spring rather than in autumn, especially in the case of evergreens. A stock with the sap in a condition of moderate activity and a well-ripened scion are the two first essentials. The scion may be a shoot of the current year or of the preceding one, according as the grafting takes place in the autumn or in the spring. Its length varies from two to six inches, and it must be cut with a flat splice-cut without the least unevenness, in order to fit the stock exactly. If it is evergreen, the leaves are not removed, and it is not cut from the parent-tree until immediately before it is fixed. The metro-grefte here comes into requisition; with its help a cut is made in the stock the exact size of the splice-cut on the scion. Nothing then will obstruct the union of wood and bark. The two parts are put together without cleft or insertion, by simply applying the scion to the top or the side of the stock, under the bark, or with the bark removed, employing either one scion or several. Such are the various modes of branch veneer-grafting. We shall proceed to treat of them in detail, without speaking of veneer bud-grafting, which is described in the chapter on bud-grafting, as we are now engaged with the subject of grafting with detached branches only.

ORDINARY VENEER GRAFTING.—By this method a scion is brought into contact with the first layer of alburnum in the stock. The stock is not to be headed down beforehand. In the case of an evergreen, the leaves on the part destined to receive the scion, are cut off at the stalk or in the middle; the scion also should not be cut from the parent-tree more than a day before



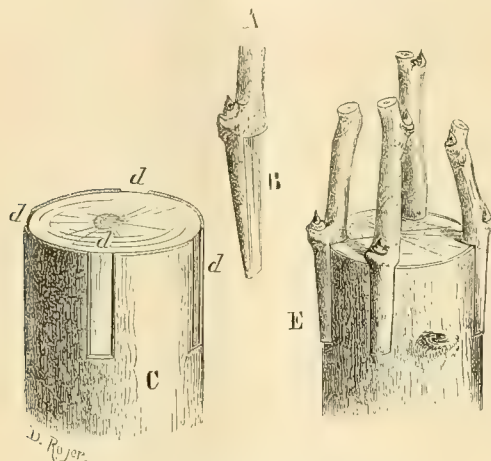
Ordinary Veneer-grafting (Rhododendron).

it is used, and its leaves should not be removed. The scion having been cut with a straight, longitudinal section, its diameter is taken with the metro-grefte, which is then applied to the stock (B), and the dimensions of the section of the scion are traced with it. Nothing more remains to be done but to cut away the part between the two marks, to correspond exactly with the section of the scion, so that they may fit as at n. First remove the bark, and if that is not sufficient, cut the first layers of the alburnum (c). Instead of a metro-grefte, a grafting-knife or a common pruning-knife may be used. Place the scion against the stock, and with the point of the knife mark

out the outline of the section, and then cut away the bark and woody layers. The scion is fitted to it from time to time until the parts are accurately adjusted. A bandage of either woollen or cotton thread, with close turns, is indispensable. Grafting wax is not always necessary. Instead of a flat section on the stock and the scion, notches or tongues may be cut, which will fit into each other. This is the English method.

VENEER CROWN-GRAFTING. The scion is not cut with a sloping or splice cut. A notch at the top of the cut (B), such as is made in ordinary crown-grafting, will be useful to set the scion square on the stock (C). With the metro-grefte the diameter of the cut (B) is marked out at d, d, d, d, successively, where the scions are to be applied. As the double spatula has cutting edges, the bark will be divided; it is then removed, and the scions placed as shown at E. The application of the bandage and wax is indispensable. The bark only has been removed; the alburnum is not cut. A large tree is more easily grafted than a small one, because the latter presents a

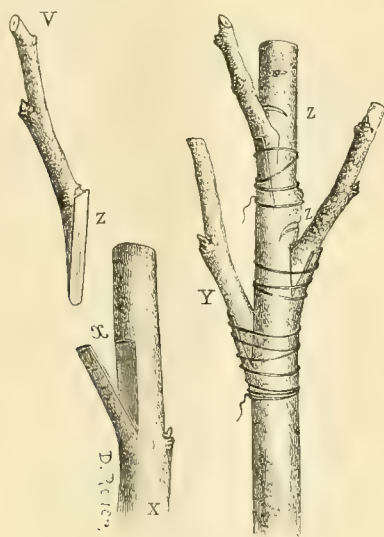
rather convex surface, and would necessitate the cutting of the alburnum in order to fit the scion in properly. With an old tree, the cortical layers of which are thick, the shifting of the scion under the bandage is to be apprehended. The way to remedy this is by leaving the cut part of the scion rather thick, or better still, by placing an intermediate substance between the back of the scion and the bandage, for instance, the strip of bark which has been removed from the stock. These strips of bark may be turned down without removing them, and afterwards brought up on the backs of the scions before the bandage is applied. The two seasons suitable for this mode of grafting are March and April, when the sap begins to flow, and September and October, just before it goes to rest. The treatment after grafting is the same as that which we have



Veneer Crown-Grafting.

indicated in the case of ordinary crown-grafting. A grafter in our establishment, Louis Asselin, invented this method, but the process is so simple and reasonable that other practitioners must have tried it before him.

VENEERING WITH STRIPS.—M. Trouillet, arboriculturist at Montreuil, communicated to us this mode of grafting. It has some resemblance to "side-grafting with a simple branch." We employ them both with equal success in restoring trees which have lost their branches. The proper seasons for operating by this method are in April with a shooting bud,



Veneering with Strips.

and in August with a dormant bud. With the metro-grefle we cut the scion, on its rounded face in a duck's bill section. We measure the diameter of this, and applying the implement to the stock (X), we cut the bark with the double spatula;

then with the grafting-knife cutting across at the top of the two lines, we bend back the strip (X), fix the scion (V) in its place, and bring up the strip upon it, as shown at (Y). It is then bandaged, and grafting-wax applied to the crevices. In operating on strong or much-branched trees, it is wise to cut notches (Z, Z) half an inch or so above the grafts. These, by arresting the flow of the sap, will divert it towards the new shoots.

TREATMENT AFTER VENEER-GRAFTING.—As the bandage is indispensable, the first care will be to prevent it becoming too tight, and it will require to be well looked after. Soon after spring-grafting, the stocks which have been side-grafted are headed down by degrees, leaving them at last a heel of four inches in length. With subjects grafted in the end of summer, the heading down of the stock is completed after winter. The heel serves for fastening up the scion in the early stages of its development. It is removed after a year's growth. If the object be to produce a lateral branch, the development of the scion is promoted by a notch (Z) made over the place of its insertion, and by cutting away the branches growing above it. A stake or prop is useful to fasten the young graft to.

(To be continued.)

C. Baltet.

GARDENING IN BERLIN.

A CORRESPONDENT of a morning contemporary speaks well of the gardening of the Berlinee:—Trees dot the streets with delightful irregularity. Save in the Linden, the Bellevue, and one or two other set promenades, there has been no plan observed, no order followed, in the planting of these hearty and hardy old Dryads. Sheer love of the green leaf and its rural associations has evidently prompted some house owner here and there to insert a slip of some favourite tree amongst the kidney stones fronting his house, without notifying his intention to the authorities. There is many a stout, honest tree flourishing exceedingly in what would otherwise be absolutely a stony wilderness, and the whole aspect of the town is thereby brightened up to an extraordinary extent, or to an extent that, at least, seems extraordinary to any foreigner walking through its streets to-day and recalling their appearance during the month of January. The villa gardens that flank the forest's northern side are many of them, masterpieces of horticultural art. In the absence of all evidence of taste in music, in the drama, painting, sculpture, or literature, I had given up the thoroughbred Prussians as utterly devoid of artistic discrimination or love of beauty; so I am rejoiced to find that they possess in a remarkable degree the talent of gardening, as well as a sincere partiality for flowers and appreciation of them. The Berlinee are unquestionably great at gardening, and have also a natural bias in favour of flowers. An ex-American Minister observed the other day, *apropos* of the latter fact, that their inclination was doubtless the result of an instinct providentially bestowed upon them in view of the perils they run from mephitic exhalations; vegetable matter being an eager absorbent of such gases as are dangerous to human health. This may or may not be the case; but it is very certain that horticulture is at a premium here, and that flower-pots and window-gardens belong to the domestic institutions of the German capital. But what they have done to render theatre-going not only possible but agreeable during the burning summer months deserves honourable mention. Their minor houses, all situated in suburbs far distant from the fashionable centre of Berlin, are with scarcely any exceptions constructed in such a manner that their lobbies communicate directly by broad staircases with large and prettily laid out gardens, in which fountains play. Every door in the auditorium, so to speak, opens into the fresh air.

These practical Berlinee not only supplement their theatres with gardens, but all their other social institutions, except their churches—though, as these latter are sparsely frequented at any time of the year, and scarcely at all in summer, it is easy to account for the apparent shortcoming. No sooner has the warm weather shown a lively disposition to set in, than gardens spring up all over the town, frequently in places with which your mind, accustomed to consider them from a wintry point of view, has never associated flowers or fountains, and experiences some difficulty in so doing. Say you turn in to a familiar restaurant on the Russian Embassy side of the Linden, or in the Friedrichstrasse, or, in fact, anywhere about the Friedrichstadt. Where your hybernally educated eye is accustomed to look for a dismal flagged yard, pent in by high, frowning walls, its only ornament, perchance, a ghastly pump, you perceive a sort of excerpt from Fairyland, made up of bright glass, gay flowers, flashing, plashing, dazzling water, and green shrubs.

GARDEN DESIGN.

WATER MARGINS.

THE introduction of water in an artificial landscape is one of the most difficult problems that beset the horticultural designer. Not only is it absolutely necessary to conceal the extent—which is generally very limited—but the character of the shore, and the judicious placing, and form of the masking island, are also most important, and extremely difficult features to manage fittingly. It is in these characteristics of an artificial lake or stream that the *ars celare artem* is most imperatively called for, and most difficult to achieve. The ugly brick-work round the canal in St. James's Park reduces the aspect of that otherwise fine piece of water to that of a farmyard duck-pond; and a similar name might be applied, with still greater force, to the lake in the Regent's Park, the shores of which, with the fine opportunities they afford of varied outline, might surely have been entrusted to an artist of a higher grade than the bricklayer; and yet such has not been the case, and consequently, the effect is precisely what a French critic would call that of the *basse-cour* puddle or pond.

What a contrast does the well-known Continental example



An Artificial Lake.

of an artificial lake, with which these remarks are illustrated, offer to the sad vulgarity of the treatment to which the Regent's Park water has been subjected! In the highly successful model engraved above, we have every variety of shore represented by skilfully-managed design. At one point it is precipitous and rocky; at another, the turf sweeps down gradually to the water and loses itself in an imperceptible outline; at another, low-growing shrubs that love the water's edge bathe their lower branches in the congenial element; and an island is so placed as effectually to conceal the extent, while at the same time it forms a most pleasing object in itself; a certain interest being secured to it by an architectural monument of graceful design.

The water in the Regent's Park would lend itself with singular advantage to a similar kind of treatment of its shores, if the authorities, who mete out garden beauty so very grudgingly to us, could be persuaded that the public would really appreciate something better than they are allowed to get, in the treatment of their parks and gardens. We have, close at hand, a successful example of what might be done, within the little circle of the Botanic Garden in the Regent's Park, where, by skilful devices, hill, and plain, and wood, and meadow, and water, are each made to play their parts pleasingly and effectively, within a restricted space. NOEL HUMPHREYS.

GARDEN DESTROYERS.

THE GOOSEBERRY CATERPILLAR.

THE gooseberry grub or caterpillar deprives everyone of us of many a gooseberry tart and many a pot of gooseberry jam—a delicious delicacy, by the way, when made of little rough reds; this insect is a resident amongst us, and not to be scared away by any of our little manoeuvres. Some years, however, are more favourable to its increase than others. Early one spring some years ago, or, to be more precise, about the middle of April, I saw the flies were already on the wing; very busy here and there, but in some localities only exhibiting themselves singly. These flies have certainly received half-a-dozen Latin names, but of these *Ribis*, or *Tenthredo Ribis*, is perhaps the best.

Having long been acquainted with the perfect insect, and being well aware of the probable result of its visitation, I kept my garden in a cloud of smoke—a practice at that early season not altogether grateful to the olfactories, but decidedly beneficial to the fruit crops. Thus I preserved my gooseberries and currants, while in many of my neighbours' gardens beyond the reach of the smoke nuisance the gooseberry bushes had to pass through the valley of the shadow of death; and as for the poor gooseberries, they shrivelled

into disgusting abortions after making a futile attempt to reddens into ripeness.

The parent fly of the caterpillar is a good-looking insect, and gardeners generally consider it a visitor with which they have little or nothing to do—"a species of thrip," to which some flea powder or beetle-killer might be administered with advantage if readily procurable; but, as the fly chiefly exhibits itself when skies are cloudless and suns bright, I have often heard it spoken of with some degree of approbation, evidently from its connection with smiling weather. I have often watched these flies glancing in the sunshine, chasing each other over the currant and gooseberry leaves, then in their youngest and tenderest state, spreading out their gauzy and glossy wings, the hind wings projecting from beneath the forewings, like those of the lappet moth, and enjoying to the top of their bent the genial influence of the short but sweet mock summer with which we are generally favoured before the arrival of those biting eastern blasts which precede and usher in the real one, and which are supposed to bring the gooseberry grub into existence. I will now describe the fly, and, on the acknowledged axiom of *place aux dames*, I begin with the lady. The wings are four, perfectly transparent and almost colourless, but in the sun very often reflect prismatic tints like those of the rainbow. They have a number of brown rays, and a dark-brown semicircular stigmoïdal spot about the middle of the costal margin; the antennæ are dark brown above, but beneath they are dull orange; the thorax is yellow above, with three shining black spots, the middle one of which is indistinctly

oval, the outer one on each side being somewhat crescent-shaped; beneath it is yellow, with two large shining black spots; the body and legs are yellow; the metatibiae at the tip, and the whole of the metatarsi, are brown. The male has black antennae, and the back of the thorax is wholly black. The three black marks, generally so distinctly separated in the female, are united in the male, forming a large blotch. I have been thus minute in my description, believing that some of my readers will like to make themselves thoroughly acquainted with the species.

The life of the gooseberry grub in its perfect or winged state is but another example of implicit obedience to nature's universal law "increase and multiply." Very shortly after the due celebration of the nuptials, the female repairs to the under-side of a leaf, and, after sawing a little slit on the midrib deposits her first egg. Next, proceeding towards the tip, she deposits a second egg, then a third, and so on to the very tip of the leaf, or at least as near the tip as she can conveniently find standing room. The midrib being thus garnished, she next takes one of the side ribs, and then another, adorning them in the same manner, until all the principal ribs are garrisoned with her eggs, ranged in the prettiest rows. After the first day the eggs begin to grow, and before the end of a week they have attained three or four times their original size.

It is seldom that more than a week elapses between the laying and the hatching of each egg—between the moment of its being glued in the groove or slit provided by its parent, and its entrance into active life; but the period is not a constant one, since it varies from four to twelve days. The grub comes out head foremost. His body is nearly transparent, but just tinged with smoke-colour, the eyes—they are not real eyes, by the way, but ocelli—the eyes so conspicuous in the egg, still being very observable; but, as the head becomes darker, losing its pellucid character and acquiring colour, these gradually disappear. The grub seems to be born with a good appetite, for immediately on emerging from the egg-shell he crawls down from the ridge of the rib, and gnaws a little round hole in the softer part of the leaf. Immediately after making his first meal, the green of the leaf communicates its colour to the body of the caterpillar, which forthwith becomes green instead of smoke-coloured, but is still so transparent that the particles he has eaten show through the skin as a green line down the middle of the back, and it is this green line which tinges all the other parts. The little grubs descend from each rib in equal numbers, right and left, leaving the shells of the eggs attached to the rib, and looking exactly like so many little empty silver purses. The depredations are now visible from above, for a number of small round holes appear simultaneously on each side of each rib, ranged in irregular rows; in each of these holes one of the tiny gluttons may be seen clasping the edge of the hole between his legs, and elevating the end of his body in the air. At this nick of time, by a little care and industry you may save a good share of your gooseberries and currants. Each leaf has some sixty-seven little grubs feeding on it. In the course of a few days, if you leave it quite alone, the leaf will have vanished entirely—disappeared all but the stalk and two or three of the ribs—and the grubs will have separated and wandered away to other leaves. Each of them, after leaving this infant-schoolroom, would devour three whole leaves before it attained its full size; therefore, if that leaf were picked and destroyed with all its inhabitants, you save two hundred and one leaves.

When full-grown, the grub is, or ought to be, well known to every gardener; but perhaps some of your readers would like a description nevertheless. The legs, as in all insects, are six in number. These are longer than the legs of moth caterpillars, and not so hard and horny, nor so pointed at the ends. It has also fourteen claspers, counting the two with which the body terminates. The claspers are generally attached to the edge of the leaf while feeding, the first pair of legs being held free, and allowed to move with each movement of the head as he takes mouthful after mouthful. When full-grown the head of the grub is quite black, and the eyes are no longer to be distinguished; the colour of the body is dull bluish green, with rather paler sides, and a yellowish space just behind the head, and another just before the tail. It is distinctly divided into twelve segments, and each segment has a number of black warts; these warts, except on the second, third, fourth, and twelfth segments, are arranged in three indistinct transverse rows, and on each side of each segment is one larger and more conspicuous wart. From each wart rises a strong but short upright black bristle, and there are several of these bristles on the head itself. The spiracles are whitish, and the thirteenth segment has a shining black plate, ending in two short and rather hooked points; the legs are ringed with black and green, but not distinctly, and the claws are brownish; the ventral claspers are pale, semi-transparent green, and the dorsal-claspers yellow.

When about half an inch in length, the grub leaves off eating: a very remarkable event, for its appetite is not intermittent like that

of most other created beings, but continuous—an incessant gnawing, craving, consuming propensity. The black head now separates from the neck, and splits down the middle, and the skin of the neck also splits, thus together making an opening large enough to allow the grub to poke out a new head which has been formed within the old one: a feat—that is, the poking out—which he forthwith performs, and gazes about him, moving his head slowly and majestically from side to side, as though he were just landed in a new world; and after the head comes the body, and after the skin is completely cast it has much the appearance of an empty stocking, and the newly-emerged grub has none of the black spots which previously distinguished it. The warts and hairs are certainly present, but the warts are colourless; the head is clear as glass, and the two black eyes so conspicuous in the egg and newly-hatched grub are again visible. In about twenty minutes the black spots begin to reappear, and in four hours become as distinct, and the head as black as before the moult. When the grub has regained its colour, it again begins to eat with a will, and eats away day and night for four or five days more without stopping. It then sickens again for its last moult, and this is performed in the same way as the previous one; but this time the spots, warts, and bristles are cast with the skin, and appear no more. The grub is now of a pale delicate green colour, except the yellow patch at each end, which it still retains. It has now done with eating. When hard enough and strong enough after this last moult, it marches to the main stem of the bush, and deliberately descends it until it reaches the ground, or more rarely crawls along a hanging branch, and allows itself to drop from the extremity.

The object of gaining the earth is to burrow beneath its surface, and no sooner does the grub once feel the soil than he forces his way into it head foremost, after the fashion of a mole. As soon as he is deep enough to answer his purpose—the depth varying, by the way, from two to eight inches, according to the hardness or stiffness or lightness of the soil—he makes a little oblong cell in the earth, and therein spins or constructs a tough blackish cocoon attached all round to the walls of the cell. In this cocoon he disposes himself to await the change to a chrysalis, and soon afterwards to a fly. The chrysalis is of a yellowish white colour, and each of the limbs, as well as the body, is clothed in a separate case or skin, which is cast off when the final change takes place. The fly is furnished with strong mandibles, the only use of which seems to be to gnaw a hole in the cocoon, through which to effect its escape.

The time occupied in this round of existence is very varied. Many of the eggs that are laid in May produce grubs before the middle of the month; these go through every change and are on the wing by Midsummer Day; and eggs laid about Midsummer will go through their changes as far as the cocoon by the middle of July. The first brood thus takes a calendar month for the round of its existence, and the second brood generally remains under ground until the following April, or perhaps in some instances even until May. It is, however, clearly impossible to lay down rules and dates for events which depend almost entirely on temperature and the varied character of soil and climate.

A word as to remedies. A favourite remedy for gooseberry grub, is whitewash—the effect of which is deleterious to the leaves, and certainly prejudicial to the fruit. Strewing with quicklime has a similar effect. The free use of smoking weeds and the careful picking of perforated leaves I have already alluded to; I may add that some benefit will also result from treading the ground very hard about the roots of the bushes. An observant gardener will scarcely fail to notice that where bushes stand singly at the ends of patches of potatoes, peas, or beans, they are sure to be more infested by the grub than those in a close bed. The reason for this appears to be that the soil for all our culinaries is made as light as possible. In a bed filled with gooseberry bushes, on the contrary, there is but little moving of the earth going on, and it gets trodden hard when the gooseberries are ripening, and often remains so throughout the year. This hardening of the soil prevents the grubs from burrowing when they come down from the bushes full-fed; so they go wandering about, and become a prey to the redstart, hedge-sparrow, house-sparrow, whitethroat, and robin, as food for their young, and also to toads, which are always on the look-out at night for everything that crawls. This hardening of the soil also prevents so frail and feeble a creature as the perfect fly from forcing its way upwards through the superincumbent earth, so that those on the surface and those under the surface are alike assailed by this simple circumstance—contrivance I cannot call it. I have tried numberless experiments on the grubs themselves, and have found them very easy to kill: brine, tobacco water, snuff water, even plain water, hot or cold, are perfectly efficient; but all such remedies necessitate the capture of the grub before they can be administered with effect. Freshly-ground hellebore powder is said to be a good remedy.—*Edward Newman, in "Field,"*

THE GARDEN IN THE HOUSE.

VARIEGATED AMERICAN ALOE.

It may seem almost superfluous to figure so well-known a plant as *Agave americana variegata*; but its use for decorative purposes can scarcely be too much dwelt upon. For halls, staircases, and lobbies, as well as for its more frequent positions on terraces and pillars and in conservatories, it is invaluable. There are, however, many places of this description where this species would be too large and out of harmony in its proportions with adjacent plants and other "fixings." For such places, there are many smaller species of *Agave*, which are just as easily grown, and quite as ornamental. I have no intention of attempting to describe these different varieties, since those who wish for information on this point can see a large collection of them at Kew Gardens, and can purchase plants from the leading London nurserymen, though not in any quantity. One of the best collections is that of Mr. Williams, of Upper Holloway; and in the second volume of his "*Stove and Greenhouse Ornamental-leaved Plants*" will be found full directions for



Variegated American Aloe.

cultivation, together with descriptions of seventy varieties of American Aloes (*Agave*). The African species, belonging to the genera *Aloe*, *Apicra*, *Gasteria*, *Haworthia*, &c., are all interesting and curious. Thanks to some few amateurs, and notably to Mr. Peacock, of Hammersmith, there has lately been more attention paid to this tribe of plants than formerly.

W. T.

CULTURE OF PLANTS IN ROOMS.

(Continued from p. 630.)

WATERING.

From various experiments which we have made in regard to watering plants in rooms during different months, we may deduce the following nearly correct rule for the guidance of the unskilled amateur: healthy evergreens, growing in moderately large pots and in light soil, and which have been brought from the plant-house into the heated room, should, in September and October, be well watered once about every three days, and from November to April once every two days. In summer, in hot, dry weather, and in an airy, open, and well-lighted position, they should be watered daily, if they are in a condition of luxuriant growth. On the other hand, healthy evergreens, in comparatively larger pots, and in stiff loamy soil, which have

been already growing in the room for some time, should, in September and October, be watered once every seven or ten days, and from November to April once every five or seven days. In summer, in dry, hot weather, and in a light, airy position, they should be watered once every two or three days. Ivy plants in boxes, as long as the ball is not filled with roots, should be watered only once a month.

TRANSPLANTING—SOIL—MANURE.

Plants grown in pots and other vessels, and also in glazed cases, receive only a proportionately small quantity of soil to furnish food for the annual formation of fresh leaves, shoots, and flowers. The smaller the pot, and the less the quantity of nutritious matter in the soil, the sooner will the latter be exhausted by the plant, and then, unless a fresh supply of nutriment be given, a scanty and feeble growth must be the consequence. The addition of fresh nutriment may be made either by renewing the soil in transplanting or by manuring. We shall, hereupon, consider the various kinds of soil, the time and manner of transplanting, and, lastly, the different kinds of manures.

THE VARIOUS KINDS OF SOIL AND OTHER MATERIALS USED IN TRANSPLANTING.

Plants are not all alike in their requirements with respect to food, some needing one kind and some another; therefore, in all large gardens a mixture of different kinds of soil is prepared beforehand, or else soil is brought from field or forest, where it is found in a condition naturally suitable for the particular kind of plant. Composts and mixtures of various kinds may be obtained at most of the seed warehouses, but as the amateur may not always be able to procure them in this way, we shall describe the various natural earths and materials which may be used instead, and which may be found in most fields or woods.

SAND AND MOSS.

An important ingredient in every kind of soil is sand, which is so much the better adapted for plant culture in proportion as it is pure and free from other matters. The best is generally found on the banks of rivers. When it is mixed with clay or other matters it is cleansed in the following manner:—Fill a pail or tub about one-fourth with the sand, then pour in water and stir up well with a stick; by this means the clay, &c., becomes suspended in the water, while the sand sinks to the bottom; the dirty water is then poured off, and the operation repeated until the water appears perfectly clean. Sand may be used either by itself, as for cuttings and seeds, or mixed with the soil. It affords no nutriment to the plant, but only serves to make the soil looser and more open for the admission of air. Another material which is frequently used, and which, like sand, contributes nothing to the nourishment of the plant, is moss. The freer this is from earthy matters the better. Two kinds are employed, the green and the white. The first includes all kinds of a green colour which are found in woods and other localities, the best of which are the longer sorts of *Hypnum* and *Dicranum*, because they are more easily found free from earthy matter. The white bog-moss is more generally known by the name of sphagnum. It is found in marshes, where by its luxuriant growth it soon covers the holes made by the turf-cutters. The white colour of the dead underleaves, and its thick, turfy habit, render it easy to be recognised. It is commonly used for covering the drainage-layer of sherds in the bottom of the pots, to prevent the soil from being carried into the sherds by the water, and so choking the drainage. It is further employed in glazed cases and double windows in the culture of orchids, *Æschynanthus*, *Bromelias*, and ferns, sometimes to envelope the kinds grown on pieces of branches, and sometimes chopped up and mixed with the soil. Used in this way, it promotes the absorption of water, and produces an equable degree of moisture.

SOILS.

Among the natural soils, meadow loam, free from lime, is that which is most commonly used in the culture of plants which do not require special composts. The best kind of this is that which is composed of loam, sand, and humus (that is, decayed vegetable matter). The more abundantly humus in a partially decayed state is mixed with the soil, the more mellow

it becomes, and the better adapted for such plants as require a supply of nitrogenous and phosphoric food.

The sand and the undecayed humus render the soil loose, so that the atmosphere can easily penetrate it. From the humus is evolved carbonic acid gas; the alkalies of the loam partially convert the humus into humic acid, or pass directly into the plants, and, as bases of salts, play an important part in all vegetable growth. Lastly, nitrogen is supplied by the humus and the loam. This soil is consequently to ordinary plants a rich source of all these matters, which as food are conveyed by water to stem, leaf, flower, and fruit. The cases in which a greater or a less supply of nitrogenous or other elements is required are noted when speaking of the individual plants.

Such a soil is mostly found in dry fields which have long been used as meadows, and which have been enriched, from time to time, by a top-dressing of manure. When, as is often the case, the soil is mixed with the red oxide of iron, this is rather advantageous than otherwise.

When it is required at once for the culture of plants in pots, the sod should be thinly pared off, and the underlying soil, to the depth of not more than three-quarters of a foot, filled with undecayed roots, taken up. Deeper than this it is seldom in a suitable state to be employed in the culture of plants, as it either, where iron exists in the ground, contains the injurious dark blue oxide, or else is not rich enough in humus. When there is a facility for storing it, it should be spread out to a depth of six inches, the sods placed over it, and so left for some time exposed to the influence of wind and weather, which will greatly improve its quality.

If the soil be too stiff, it should be mixed with humus and sand, and when it is too rich in humus, which may be easily known by its dark colour, a mixture of wood-ashes or loam which has been made friable by frost, will supply it with the necessary alkalies.

Garden soil, which is formed by the mixture, during many years, of the original soil with decayed vegetable matter and manure, should only be employed in room culture when the original soil has been a loam, and has not received too much manure. Soil taken from a kitchen garden usually contains too much nitrogen for the greater number of pot plants, and, if used, should be mixed with loam and humus.

There are, indeed, many room plants which, under the influence of strong nitrogenous food, exhibit a much more luxuriant growth and a greater abundance of bloom. But it is recommended not to give these a soil too richly manured, as it readily becomes sour, and renders the culture of the plants more difficult during the period of rest. Liquid manure, of which we shall speak further on, is to be preferred to solid manure.—*Dr. Regel.*

(To be continued.)

IVY IN THE HOUSE.

We do not sufficiently appreciate the Ivy as an indoor ornament, perhaps because it is so common with us out of doors. The following by an American lady, "Daisy Eyebright," shows what it is capable of as an indoor ornament:—

There is no other plant that produces so pleasing an effect as a luxuriant English or Irish ivy trained over the walls of a living room, framing a door or a window; draped about brackets, statuettes, or pictures. It is the most graceful setting that can be procured, and adorns the most common surroundings, rendering a plain room lovely and attractive. Placed in a hall, it will beautify and ornament it wonderfully. Trained in festoons over a stiff, straight window frame, it changes its appearance like magic.

There is no plant which strikes root more readily, and large trailing ivies nine feet or ten feet long can be purchased in any of our nurseries. For a room, place the stems in small bottles of water and hang the vials behind a picture frame, wreathing the leaves and branches about it. A rustic frame is best adapted to this adornment, as the stems can be more readily attached to it; yet a gilt frame looks very pretty when entwined with bright glossy foliage. If the picture is large, a pot can be made of zinc, and shaped like a wedge, of such dimensions as will readily fit between the wall and the frame, and it can be caught or fastened so as to be quite concealed, while the Ivy can be gracefully trained over the frame; but one must be sure to keep it filled with water, and put two or three bits of charcoal into it to keep it sweet, while a drop of aqua

ammonia added once a week will increase the growth. If the space between the wall and picture is large enough to admit of a wedge-shaped pan of eight inches in length, and three inches or four inches at the top, it can be filled with rich soil, and the plants will grow and flourish, although no sunshine reaches the roots, and send out long tendrils that will twine lovingly about the frame. There are many ways of growing the ivy; large branches can be put into glass vases, which must have bits of charcoal and a little stimulant of aqua ammonia weekly, and they will strike tiny white roots away down into the water, and throw out delicate green leaves from the upper branches, which can be trained around the mirror, over the mantel-piece, or twined around statuettes placed upon brackets on the wall.

For hanging baskets ivy can be made very available; by filling the basket with moss, and placing five or six small bottles of water among it, with a branch of ivy in each bottle with water, charcoal, &c., a very handsome appearance can be obtained; and if pressed fern leaves, mingled with bright-hued autumn leaves, are interspersed between the ivy branches, which can be made to twine up the chains or cords which suspend the basket, the effect is really lovely. Each evergreen, heart-shaped, bright, glossy leaf, with its rich veining and shading, becomes a beauty, and, well deserves the care it will demand at your hands; for if the basket is deep, you need fill up the small bottles or vials but once a week, but be sure to use warmish water when it is given. Such a basket is easily prepared, and will be a decided ornament to every room. Ivies do not thrive well in strong, bright sunlight; they prefer a shady place—in fact, they rather shun "the garish eye of day." They will grow finely in the farthest corner from the windows. A large pot can be placed on a stand far from the window, and it will twine its flexible branches all about the wall and cornice. The stems and branches can be fastened to the wall paper and the cornices of the room by small pieces of green worsted braid, tacked around them with silvered tacks. These can be easily removed, when it is desired to transfer the ivy to the verandah or porch, in the summer, or when the semi-annual house-cleaning demands its removal.

Ivies will endure any amount of neglect and still live; yet they repay the careful cultivator by a much more rapid and vigorous growth. The soil should be prepared with reference to the growth of wood and leaf, yet not too rich, as long, lanky stems, with leaves few and far between, do not accord with our standard of beauty. A good soil is composed of one-half good loam from a garden, and one-half leaf-mould and sweepings mixed. For growing in pots, set the plants into large porous clay pots, rather than ornamental pots that are glazed, as they do not admit of evaporation from the sides, and are not as healthful for any plants, though ivies will grow better in them than either roses or geraniums.

Ivies do not like a warm, close atmosphere; they will flourish best if kept in a cool hall or upper chamber. Indeed they will bear a chilly air without injury; and even if the soil slightly freezes, they will not complain by one drooping leaf. They also like much moisture, will bear wet feet better than most plants, and also require stimulants to induce them to grow finely. Plants raised from cuttings do not make much headway until they are two years old; then they commence to shoot forth new branches, and continue to do so every year. Their life is of long duration. No one knows how old are the ivies that adorn the ruins of England's ancient castles; hundreds and hundreds of years have passed since they began to creep "o'er ruins old." The ivy will strike root from every joint, and is easily propagated by layers from an out-of-door plant, as well as from cuttings.

Nemophilas for Cutting.—The merits of these for cutting are too little known; but if, when cut, they are placed in water and in a fair light in a room, they flower very beautifully for several weeks. Few would expect this, considering their transient nature in the flower garden.—B. BRANDON.

Early Irish Flower Shows.—Though horticultural shows properly belong to the present century, Dublin can boast of the existence of "The Florists' Club" as early as the reign of George I. It is to the Huguenots, as a body, some of whom settled in this city after the Revocation of the Edict of Nantes, that we must ascribe the general introduction and cultivation of flowers, and it was some of their members also who founded the flower club alluded to. They held their meetings in Dorset Street—then Drumcondra Lane—at an inn called "The Rose Tavern." This tavern must not be confounded with another of the same name which stood opposite to the Castle steps, alluded to by Swift in his odd verses on his own death. Of this "Rose Tavern" Swift writes in 1731:—

"Suppose me dead, and then suppose
A club assembled at the Rose."

The Huguenots' Florists' Club that existed in Drumcondra Lane continued till the close of the reign of George II. Premiums were adjudged to the members who produced the most beautiful specimens of flowers, and certain days were set apart for the shows and meetings.—*Dublinensis, in "Irish Builder."*

THE GARDENS OF ENGLAND.

TRENTHAM.

THERE are at least four elements of beauty and grandeur at Trentham—the house, the garden proper, the lake, and the distant woods and shrubberies. The house is massive, highly finished, lofty, and admirably fitted into its surroundings. So much so, that a landscape artist looking on Trentham for the first time would have some difficulty in determining whether the mansion was raised as a finished back to the garden, or the garden added as a basement for the house. The first garden in order of distance from the mansion is, therefore, highly formal and architectural. Each bed has its counterpart, on the same principle as the windows on the two sides of a regular house are alike. The furnishing of similar beds are also balanced as to style, height, and colouring, the latter

plants of *Humea elegans*, and pretty standard *Heliotropes*. A great difficulty is often experienced in merging the foreground into the middle distance, and this again into the background of landscapes. This is obviated at Trentham by boldly cutting off the colour garden from the next by a noble terrace walk and sundry architectural embellishments. From the colour garden we descend to another on a lower level, that might be called the grass garden. The velvet turf dominates here, as the mansion and the mosaic of flowers rule the first. The grass is broken and lightened up at regular intervals of great distances by large masses, mostly of cooler colours, the form, size, and furnishing of the beds being in striking contrast to those in the first garden. Thus we proceed from one style into another until, at the extremity of the garden, the eye is relieved by the lake, or rests itself with delight on the grand masses of foliage that engirdle its sides and drop themselves down into its



View of Italian Garden Front at Trentham, with Terrace, Pavilion, &c.

either contrasting or agreeing, so as to produce harmony. A good deal of colour is also used, *Pelargoniums* being the favourite plants for providing it, as they go through the season without flinching. In many modern gardens green leaves are displacing bright flowers; form is looked upon as of more importance than colour, and rightly so. But in such gardens as Trentham, with a heavy architectural pile behind, and the cool shadow of the large lake and far-reaching woods and shrubberies in front, colour is not only allowable, but essential. It lightens up the whole scene with a gleam of brightness. The colour is also placed where it ought to be—nearest to the house. The latter, in fact, stands behind a rich mosaic of flowers, bounded with broad bands of gravel, both giving a warm foreground to a scene of rare beauty. Lest, however, the colour should be too brilliant, patches of green and of cool tints are thrown in with admirable effect by the use of some of the smaller foliage and succulent plants, fine placid waters. We were not fortunate enough to find the lake

full. It was meant originally to be replenished from the Trent; but of late years that river has become far too foul to be used for that purpose. The water had also been lowered to facilitate the keeping of its bottom clean. When full it must indeed be a noble sheet of water. The wood on the right-hand side is truly magnificent. Crowning a bold promontory, and stretching along the whole side of the lake, there seems no end, neither in length nor breadth, to the rich mass of fine foliage. There is green enough here to tone down the flower gardens, were they all colour. It is this failing to grasp all the features of a landscape that has led to some of our greatest mistakes in the furnishing of gardens. We try to crowd all our shades, as well as lights, into the foreground; but the background should never be lost sight of. Its character ought chiefly to determine the colouring of the foreground. This seems to have been the case here. Nor is there wood alone at Trentham. On the left, the richest masses of shrubs skirt the

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Trent, which meanders along between and among them, as if ashamed to show its black, slimy face, as well it might, amid so much sweetness and beauty. This rich clothing, while beautiful in itself, shuts out the site of the noble kitchen garden and fine ranges of glass, from the flower garden. These shrubberies, thick and massive at all seasons, are now lighted up with the glory of thousands of rhododendrons, azaleas, and other blossoms, which give an amazing richness to the scenery; and nearly all the prominent corners and telling points have quite recently been replenished with superior and newer varieties, and as these fill the eye first, the character of the entire group is remodelled and elevated by the skilful disposition of higher types of beauty. First impressions are not only the most pleasing, but the most lasting, and hence the importance of thus skirting common masses of shrubs and trees with those of higher excellence. You cannot but see them, and they assist very much to bring up the whole mass to their own high level. Hereafter we shall have something to say in reference to other matters at Trentham—of Mr. Stevens's miles of glass walls and houses crowded with fruits and plants of superior merit; but for the present we must be content to note those broad features of wood and water, and colour and architecture, that give to Trentham a grandeur almost unique, and a magnificence as rare as it is satisfying.

(To be continued.)

THE FRUIT GARDEN.

RUST ON GRAPES.

I HAVE never found sulphur sufficiently vapourised by the solar rays to inflict injury upon either grapes, or tender flowers, or foliage. Even on hot-water pipes, unless pushed to almost boiling point, sulphur is mostly harmless. Still, I do not advocate its use in vineries with the fruit in a young state; whilst on flues sulphur is always dangerous just in proportion to the degree of heat employed, and the consequent extent to which the sulphur is vapourised.

I have had painful experience that the vapour of sulphur is injurious to delicate membranes, having frequently had my eyes affected, and once seriously for more than a week, by thinning grapes in an atmosphere strongly charged with sulphur fumes. Reasoning from analogy, I should say that the vapour that was powerful enough to affect most painfully the skin of my eyeballs, was strong enough to rust that of grapes. And it did; for in this very case the grapes were badly rusted. I also agree with those who say that rubbing, or mechanical abrasion of any kind, will cause rust. Hard water will likewise produce rust, or something closely akin to it, in this way—by leaving a deposit on the berries which sticks so closely that it cannot be removed, and by bringing substances into contact with them that penetrate their delicate skins. There are likewise several other causes of rust on grapes. One of the most prevalent is the practice of steaming vineries at work when the berries are in a young and tender state. Flues, and very hot pipes, are deluged with water, and clouds of hot steam fill the house. These are often too hot for the delicate skins of the grapes, and rust ensues. The whole practice of damping down, and even of syringing vineries, is undergoing a change in favour of more moderate and natural means of charging the air with moisture.

Again, another cause of rust on grapes is sudden draughts, and especially through draughts. So well is this understood by grape-growers, that many prohibit front ventilation altogether until the grapes begin to colour. The grapes swell more kindly and run fewer risks in the absence of a through draught. Nothing can hardly prove a more fruitful cause of rust than a current of cold air sweeping over the delicate skins of grapes. Another cause is allowing the sun to condense the moisture on the fruit before air is given in the morning, and then suddenly giving air enough to sweep the vapour off, thus subjecting the berries to a tremendous change of condition within a few minutes, and chilling them through to the heart and well-nigh freezing their skins at the same moment. Is it any wonder that the latter become ruffled by such treatment?

Finally, any sudden and unnatural arrestment of growth, either at top or bottom, will frequently produce rust on grapes, on the almost universal law that deformities of all kinds are mostly the products of "stunts," and that arrested development is the most fruitful parent of malformation and disease.

D. T. FISH.

— *Apropos* of the Rev. Mr. Reynolds Hole's remarks on this subject, I beg to say that my experience leads me to believe that cold and sudden currents of air between the flowering and stoning

periods are more frequently the cause of rust than sulphur. Certain I am that the latter will cause it if the pipes are overheated; but I am still more certain that sulphur often gets the blame when our own carelessness in the giving of air is at fault. I am sorry to say that I have at this moment, on some half-dozen bunches in an early vinery, proof positive of it; but to give air and avoid draughts in such a season as this has been is enough to puzzle the best man among us.—W. WILDSMITH, *Winchfield, Hants.*

— OUR first house of grapes is just beginning to colour; the bunches are large and heavy, but the berries are affected with rust. Of this, sulphur is not the cause, for we never paint our pipes with it, nor employ it in any shape. Rust on grapes may arise from many causes, such as syringing with hard water, or maintaining too close a temperature, especially where vineries are heated by means of flued furnaces; doubtless, too, an excessive use of sulphur may cause it; but I am of opinion that in my case the grapes were handled too roughly when thinned, and that they were also rubbed with the head during that operation.—EDWARD JACKSON.

THINNING HARDY FRUITS.

THE thinning of out-of-door fruits is one of the most important operations within the entire range of horticulture. Yet, strange to say, it is often wholly neglected, and mostly performed in a hap-hazard, rough-and-ready way. The thinning of grapes under glass, in bunch and berry, receives due attention, and is often carried to a perfection approaching to mathematical precision; but out-of-door fruits are seldom thought of; leave plenty on, and let the strength of the tree and the character of the weather regulate between them the final crop. We'll warrant these two to thin enough off in ordinary seasons, and an extraordinary crop now and then will prove useful. Yes, but suppose the weather and the tree thin too much, what then? You cannot replace the fruit when once it has been shot off in showers, and such wholesale deprivation is often the penalty exacted for the neglect of thinning. When fruit drops, the mishap is generally laid to the weather; but a dropped crop or a wretched harvest of worthless, small, ill-flavoured fruit is but the legitimate results of allowing the weather and the trees to do the thinning between them.

By leaving an excess of fruit, the fountain of growing force is speedily dried up; the growth of all the fruit is arrested. Then great haste is made to thin; but it is too late. Late thinning is just like locking up the stable after the steed has been stolen. We want to recoup the growing force, and send it all into the fruit left. To effect this early thinning is indispensable. Thin early, and the fruit kept acquires the portion of the fruit removed. Thin late, and that goodly portion is lost. In any case the strength expended upon the fruit removed is wasted. By grasping at too much we also frequently lose all. Leave a thousand fruit on a tree that has only vital force enough to finish two hundred, and note the result; you will not gather two hundred, but more probably none. The tree will take the matter into its own hand. Finding you mercilessly avaricious, it will revenge itself. Three courses at least are open to it, and it adopts either that seemeth to it best. Either it will shoot off the whole of its fruit, or it will retain all, and furnish a wretched harvest of deformed Lilliputs; or it will develop all to tolerable perfection, and sacrifice its health, future fertility, or life in consequence.

The mode of thinning is simple enough. "Progressive" expresses it in one word—a little at a time; and a good many times, say six in all, are needed to complete the process. At the first thinning remove all deformed, ill-placed fruit, and reduce the nestling clusters to units. At all other times remove the smallest and weakest. With stone fruits, such as peaches, nectarines, and apricots, defer the final thinning until the fruits are stoned. When a knife refuses to pass through the stones, the danger of the fruit dropping is past. Up to that time a double crop may have been left on the trees to guard against accident; for some trees shoot off a good many fruits as they are hardening their stones. An excessive crop is one great cause of this tendency; still, on some soils and situations, it happens under the best management, and it is safe practice to hold a reserve till this last season of danger from self-thinning is past. As soon as it is over complete the process; go about it with a bold heart and a skilful hand, and err, if at all, on the side of thinness. Apples and pears may receive their final thinning when they have reached a fifth of their final size. By this time all deformed, ill-favoured, maggot-infested fruit will be revealed. Having removed all such, and all under-sized, badly-placed fruit, then proceed to reduce the sound and good to reasonable and proper dimensions. No fruit trees suffer more from want of thinning than these. Alternate crops, cankers,

blight, and other frailties and diseases, are but the language of reproof for barbarous over-cropping.

The extent of fruit thinning opens up a large and difficult question. It divides itself into two parts—the fruits that ought to be thinned, and the extent to which the thinning should be carried. Where the highest quality is an object, and labour is plentiful, I would thin every fruit, from strawberries to grapes inclusive. One large fruit is always better than three small ones; it contains more eatable matter, and generally of higher and better quality. This one will have less rind, seed, or stone than the three; and for appearance, who would not rather have the one large fruit than the three lesser ones? But the question of extent may be answered in another way. How far apart would you leave peaches, nectarines, pears, and apples? As a general rule not more than ten inches, nor less than four. But it might be desirable at times to allow the fruits to touch each other, and at others to widen the interval between them to twelve, or say eighteen, inches. On young strong trees or cordons the fruit can hardly be too close together. On weak-growing trees, whether old or young, the fewer fruits you take the better. Constitution, root room, food, future intentions regarding the trees, whether designed for a permanency or merely grown for the current crop, all such considerations must influence the extent of thinning, and the weight of crop taken from the trees. S.

DISABLED PEACH AND NECTARINE TREES.

THERE is a point which I shall be much obliged to some one of your practical gardening friends to elucidate for me. The fact is simply this. Like most of my neighbours, my wall trees have suffered dreadfully from a combination of "curl" and late frosts, and are at this moment in a most miserable plight. My peach and nectarine trees have only been planted two years, and last year they made wonderfully good wood, so that I was in hopes of training them into beautiful trees. My wall is properly copped, and I take particular pains in protecting with scrim canvas. However, about six weeks ago, although "under canvas," the leaves began to curl to a very great extent. My gardener syringed, and syringed again, with various compositions and with water. In spite of this, some of the trees have died off; and although a few of them are making their midsummer shoots, I doubt whether they will not take another season or two to recover their strength; and I also presume that these midsummer shoots will be of no good, as regards fruiting for next year. Some gardeners have suggested to me that it was the frosts of six weeks ago which did all the mischief. Now the question I most especially wish to have answered is this:—Can a peach or nectarine tree on a south wall be likely to be killed or disabled by a spring frost? I confess my own idea had always been, that (if not properly protected at the critical moment) the blossom was likely not to set and to be injured. But I never imagined that the tree itself was likely to be destroyed by spring frosts. All the young fruiting wood on my trees has been completely destroyed, the young leaves being quite covered with aphides on the inside. This is, I presume, the cause of the curl in the leaf.

Sevenoaks.

W. B. N.

— I SHOULD be glad if some one could enlighten me as to the nature of some blight that has come on most of my Peach trees this season. The blossom was good, and not much injured by the late frosts and snow in April; but soon after came blight, which entirely destroyed the foliage. The trees are as bare as they would be in winter, and the branches—small and great—are studded with reddish-brown seeds, shaped like cockle-shells, and filled with a white powder adhering firmly to the bark. I am having the trees loosened from the wires, the branches thoroughly cleaned, washed with a solution of Gishurst Compound, and the walls whitewashed. I have observed the same on some Golden Elms; but Nectarines and Apricots, although growing close to the Peaches, are quite free from the evil.—K.

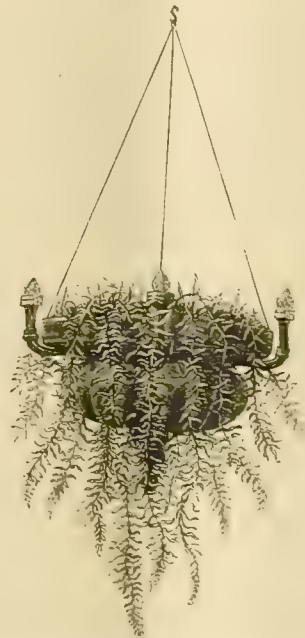
English Walnuts in California.—In the southern parts of California English walnuts are being planted, and the climate appears to be well suited to them. The first trees were planted in Los Angeles county in 1857, and commenced bearing in 1860. In 1863 nearly 10,000 pounds of walnuts were gathered, while, previous to that year upwards of 30,000 pounds were annually imported into that State alone. The flavour of the walnuts grown in California is said to be much finer than that of the imported nuts.

Cherry Grafted on the Laurel.—I have in my garden in Hampshire a cherry tree that must have been worked on a laurel some years ago; it has flowered and fruited freely for the last year or two, but not until last summer was I able to save any of the fruit, as the birds were always before me. I then, however, picked one thoroughly ripe; it was a black heart, well grown, and of excellent flavour; but the stone was soft, something like the stone of the laurel berry.

THE INDOOR GARDEN.

FERNS FOR BASKETS.

THERE are some kinds of Ferns that look better when grown in a hanging basket than in any other way. This especially applies to those which have creeping rhizomes, like the Davallias, or Hare's-foot ferns. The accompanying illustration does not do justice to probably the finest of all basket-ferns, *Goniophlebium subauriculatum*; its elegant fronds, in full-grown specimens, may often be seen hanging down five or six feet long. Amongst the Maidenhair ferns are several that show off to great advantage in a basket, especially *Adiantum caudatum*, *A. assimile*, and *A. Farleyense*. The best kinds of Davallias for baskets are *bullata*, *dissecta*, and *pentaphylla*. *Nephrolepis exaltata* and *pectinata* both look well when suspended, but are not so good for a basket as *N. tuberosa*. *Platyloma flexuosum*, *Doodia lunulata*, *Asplenium flabellifolium*, *Pteris scaberula*, and all the species of *Drynaria* and *Nipholobolus* are excellent basket-ferns; and, although I have



Goniophlebium subauriculatum in Suspended Basket

never seen them so treated, I fancy that *Gleichenia Speluncea*, and *heciostophylla* could not fail to make fine specimens, when grown in a basket and allowed to hang over the sides in the tangled manner which they naturally assume. W. T.

THE TREE CARNATION.

It has often surprised me that this beautiful and gratefully-fragrant plant is not more grown than it is. But even where it is grown its culture is frequently in such a backward condition, and the specimens so poor, that they give no idea of the beauty of the tree carnation. The first mistake made is that of layering the plants. Layering carnations is indeed one of the old customs worthy the "attention of the curious." They should be propagated from cuttings inserted any time from August to November, and in a propagating house or frame ranging in temperature from 55° to 60°, or on a gentle hot-bed under cloches or hand-lights. They will also do well if put in during winter or early spring as late as March. As soon as well rooted, pot the plants singly in small pots in sandy loam slightly enriched, and place them in a rather dry pit or frame with full exposure to the sun, or on the shelves of a cold house—in all cases near the glass.

In spring prepare a good border, bed, or quarter in a sunny position, enriched with some good loam, rotten dung, or cow-dung incorporated and intermixed, trenched, ridged, sweetened, and well pulverised by forking over in dry, frosty, and suitable weather.

In April the plants struck the previous autumn should be planted

out two feet or two feet six inches apart, for their summer growth, kept tied and staked, and cuttings taken off as previously recommended. If well done, these will be large plants by October, three feet or four feet high and through, and full of bloom buds.

When in the open air in summer they require no attention beyond cleaning the ground and staking the central shoot. It is better to pinch off the shoots and buds during summer till the end of August, when the central one may be allowed to rise.

October arrived, and the last batch of cuttings put in, take up the plants carefully with balls, and place them in pots, according to size, for a short time in a quiet, partially-shaded situation; stake and tie. Many will now be full of bloom buds, and some coming into bloom. Place them, as soon as they are a little settled in the pots, about the conservatories, greenhouses, or where you please, to flower all the winter. A few about Christmas can be placed in a little heat such as is employed at the first commencement of putting a vinery, peach, or fig-house to work; two-year-old plants are the best for this early forcing. They should not be over-potted; it is better to feed the plants with well-diluted liquid manure. Seven or eight inch pots will usually suffice, but larger specimens may require larger pots. It is my rule to discard the old plants generally by turning them out in a border, where they yield flowers during the summer; thus, by a little management, one can have tree carnation blossoms at all seasons. In America, where such fine varieties as *La Purité* and *Dégradé* are grown by hundreds of thousands, the system here described is the one pursued. In the winter, the plants are placed in warm light houses, and the flowers are used in immense quantities for bouquet-making. In America, where they are thus grown in quantity, instead of potting the plants, they are often planted directly on benches, by which means as good or a better result is obtained than when they are grown in pots, and with less trouble. Q.

ANOTHER NEW HEATING MATERIAL.

TANNER's bark, tree leaves, and stable manure have hitherto been the stereotyped agents in use in gardens for supplying plants which require it with bottom-heat. The two first-named have the further advantage of affording an excellent and conveniently available medium for "plunging"—the technical term for inserting pines or other plants in pots in the heating material. When we say these three were the only agents in use for supplying bottom-heat, we mean agents that produce heat by fermentation, or while undergoing the process of decomposition. Of course, the flue and the steam or hot-water pipe are available for the purpose; but these, however, are purely artificial agents. Unless in the neighbourhood of large towns, where there are tanneries, bark is not to be had. Unless in places of some extent, and pretty well wooded, tree leaves cannot be had in sufficient plenty, and in many places there is by no means a glut of stable manure for the wants of the garden.

We are glad, therefore, to direct attention to another heat-producing and useful plunging material that has recently come into use, and has been found practically in many respects superior to tan, &c. This material is the refuse or waste that accumulates during the process of dressing flax. It consists of the external coating of the stem, broken and triturated in the mill, mixed with a portion of waste fibre. Among its advantages over tan a very important one is that, where available, it comes dry from the mill, and ready for getting into the pit at once, while the former requires to undergo a drying process under cover, or at great risk in the open air, for some ten days or so before being used.

It does not appear, like tan, to be a favourite haunt for worms, which generally abound and are a great nuisance in tan pits. Neither does it seem to be so favourable to those soft fungoid growths sometimes so injurious, in their magically-rapid development, to plants plunged in tan. When spent, we should consider the flax refuse a much superior manurial agent to spent tan. When got into the pit the heat is as rapidly developed with the flax refuse as it is in tan, nay, perhaps more so, and is retained perhaps longer. We were speaking of it to an eminent pine-grower this week who has been using it, and his words were, that "for the purpose of pine-growing it is invaluable." He was equally impressed in favour of it as regards its use in melon or plant pits. In Ulster, where scotch mills abound, our gardening friends can have it very generally available. As we hope flax will, too, become a staple product of the other provinces, the day, we trust, is not distant when it will be equally available in the south as in the north. In fact, gardeners in the vicinity of Cork have already at their doors a source of supply in the magnificent flax mill recently erected just outside that city. We have heard of flax refuse being used about Dundee, and perhaps one or two other places in Scotland, but cannot vouch for

the fact. At all events, its use is little known here. It is only within the last year or so that it has been used about Dublin, and that only in one or two gardens in the vicinity of Chapelizod, where there is a large flax mill. Those who have used it are very favourably impressed with its utility. As regards the cost, we believe in the first instance it might be had for the removal; now that a demand has sprung up, a shilling or so a load is asked for it.—*Irish Farmers' Gazette*.

PUBLIC GARDENS.

THE NEW PARK AT BROOKLYN.

NOTWITHSTANDING the efforts of the rascals who combined to fleece the American people while filling important positions in the councils of their cities, there is no country where public gardens have been more nobly made. Not only are some of the American public gardens worthy to compare with any of ours, but in point of design they are far before them. Here is an example, which, if compared with the plans of any of our London parks, new or old, will be found to have very great merits indeed, and to show much thoughtful design. We had the pleasure of visiting this park in 1870, accompanied by Mr. Olmsted, of the firm of Olmsted, Vaux, & Co., of Broadway, New York, who designed it. We were much pleased with its wide lawns of green turf, its fine sheets of water, capital and extensive drives, the wide boulevards which converge towards its main entrance, and last but not least, the provision made for public meetings outside its gates. Surely, our clamour about meetings in the parks might be allayed by providing a roomy place for public meetings, as the people of Brooklyn have done in this instance. By so doing we should save our flowers and shrubs and trees, and peacefully accommodate, if need be, a meeting of forty tub-orator power. The place of meeting is, as we have just observed, outside the main entrance of this noble park, where there is a raised stone platform for the speaker and sufficient room, and every convenience, for a vast crowd. In addition to the broader features of the park (which are sufficiently shown by the annexed illustration), the following interesting and somewhat novel features are worthy of record here:—

Besides the wide open lawns there are provided "places of congregation and rest," each adapted to the assemblage of large numbers of people. The first of these is designated the "Look-out." The circumstances which made a special arrangement for the accommodation of an assemblage at this point desirable were—first, a view is obtained here, and nowhere else in the park, of the outer harbour, the distant mountain ranges of New Jersey, and the ocean offing; second, the peculiar advantages which the elevation offers for the enjoyment in hot weather of the sea breeze; third, the interest of the local scenery; and, fourth, the bird's-eye view which will be presented of military evolutions, if the projected parade-ground should be formed south of the park.

From the "Look-out" broad walks lead across the park to the east end of the lake, where, at a point commanding the largest water view, together with a rich open meadow landscape, backed by the highest elevation of the park, pinnaced with evergreens, arrangements for open-air concerts are made. Within a distance of two hundred and twenty-five yards of an island, where musical bands are usually placed—at which distance the music of a well-appointed band can be perfectly appreciated—standing room is provided for horses and carriages in a circular space about five hundred feet in diameter, and in an oval space at a higher elevation, three hundred feet long and one hundred and seventy-five feet wide; while directly in front, at a distance varying from one hundred to five hundred feet, a space is provided, to be occupied by shaded seats, sufficient for over ten thousand people. The provision for a resting-place for vehicles is in consequence of the widely developed taste for driving which exists in every American city. It is this also that causes the formation of the admirable drives which are made near all the large cities and in the large parks.

Round the lawns, the meadows, and the slopes of the upper lake, is a display of the finest American forest trees, standing singly and in open groups, so as to admit of the amplest

PLAN OF PROSPECT PARK BROOKLYN, NEW YORK.



development of individuals, which will be further encouraged by the best attainable conditions of soil and situation. In the central portions of the park is an open grove of forest trees, in which visitors may ramble in the shade without impediment of underwood, and without danger of doing harm to anything through carelessness or any ordinary selfish impulse.

A collection, arranged in the natural way, of the choicer evergreens, both coniferous and of the class denominated in England "American plants," such as *Rhododendrons*, *Kalmias*, *Azaleas*, and *Andromedas*, is tastefully grouped on the interior slopes of the "Look-out" and the "Friends' Hill," and in the valley between them, where, from the peculiar circumstances of exposure and protection, they will be likely to thrive. The whole is well and profusely planted.

It would, however, occupy too much of our space to describe the whole of the features of this remarkable park, in which we only saw two errors. The first is the one carried out to a greater and more objectionable extent in the Central Park—the making of a number of bridges for which there was no occasion whatever. The alleged reason for these bridges is that it is desirable to keep the carriage and equestrian traffic separate. Imagine the drive in Hyde Park bridged over to allow the horsemen to cross it, instead of doing as they do at present! But this is quite a transparent piece of absurdity; the real reason, no doubt, arose from the desire to create many second and third rate architectural features in the park; for vast cities are not sufficient for the architects, they must thrust mediocre work upon us in the very place where even all the necessary structures should be partially or quite hidden. Another error here was the construction of a good deal of the plum-pudding species of rockwork, *i.e.*, the sticking of large stones into sloping banks not otherwise objectionable. This would be wrong anywhere, but it is peculiarly so in a park lying in what is practically as much New York as Lambeth is London. Now, the Central Park contains the noblest croppings up of natural rock we have ever seen in a park—public or private; but as nothing of the kind occurred in the Brooklyn Park, it was unwise to attempt puerilities of this kind with such grand examples so close at hand; the wisest plan would have been to dispense with rockwork entirely, and to encourage the development of other distinct features.

THE FLOWER GARDEN.

ANNUALS FOR SPRING.

It is certain that those who have not raised annuals for spring flowering have not enjoyed them in half their beauty. And yet it seems to be comparatively seldom done. The colours of spring flowers are, as a rule, purer and brighter than those which come later, and this is enhanced by their sombre surroundings. There is nothing in the summer or autumn garden which can give such an exquisitely pure piece of colour as crocuses of different colours scattered over the turf on a sunny day in spring; nothing so gem-like as hepaticas, or so fragrant as violets. But this has been said a thousand times. The object of this note is to induce amateurs to raise some annuals next autumn, so that they may enjoy them as they never enjoyed them before.

Nemophilas, for instance, sown in the beginning of September in rows, and thinned out, may be moved to the flower garden when the summer bedders are removed. Let each plant be quite a foot apart, and the brilliancy and duration of bloom will surprise those who have only seen spring and summer sown annuals. Mine began this year to flower in February, and are now (June 12th) at their very height—that is four months of bloom from an annual. Sweet Peas sown at the same time came into bloom last week. That exquisite annual, *Leptosiphon roseus*, will not do for spring flowering, but it stands the winter quite happily. Last autumn, after having bought and sowed some of it, as a new annual, I happened to see some beds of it in a garden near Edinburgh, and was much disappointed at its shabby appearance. But my autumn-sown plants are a different thing altogether. They flowered too late for the spring garden, and had to be transplanted (for the second time) when just coming into flower. They are now splendid, and the neat habit and brilliant rose colour of the plant make it, for some purposes, where neatness is required, quite the best annual we have. It is a capital thing for dotting over rockwork.

If possible, devote a part of the garden to autumn-sown annuals,

where it will not be necessary to root them up at the height of their beauty to make way for bedding plants; and, above all, keep them well thinned, and treat them generously. SALMONICERS.

MORINA LONGIFOLIA.

THE thistle-like leaved plant cultivated in gardens under this name from its first introduction by Captain Madden some thirty years ago, is, I believe, more correctly referable to the *Morina persica*, a native of the northern mountain districts of Persia, and also extending eastwards to the Eastern Himalayas. Certainly, it is not the plant figured under that name in the "*Plantæ Asiaticæ Rariores*," which is of a much more slender habit. Be this as it may, it is one of our best hardy border plants.

Unfortunately its thistle-like appearance has, in more instances than one to my knowledge, militated against its general introduction, the gardener's hoe having made a clean sweep of it as a worthless weed long before it had unfolded its beauties.

I well remember, when serving my apprenticeship, seeing it placed in the thistle section of *Compositæ*, and I also remember my astonishment when its bloom indicated a very different position in the natural arrangement. Never was hen more surprised at her fresh-hatched brood of ducklings, than was I at the flowers which this plant produced; for in place of the



Morina longifolia.

capitula of the supposed order, it sent up long spikes furnished with foliaceous bracts, every serrature of which was terminated by a long stiff mucro, and out of these protruded long tubular flowers, at first white, shading off to rose colour on the second day, and to a deep crimson on the third, thus giving a peculiar beauty in the variety of tints. These spikes have somewhat the appearance of the *Acanthus* family, but it is really referable to the order *Dipsacæ*, and not remotely related to our Fuller's Teazle.

The following brief description of this plant when well grown will give some idea of its value as a herbaceous plant. From a mass of foliage by no means inelegant, rose some eighteen spikes of bloom, varying in height from two to three feet, each erect and capable of holding its position without the assistance of any stake; the lovely flowers—some white as snow, others rosy as peach blossom, and others again crimson as blood, drooping over the fortified battlements that each set of bracts might be said to represent—presented a *tout ensemble* no less beautiful than singular. This plant blooms in the month of July, and thrives well in any deep garden soil; showing, however, in its more vigorous growth a liking to a stiff retentive loam, in which the specimen I have alluded to has flourished for five or six years. It is very impatient of removal when once fairly established, but it seeds freely, and is readily increased in that way. To those who would secure this desirable, and by no means common, border plant, I would tender this advice—always choose a seedling in preference to an old plant; the former begins at the "beginning," the latter more frequently than otherwise begins at the "ending."

Botanic Gardens, Hull.

J. C. NIVEN.

THE CANNAS.

If there were no plants of handsome habit and graceful leaf available for the improvement of our flower gardens but these, we need not despair, for they possess almost every quality the most fastidious could desire, and present a useful and charming variety. The larger kinds make grand masses, while all may be associated intimately with flowering plants—an advantage that does not belong to some free-growing things, like the Castor-oil plant. The *Canna* ascends as boldly, and

spreads forth as fine a mass of leaves as these, but may be closely grouped with much smaller subjects. The general tendency of most of our flower-garden plants is to assume a flatness and dead level, so to speak; and it is the special quality possessed by the Cannas for counteracting this that makes them so valuable. Even the grandest of the other subjects preserve this tameness of upper-surface outline when grown in great quantities: not so these, the leaves of which, even when grown in dense groups, always carry the eye up pleasantly from the humbler plants, and are grand aids in effecting that harmony which is so much wanted between the important tree and shrub embellishments of our gardens and their surroundings, and the dwarf flower-bed vegetation. Another good quality of these most useful subjects is their power of withstanding the storms of autumn. They do so better than many of our hardy shrubs and herbaceous plants, so that when the last leaves have been blown from the Lime, and the Dahlia and Heliotrope have been hurt by frost, you may see them waving as gracefully and as green as the vegetation of a temperate stove. Many of the subtropical plants, used for the beauty of



A Flowering Canna.

their leaves, are so tender that they go off in autumn, or require all sorts of awkward protection at that season; but the Cannas last in good trim till the borders must be cleared. All sheltered situations, places near warm walls, and nice snugly warmed dells, are suitable positions for them. They are generally used in huge and ugly masses, but their true beauty will never be seen till we learn to place them tastefully here and there among flowering plants just as we place sprigs of graceful fern in a bouquet. A bed or two solely devoted to them will occasionally prove very effective; but enormous meaningless masses of them, containing perhaps several hundred plants of one variety, are things to avoid and not to imitate.

As to culture and propagation, nothing can be more simple; they may be stored in winter, as readily as potatoes, under shelves in the houses, in the root-room, or, in fact, anywhere if covered up to protect them from frost. And then in spring, when we desire to propagate them, nothing is easier than pulling the roots in pieces, and potting them separately. Afterwards it is usual to bring them on in heat, and finally to harden them off previous to planting out in the middle of May; but a modification of this practice is desirable, as some kinds

are of a remarkably hardy constitution, and make a beautiful growth if put out without so much as a leaf on them. The soil for all Cannas should be deep, rich, and light.

Considering their diversity of colour and size, their graceful pointed habit and facility of propagation, we must concede to Cannas the first place; but their capability of being used by anybody who grows ordinary bedding-plants, and the fact that they may be preserved so very easily through the winter, enhance their value still more. Cannas, protected by a coating of litter, have been left out in Battersea Park through severe winters, and during the unfavourable summer of 1867 attained a height of nearly twelve feet. Where it is desired to change the arrangements as much as possible every year, it may not be any advantage to leave them in the ground, and in that case they may be taken up with the bedding-plants, and stored as simply and easily as carrots. Wherever they are grown as isolated tufts, in small groups, or in small beds, it will be best not to take them up oftener than every second or third year. These noble plants would also adorn the conservatory, which is often as devoid of any dignified vegetation as the unhappy flower gardens which are seen all over the country. Few subjects would be more effective; none more easily obtained.

Spring and Summer Bedding Combined.—I have tried to keep a few small beds in my garden continually filled, without disturbance, with a succession of hardy flowering plants. The beds are circles, five feet in diameter, and are planted with single or double anemones (only one kind and colour being allowed in each bed) and purple Clematis, Jackmanii or rubella. The clematises are tied down to a wire frame, low enough to admit of the anemones flowering over and hiding them. By next month the anemones will have died down, and the clematis will cover the frame. About eight inches margin is left for an edging. In November the clematis will be cut down, and the frame removed for manuring the bed. This will, I fear, be a difficulty, as it may injure the bulbs; as yet all have done well, and though the clematises have made strong shoots, they are not visible except on close inspection among the anemone flowers. —J. H. W. T

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

The Mountain Catsfoot.—This pretty alpine plant (known and popular in good collections as *Antennaria dioica* rosea) is grown here and there in the cottage gardens of Warwickshire as an edging plant. As such it is among the neatest of silvery leaved plants at all times, and very pleasing when the dwarf cushions are studded with the little everlasting flowers. —W. R.

The Armenian Grape Hyacinth (*Muscari armeniacum*).—This is a very distinct and striking species, with flowers of a fine cobalt blue, marked with three small yellow dots near the mouth, and produced in dense spikes 2½ inches long. They are also slightly but agreeably fragrant. It is as yet scarce, but will I hope one day be as much grown as any spring flower, as it certainly seems finer than any of the other Grape Hyacinths, though these are among our prettiest flowers. —H. V.

***Ononis rotundifolia*.**—This pretty little shrubby plant has been flowering for the last six weeks round London, and is now profusely ornamented with its showy rose-coloured flowers. It is a capital subject for planting among dwarf rock shrubs or for the mixed border, and is not fastidious as to soil, for it thrives perfectly in the London clay. —T. E.

***Crinum capense*.**—This fine bulbous plant, often an occupant of our stoves or hothouses, succeeds well planted in the open border in the front of a lean-to house at Messrs. Osborn's nursery at Fulham. In this position it flowers annually, and this spring it has thrown up three stout flower stems. Doubtless it would succeed in many warm sheltered borders if planted in good sandy loam. —U.

***Dianthus brachyanthus*.**—I saw a plant under this name at Kew a few days since, which seems likely to be a first-class plant for choice rockwork. It is a diminutive species, with neat rosettes of slightly glaucous leaves, pink flowers, which are rather freely produced, and is a native of Spain. Can you or any of your readers tell me if it is obtainable in the trade? —S. M. S.

Mice in the Rock-garden.—I saw the other day in Mr. Lowndes' garden, near Boreley, many of the ornaments of a pretty series of rock-gardens much injured by mice which had many runs through them. In some cases strong kinds like *Achillea aurea* looked as if grazed down by cattle. It may be useful to record this fact, as in gardening we do not always know the enemy that destroys our hopes. —W. R.

Silvery-leaved Saxifrages.—I am much pleased with edgings and tufts of these; they look so well at all seasons. Will you kindly tell me what kinds I may try in this way with hope of success? —F. C. C. —The following six kinds are among the best:—*S. aizoon*, *Cotyledon ligulata*, *longifolia*, *pectinata*, and *recta*.

Best Varieties of Iris.—I am very fond of these noble flowers for planting in rough places and by the grassy margins of ponds, and should be glad if you would tell me the names of the best and most diverse kinds. I think these fine plants suffer a good deal from the seeming mistake that one or among them and which results entirely from not weeding-out kinds that have no really distinct character. —VICTORIA. —[*Iris germanica*, or its vars. *pumila*, *strobilata*, *ochroleuca*, and *florentina* are all good and distinct kinds.]

SUBSOIL DRAINAGE AS SANITARY WORK.

At a meeting of the Association for the Promotion of Social Science, at which a paper, "On the Haunts of Typhoid and other Fevers, in England and Wales," was read; Mr. Edwin Chadwick, who presided, said:—Subsoil drainage, which removes surplus water, and makes soils permeable for agricultural production, besides being a great agricultural, is also a primary sanitary, work. By even the imperfect ditch drainage, as I deem it, of the Fen districts, ague has been so much reduced that ounces of bark are now used where pounds were employed formerly. In my report of 1842, on the sanitary condition of the labouring population, there is a chapter of testimonies on the improvement of the health of the population that has followed subsoil land drainage. As a member of the first General Board of Health, I went into the subject thoroughly, and prepared minutes of instructions from comprehensive practical information, as to the subsoil drainage of lands forming the suburbs, as well as the sizes of towns. It is a subject grievously neglected from want of knowledge by medical officers whose education in preventive medicine is imperfect, and who commonly assume that house drainage and sewage is almost the only sanitary work to be regarded. Why, here, in the metropolis, after the prevalence of easterly winds over the Kent and Essex marshes, there is more of ague than appears in returns, and at times marsh diseases of a peculiar type; and surveys and preparations were made for the agricultural drainage of those marshes as a measure necessary for the sanitary improvement of the metropolis; but that measure has hitherto been neglected. Of the drainage works carried out under the Public Health Act within the towns, one effect was the subsoil drainage of some of the sites, as denoted by the lowering of the wells. On a cursory examination, as I might show, and a report by a medical officer of the Privy Council on the results obtained by the works in those towns, it appeared that there had been a marked reduction of cases of phthisis. And it was put forth on out-door experience, that reductions of inflammations of the lungs, as well as ague and typhus, were attendant on subsoil drainage works. Indeed, I have always understood that pure air—and dry air, if possible—was the desideratum for incipient phthisis. There may be some moisture, but it is essential that it should be pure moisture, which the moisture from ill-drained and surcharged subsoils rarely is. Sir John Pringle, one of our earliest sanitarians, gave instructions to note where wells were near the surface, for he had observed that such sites were bad camping grounds. On such facts, instructions embodying the best obtainable experience in agricultural engineering were prepared for the drainage of suburban lands, for the protection of the health of the population of towns and rural districts, as well as for agricultural production. But these instructions have been ignorantly and heedlessly neglected. The necessity of subsoil land drainage for health, as well as for agricultural production, is a leading condition that requires drainage areas, and lines of watershed from the hill tops to the dividing river of the valley bottom, as areas of sanitary administration, independently of the areas for other administrative purposes. I may show the enormous waste as well as obstruction to sanitary work, created by ignorance and neglect of this one condition of the drainage areas for the metropolis. Notwithstanding all that has been said on the subject—I have it on the authority of Mr. Bailey Denton—for every acre of land in this country that has been subsoil-drained more than twelve require drainage. This is a work—which public administration may, and ought, powerfully to aid. The most common obstruction to subsoil drainage is the want of outfalls. These, I have shown, may be provided for on contiguous lands by an improved road drainage, which is necessary to the maintenance of the roads themselves. The sanitary engineer—and there must be such engineers for efficient and economical sanitary work for a district—should be a scientific road engineer. This, again, leads to extended drainage areas, as efficient and economical sanitary areas, which at this time require to be considered in the pending legislation.

WATERCRESS.

THERE are many edibles, natives of our own country, hawked about the streets, of which we might be supposed to know more than we actually do. The watercress is one of them, and most of us no doubt have seen it growing where nature has placed it, in some shallow and remote stream. Many who love a ramble in the fields in search of wild flowers have halted by the side of some refreshing brook to gather the watercress; but it is not from the pleasant brooks and streams of England that our markets are wholly supplied, or the best quality of watercress is grown, for, like other edible plants, it is improved by cultivation.

Watercress thrives best in springs or clear running water, where the bottom is either sandy or gravelly; and in such a situation it

will sometimes grow a foot above the surface, though its more usual height is about six inches above the water. It has, as is well known, smooth, shining, very often brownish-green leaves, composed of five or seven ovate or rather heart-shaped leaflets. The edges of the leaflets are very slightly sinuated or waved, which is a very good characteristic to distinguish them from those of the water parsnip, with which they sometimes get mixed, and which are decidedly serrated or saw-toothed.

Watercress has been introduced into North America and into some of the British Colonies. In New Zealand it forms a stem as thick as the wrist, almost choking up many of the rivers. Housewives of a few generations back gave to their children, in the spring of the year, a "health-giving" draught, which was a decoction of watercress, brooklime, scurvy grass, and oranges. It is said that the ancients ate watercress chiefly with lettuces, the stimulating properties of the former counteracting the coldness of the latter. The first attempts to cultivate watercress by artificial means in Europe appear to have been made, about the middle of the sixteenth century, by Nicholas Meissner, in the numerous streams which abound in the vicinity of Erfurt. The water and soil suiting the plants, they thrived, and their cultivation became a great pecuniary success. Cresses grown at Erfurt were, and are still, considered of superior quality, and are sent in large quantities to the markets of Berlin, a distance of about 150 miles. In the early part of the present century, the cress plantations of Erfurt were so profitable that they were let by the authorities of the city to the cultivators at the yearly rent of £2,400; and the value has since that period considerably increased. The crops have been known to realise, in one year as much as £8,000. Watercress plantations have since been established in the neighbourhood of Paris, as the demand in the French capital, in its more prosperous days, was very great, the estimated annual value of the cress sent to the Paris markets exceeding £37,000. For conveyance from the plantations, the cresses are packed in large baskets, containing many dozen bunches each, in such a way as to leave an entirely open space down the centre of the basket, which admits of a free circulation of air. The whole are then well watered before being loaded into the waggons, and they are thus delivered quite fresh at the markets.

We read of watercresses once growing in large quantities in the waters of Tothill Fields, Westminster, and even on the neighbouring banks of the Thames itself; but the first we hear of their cultivation, in anything like a regular manner, in England, was in the year 1808, at Springhead, near Gravesend, where they are still grown, and the cress there is noted for its superior quality. When the success of this plantation became known, others soon started in many parts of the country where natural and suitable springs existed. In the neighbourhood of London especially were these watercress beds formed, some of which were many acres in extent; some still exist, some have been done away with, and some new ones have in course of time been formed, the produce being nearly all consumed in London; indeed, the supply is scarcely adequate to the demand. Some of the most noted watercress plantations in the neighbourhood of the metropolis are at Uxbridge, Rickmansworth, and Waltham Abbey. Watercresses are also grown to some extent at Hackney and several other places near at hand, and at one time quantities were even brought to London from Salisbury.

Some idea may be had of the importance of this branch of trade in London alone, when we state that it is computed that between 6,000 and 8,000 bunches are daily brought into the markets, and that the sum annually realised from the sale of watercresses exceeds £10,000. Watercress is undoubtedly a wholesome plant, and an excellent anti-scorbutic; and there are but few to whom it is not agreeable in its fresh green state. It is, moreover, sometimes cooked for table in a manner similar to celery.—*Food Journal*.

A QUESTIONABLE SPIRIT.

"THE New Tea Spirit, Robur"

About the walls we see.

What Spirit, from so sober

A beverage as Tea?

And Tea with "Robur" naming

Together seems a joke

Some explanation claiming;

As "Robur" stands for oak.

If leaves could be fermented,

And were a Spirit made

Of some which are presented

For tea-leaves in the Trade;

Then Robur, in all reason,

Would be its name, right due:

Those leaves that King of Trees on,

The *Queens Robur*, grew.

—Punch.

THE LIBRARY.

"MY GARDEN."*

This is one of the most remarkable books issued on gardening for years; and not so much for what it endeavours to teach as for the immense amount of interest which it shows a garden offers to those who seek its charms intelligently. The author has little that is new to teach in our art, but assuredly we never had a better guide as to how to enjoy a garden. Every phase of gardening seems alike pleasing to him, from fern-growing to vine-growing in what he calls the "Poor Man's House." Judging by the many capital illustrations in the book, the author would appear to be a very enthusiastic and successful fern-grower. He says:—

"The land as well as the water of my fern glen, is well furnished. As we enter it we see gigantic osmundas rearing their stiff and majestic forms; enormous lily ferns gracefully showing their flowering feathery forms, with the noble broad ferns expanding

'lily of the field' expands its beautiful flowers in autumn with such effect that 'Solomon in all his glory was not arrayed like one of these.' A cranberry plantation is arranged on the slopes towards the stream, so that the mind is led from this weak horticultural sham to the real glorious natural scenery of Zermatt and the high Alps, where such plants delight to grow. . . .

"I have five outdoor ferneries and one indoor fernery. As a general rule, I think it advisable that they should be arranged below the level of the ground, and in a spot capable of drainage, as a uniform moisture to the roots is thus insured. In a natural state, wherever we see ferns growing luxuriantly, there a bank of earth rises above them, so that the roots derive continuous moisture from water percolating through the soil. When this condition is reversed, and the ferns grow on the top of a mound, they are apt to die from drought. Whenever a stream of water can be introduced near the ferneries, it is desirable; ferns suffer no harm, but on the contrary derive great benefit, from the roots being occasionally flooded for a few hours.

"Experience has taught me that ferns like an abundance of light, although it is necessary to screen them from cold winds. For this



Fig. D. in Mr. Smeeth's Garden at Biddington, Surrey.

their curved fronds to view. Every stump glistens with the golden-spored common polypody, and near every stone the triangular oak fern shows its fronds. Turning round, another view discloses alpine polypody, marsh fern, beech fern, and oak fern. *Cystopteris* grows luxuriantly. The beautiful *Asplenium Trichomanes* and *A. Adiantum nigrum* are healthy, but to the observing eye only do the Woodsias, the filmy ferns, and the Killarney fern appear. The grass of *Parnassus* abundantly lends its aid to decorate so lovely a spot, mosses of many kinds appear, and the Northern cloudberry and *Rubus arcticus* grace the scene with their presence. American *Adiantums* flourish, and a little tiny pond shows frog-bit, the water soldier, and other aquatic plants. On emerging from the glen we have to traverse little tiny mountains, such as children might make as toys, but then they are lit up with alpine snapdragons, the lovely gentians, primulas, and other alpine plants, with sempervivums at the apices of the stones, and many terrestrial orchids at their base. Here the

reason I always contrive that a belt of trees, or of rootwork or rackwork, shall surround my ferneries, and at the same time that the light of the sky may fall upon them from above without their being directly exposed to the fiery rays of the sun. My fern glade is placed on one bank of the Backwater, and is screened from the sun by a row of nut-bushes to the south. Here many of the larger varieties of lady ferns, interspersed with polystichums, broad ferns, mountain ferns, and scolopendriums, are grown. The royal fern flourishes near the river (the Wandle), but it is advisable to keep the crowns well above the water, as their roots like damp soil rather than wet. In the driest spots we grow polypody (*Polypodium vulgare*), and in the wettest the marsh fern (*Isoetes Thelypteris*). . . .

"My fern glen has given me so much pleasure that I strongly advise everyone who has a waste piece of land near his garden to make a fern glen. It will be a pastime in the winter evenings to design it; the construction of it—the transforming of the ideal conception of the mind into a living reality will afford much pleasure; many a country trip in the woods will be required to furnish it; and when furnished it will afford a spot for contemplation

* "My Garden: its Plan and Culture; together with a General Description of its Geology, Botany, and Natural History." By Alfred Smeeth, F.R.S., &c. Illustrated with 1,250 engravings. London: Bell & Daldy.

and enjoyment, in which the designer may fancy that the robins, warblers, and nightingales, which never fail to dwell there, are pouring forth their gratitude for the construction of such a delightful retreat. . . .

"In my five outdoor ferneries I have three distinct classes of ferns: firstly, those which remain in the ground the entire year; secondly, those which are bedded out during the summer; thirdly, those which are placed out in their pots, and taken back to the greenhouses in autumn. A very large proportion of all ferns which are grown would be benefited by exposure to the pure air of heaven during the months of June, July, August, and September."

Reeds and many other picturesque hardy plants are also used by Mr. Smee in a very happy manner in the embellishment of his grounds, as shown in the accompanying illustration.

To turn rapidly from the æsthetic to the edible side, so to say, we find a very useful structure described by Mr. Smee as the "Poor Man's House."

"A glass structure exists at my garden, which is really nothing more than a large frame, so constructed that the gardener can get in and walk along. We call it the 'Poor Man's House,' because it is erected so cheaply and answers so efficiently. To construct a Poor Man's House, a hole is sunk in the ground 2½ feet wide and 2½ feet deep, and the earth so removed is placed at the back of the house. If the water-level of the ground permitted, and drainage could be procured, the whole interior of the house might be lowered two feet more; by which device the house would be well sunk in the ground. A single glass roof is fastened over the sunk part, and ventilation is provided by a board hung upon a hinge at the back.

"My Poor Man's House is forty-eight feet long, and the width of the glass roof is ten feet, the door being at one end. Perhaps in future structures, where there is plenty of earth for the back, it would be desirable to increase the width to twelve feet. Vines are planted which yield abundance of the highest-flavoured grapes, lasting from July till November, when the vines are cut, and the house is filled with geraniums, azaleas, and camellias: these give lovely flowers till advancing spring produces plenty of flowers in the open air.

"The house is lighted exclusively from the roof, and thus a maximum of light is secured with a minimum of cooling surface. From the earthen walls, the air is always kept in a proper hygro-metric condition, and as a result of the whole arrangement healthy vegetation is secured with the least possible amount of artificial heat. My house has only two three-inch hot-water pipes, and many plants may be grown in it without any heat. No one who loves plants and likes to see them grow should be without a Poor Man's

house; for there is no method in which so much pleasure may be obtained with so small an outlay."

Mr. Smee seems to have a truly catholic taste, as there is scarcely a class of plants that he does not grow. Our finer British orchids, for example, we do not often find well grown in our botanic gardens, but they seem quite at home in the garden at Beddington.

"Many persons speak of Orchids as eccentric plants, to be looked upon with wonder, not with admiration; yet I must confess that, in my opinion, they are, in form and colour, the loveliest of all the lovely plants which adorn the woods and fields. Of our British orchids twenty-eight species are recorded as growing in the county of Surrey alone. A few have been found in the fields near us, and more are found on the neighbouring chalk downs. All British orchids are terrestrial, and have bulbs or quasi-bulbs. First and foremost, I grow the common orchid (*Orchis mascula*), which abounds in Kent. I procure them by digging the roots from the hedgerows in February and March, before the flowers appear. Although many have flowered in the highest perfection and have seeded every year, yet I have never known them to multiply; nor can I tell how to increase them, although they grow, blossom, and seed so well in my garden. I am always anxious to have some Bee Orchids, as a group of these plants is very beautiful. They blossom with me in the very highest perfection when grown in top-spit loam. The Fly Orchis is another lovely species, but much as I love it I never cultivate many. They grow in the very highest luxuriance in my alpinery, with the curious Bee Orchis. The Man Orchis is another curious flower, but not so beautiful as the last two. It is called the Man Orchis because the flower has a resemblance to a little man dangling in the air. These grow on the southern side of our chalk downs, whence I obtained my specimens. I cultivate also the Great Butterfly Orchis, the Spotted Pale Orchis, and the common Marsh Orchis. . . .



Rustic Bridge, with surrounding Reed Vegetation, in Mr. Smee's Garden.

"For all terrestrial orchids I use a light turfy loam, which appears to suit them better than any other material. There are many other South European kinds, growing in Italy and Greece as thickly as buttercups do in our fields, which doubtless, if they were imported into this country, would readily find purchasers."

Our illustrations, for which we are indebted to the publishers of "My Garden," give a fair idea of the admirable engravings scattered abundantly throughout the book, to which we shall shortly return, and which, in the meantime, we strongly recommend to all who are interested in gardening.

THE BIRMINGHAM SATURDAY HALF-HOLIDAY GUIDE.*

WE have great pleasure in welcoming this handy and well-prepared little guide to Birmingham and its neighbourhood. The district is likely to interest many horticulturists about this time, when the horticultural wealth of the country is assembled there, and they will find the pamphlet prepared by Mr. Joseph Sturge a very useful aid. It furnishes information respecting all worth seeing within a half-day's journey of Birmingham.

FLOWER FACTORIES IN BELGIUM.

WHERE do they all come from, those innumerable multitudes of plants, which we see everywhere, indoors and out, in pots, in beds, in borders, in windows, in brackets, and jardinières, not one in a thousand of which leaves a lineal descendant to continue its race, in the shape of seedling, sucker, cutting, or offset? And if such be the case with plants which, like dogs, have their day—which appear in public, gladdening the universal eye, and enjoying their allotted seasonal term—what must it be with the plants which disappear—which retire into private life and are heard of no more? Not one in a million of these would ever become a *plante mère*, a parent plant. How then is their place supplied? How many ladies per cent. get their over-year's camellias to flower, or even to live? Do not countless window gardeners grow semi-aquatics in mould as dry as brickbats, while they drench tropical succulents with water? Do they not think to get geraniums through the winter in dark closets, musty cellars, freezing garrets, and dusty corners? Is any plant so hard to kill that amateurs cannot overcome its obstinacy? In large towns and cities, the waste of plants, as of infant life, must be enormous; and yet the supply never falls short. Where do they all come from?

On popping these questions to my practical friend Hortulus, who makes a considerable consumption of the article plant, he quietly answered, "I am going to Belgium next Tuesday, to fill up my vacancies. Come with me, and see." Going and seeing being one of my weaknesses, I accepted the invitation with a jump of joy. On the appointed morning, we took the branch of the Chemin de Fer du Nord which carries wayfarers into Ghent.

There not a few of the windows attract your gaze with very respectable horticultural shows. But the streets themselves are neither crooked nor straight; they are warped to the right or to the left in such gentle curves as to baffle the possessor of the most highly-developed organ of locality. You fix the points of the compass in your mind, and resolve to reach your goal with inflexible directness. This is easy enough to do in rectilinear-streeted and rectangular-cornered towns; but in Ghent, with corners like wedges cut out of a cheese, and with streets bulging this way and that, like a whalebone walking-stick under a fat man's pressure, while making for the north you find yourself tending to the west, or desiring to become a southerner, you discover that you are one of the wise men of the east. Your only guarantee for surety is a *vigilante*. . . .

* The Birmingham Saturday Half-Holiday Guide; with a Map. Birmingham: William Walker, 21, Great Charles Street.

Hortulus, to whose guidance I have committed myself, proposes to do the little gardeners first. Of course I have only to follow my leader. In an inconspicuous lane, we enter an inconspicuous door, without name, sign or other indication of its occupant and his pursuits, and discover within a little nursery, whose speciality is azaleas and camellias. The nurseryman and his son are out, leaving the wife alone at home. Madame speaks neither French nor English, but Flemish only, which is Hebrew to us. Hortulus tries his French, in vain. I try bad German, which I have occasionally found efficacious, just as people make themselves intelligible to babies by negro talk; but in this case it proves an utter failure. Madame then rattles out her Flemish louder than before, to make us understand it better, as if we were deaf; but the deafness is of the mind, and not of the ear. We are about to retire, when a hand-barrow rumbles on the stones in the lane, and stops. She seizes us by the arms to retain us, vociferously shouting "Kommen, kommen, kommen!" or some similar sound. Immediately enter the father and son, simple workmen shod with sabots. The son alone, of these three, speaks French; and the intellectual mist clears up, as as if the sun had burst through a London fog. Neither of our

friends has the slightest pretensions to be master gardeners, heads of houses, or chiefs of horticultural establishments. Themselves are the only labourers they employ; consequently, they are excellently well served. They make no secret either of their management or their manipulation. As to the former, the whole surface-earth of their little plot of ground is annually thoroughly renewed with hearth mould. The latter is as simple as fiddle-playing, when you are used to it. You have only to stick and fasten a little bit of this upon a little bit of the other, in such a way that it shall grow, and grow vigorously too, and the thing is done. Look! A cut or two with the knife, an opening of a cleft with a bit of blunt stick, and a binding up the wound with a ligament. That's all. If it were longer or more elaborate, how could we turn out our thousands of camellias and azaleas in the given time? There are only twelve months from the 1st of January to the 31st of December.

To be sure the operation

is not everything. As bottles, after blowing, have to be annealed in heat, in ovens, so these plants, after grafting, must be *chouffées* or stilled, under glass and in greenhouses, in an atmosphere constantly maintained in certain thermometrical and, above all, hygrometrical, conditions. But all that, like the grafting, is mere A B C, when you have been in the way of it for years.

Hortulus has long known all these details, but I have not; so he kindly gives me time to inquire. On what are the finer kinds of flowering plants grafted? Well; that depends. The common evergreen spurge-laurel, *Daphne laureola*, serves largely as a stock for the choicer and rarer species and varieties of *Daphne*. You see the seedlings in rows, established in little pots, ready to receive the slips intended to metamorphose their individuality. Young acacia plants perform a similar duty: so do those of the common laburnum. But they are not the speciality of this particular factory of flowering plants.

Cuttings of the single-flowered camellia are struck to furnish stocks for grafting the innumerable double-flowered varieties. Cuttings of the double kinds will strike not unfrequently, and with care; but they make less thrifty and handsome plants than those established



on the wilding stock—for such the single camellia may be assumed to be. They are also longer in becoming fit for market; which is all-important in a commercial point of view. After striking root, the camellia cuttings are potted off, to harden—such little infantile, baby-like things! Can it be possible to put a graft on such a straw-like stem as that? The question is answered by a practical affirmative. Here are some, with stems no bigger, on which a fresh graft is putting forth young leaves.

Double camellias are beautiful flowers, and the season when they come renders them so welcome; but I have a weakness for the single camellia, because years ago I saw in the royal gardens of Caserta, near Naples—may it still be continuing to flourish there—a big old bush of that species—not a tree with a stem, but a regular bush—covered with hundreds, probably thousands, of scarlet flowers. The ground around it was carpeted with red. By the way, even the fallen flowers of the single camellia render good service to bouquet-makers. They last, mounted, without fading, several days.

Indian azaleas are treated much in the same way, except that, after the graft has taken, they are planted without pots in the open ground, to be potted at the approach of autumn. The young azaleas are thus raised in rows; dutiful pupils (*élèves* they call them), who never break the ranks, nor play truant, nor disobey orders. And it is curious to see choice flowering plants considered as mere merchandise, manufactured by grafting and pricked out like cabbage plants, vegetable live-stock bred and propagated for popular consumption. Patient as little lambs do the rooted azalea cuttings wait their turn ready to receive their graft—the training which is to fit them for their future course of life.

These small special nurseries are good to visit, because they show how certain plants (which we only see in their advanced and flowering state, in shops, greenhouses, and exhibitions) are brought up from their earliest infancy. They also disclose the life-routine of a very worthy class of persons, who rarely work isolated or alone, but in small family associations or partnerships, such as father and son or sons, two or three brothers, brothers and sisters, mother and children. The month of August is the time when they expect their customers' visits, and for these they prepare during the whole previous twelvemonth. Needless to say that ready money is very acceptable, and exerts considerable influence on the terms of a bargain. For most things, the time of delivery is early autumn, when the camellia and azalea buds are well set and apparent. Speaking French, as most of them do, as a foreign language—for few visitors can answer "Yes" to their eager question, "Do you speak Flemish?"—their conversation has often a certain quaintness.

Some of these humbler horticultural establishments have their approaches and entrances so undiscernible, that you would say they intended to baffle rather than invite the intrusion of strangers. "It must be somewhere here," says Hortulus. "Last year I had difficulty in finding it, and I am not sure that I can find it now." On searching close, we discover a sort of hole-in-the-wall or open sesame trap-door, defying all but the initiated to discover and open it. . . .

"Have you got anything new this year?"

"Not much. Comme ça. Azaleas frozen in spring, comme ça. Plenty of standard laurustinus, comme ça, if you want them. Standard sweet bays, comme ça, the biggest of them gone to Russia. Never have enough of them for Russia, comme ça. Variegated-leaved plants, comme ça, the fashion; obliged to grow them comme ça, but won't last, comme ça."

"And this new-old thing?" asks Hortulus, looking at me. It was a George the Third pelargonium, a *bric-à-brac* plant, harmonising with perukes, pigtailed, chintz gowns, and silk socks that will stand alone without any wearer inside to support them.

"Pelargonium tricolor, comme ça. You like it, comme ça. Have only seven plants, comme ça; must keep one, comme ça. You can take the other six, comme ça, at fifty centimes apiece, comme ça."

Another clever individual, who has been a botanical collector in his day, and knows what tropical forests are, instructs us, and at the same amuses us by pronouncing all the mute *rs* in his French.

"Doucément, doucement; gently over the stones. If you go so fast you won't see all the pretty things I want to show you. Here is a new fraxinelle, another species, not variety, of Dittany of Crete. I have it quite nouvellement. Like the other, the vapour around it will catch fire on a warm summer's evening. I often do it for my amusement. Those other novelties are only rubbish; they are tout bonnement, good for nothing at all. That's a nice elephant's foot (*Tamus* or *Testudinaria elephantipes*); but I am expecting some smaller and cheaper ones. You know they get them, like the zamias, by setting fire to the forests. That squat euphorbia, a green

candelabra stuck on the top of a peg-top, is at least a hundred and fifty years old. I could let you have it for fifty francs, which makes it cost only threepence a year. But réellément I don't care to part with it, as I brought it home myself, and have taken great care of it ever since, I am fond of it, très naturellement."

Some pot or tub plants, like carriage horses, go in pairs; and the better the match, the higher the price and the greater unwillingness to separate them. Indeed, the seller will never part them; the buyer may do as he pleases, pocketing the loss and prepared for the diminished value of the divided companions. To be perfect pairs, plants must be reared as such from their earliest infancy. Like twin children, they are dressed in the same fashion, fed with the same food, washed with the same water, have their hair and nails cut on the same day and in the same degree, and are sent out of doors and put to bed at the same hour. Many pair plants have an almost indefinite term of existence—myrtles, sweet bays, cycases, dracænas, yuccas, agaves, bonaparteas, cactuses, euphorbias, tree and other ferns, laurustinuses trained with a head and a stem. Consequently, the process is long, occupying years, sometimes lifetimes. The small horticulturists, with patient labour, devote daily attention to this class of nurslings, and assiduously train them in the way they should grow.

Unmatched plants belonging to this category are comparatively cheap, being sometimes to be had for half what they would fetch if paired. Their owners well know the difficulty of providing them with a mate endowed with the required compatibility of disposition. This repetition of forms in ornamental plants is called for by the architectural requirements of terraces, galleries, and greenhouses, which must have vegetable decorations, like statues and vases, alike though not exactly the same. Some positions, however, are not symmetrical, and are content with one attractive botanical specimen. Hortulus wants one *Araucaria excelsa*, to make the central figure in a group. We find a beauty in a large establishment, cheap, because single. It was either taller or shorter than the rest of its carefully coupled sisterhood; and it stood in the ranks, commanding admiration, for sale, like an unveiled beauty in an Oriental slave market. It is ours at once; entered on our list of acquisitions at the price demanded.

But there are slips between cups and lips. Next morning comes a billet-doux from the very regretful horticulteur. "Exceedingly sorry, but my brother had sold in the morning the *araucaria* you chose in the afternoon, without my knowing it. If you leave it to me, I will select another."

No you won't. We smell a Gantois trick. The get-off may be bosh, or it may not. Has your brother, perchance, found up for his plant an unsuspected partner on the premises? Without vouchsafing an answer, we go elsewhere. Soon after our entry, without receiving a hint, the proprietor points to a pyramidal tuft of green.

"Those are my unmatched *araucarias*. What am I to do with them, I don't know. I would let you have that fine fellow for five-and-twenty francs; and really it is—"

"Bon! Done! We'll relieve you of that difficulty."

They say that few women marry the man they love. Few gardeners cultivate the plants they like; they are obliged to conform to horticulture de convenance, as their fair customers are compelled to make mariages de convenance. The more outspoken amongst the fraternity avow the constraint put upon their affections.

"Is it not assommant, when one really loves good plants, to be obliged to work from morning till night at producing such heaps of rubbish as this," giving the pots a contemptuous kick, "bedding-out stuff by the train-load and the milliard? One gets sick of the very sight of all these zonals, nose-gays, *iresines*, *perillas*, and the rest of the lot. It is for ever and ever the same *balancoire*, the same boutique, the same *pacotille*. Now and then a good new thing, or a good old thing renewed, comes in to vary our monotonous diet; but it soon either disappears, or becomes itself one of the monotonies. But we must live; so we are everlastingly making materials for rubans and massifs. I have a few nice things here, which I keep more for myself than the public," coaxing their leaves tenderly with the tips of his fingers; "they take at least four years to come to this; and then if I try to sell them for a franc and a half each, people scream out and call it dear. You may well call my *heliotrope* bushes ugly, with their crooked rough stems and their shabby straggling heads; but they have helped to make the pot boil for many a year. I sell the flowers wholesale to the bouquet-makers, and in winter they fetch remunerative prices. Ah! If I were only rich, I would still continue to be horticulteur; but then I would grow the plants that pleased me, and not be the slave of such *cochonnerie* as this."

Another contemptuous kick at the offending bedders-out concludes the harangue. We retire, leaving the giant nurseries for inspection on another day.—*All the Year Round*.

WORKING IN THE HEAT.

THAT a tropical climate is specially trying to the health of Europeans is accepted as an axiom. Hence, better salaries are offered for similar service and higher premiums imposed on lives by insurance companies, to compensate for the extra risks to health and dangers to life. All this is received as a matter of course; and yet singularly enough scarcely any note is made of the danger of working in the heat at home. Tropical temperatures are only held to be enervating in tropical countries. The danger of working in the heat at home is, however, greater than exposure to the same temperature abroad. Sudden changes are even more disastrous than a high temperature. A whole host of diseases follow the track of great alternations from heat to cold. These, oft repeated, open up the citadel of life to most of the ills that flesh is heir to. And it is to such extreme changes that horticulturists are particularly exposed. In winter they are constantly plunging from a tropical into an arctic sea of air. It is this that makes them the natural victims of rheumatics, with its racks and thumbscrews.

The evil is by no means a small one, neither in its results nor the numbers affected by it. Every day the area covered by glass is extending, and probably one-half of it is used to furnish tropical climates. The number of workers in the heat keeps pace with this extension of glass. Hence the importance of lessening the risks. Much work must be performed in high temperatures; but by attention to the following simple suggestions the amount might be greatly lessened, to the comfort and benefit of all concerned. A good deal of the work might be done in cooler places; the temperature of the houses could be lowered when work was being done in them; the coolest part of the day chosen for hot work; and the workers so prepared for their labours as to be able to go through them with a minimum of risk. Much horticultural work is portable. All plants in pots are of this character, and the cleaning, training, and potting of these constitute a large proportion of the work done in the heat in most establishments. True, plants are generally removed to a shed for potting; and were sheds are lighted and warmed, as all garden workshops should be, there are good reasons why all cleaning, training, and staking should likewise be performed out of the house. More and better work would be done in less time. The men would be safe, and the plants could take no harm. As I have said, the temperature of the houses might often be lowered with perfect safety while work is being done in them. Take for instance the everyday operations of shutting up and syringing glass-houses early in the afternoon. The most common practice is to shut up first and syringe afterwards. The consequence is the operators are subjected to a Turkish bath. No harm whatever could come to the plants by reversing this order. Syringe first, and shut up immediately. The plants would thus have their bath, and the men escape. And so in regard to thousands of other matters. If done without creating draughts, the temperature of most plant houses may be considerably lowered while necessary works are being performed without injury to the plants; and it is high time that the health and strength of the operatives were taken into some account in our hothouse arrangements.

Again, by choosing the cool of the day for housework, there would be much less working in the heat. Take grape thinning, for example—what a melting affair it is at noon; but in the early morning, or cool of the evening, it is a real delight to the true gardener; and if it must proceed all day and every day till finished, an artificial cool or dull day can be made by thick shading and an extra amount of air. The latter expedient must not, however, be carried too far, lest the tender grapes get a chill that stunts or mars them for life. But by picking out dull days and the cool portions of hot days, drawing out the fires, &c., cool times may generally be made or found for the doing of most irremovable housework.

Finally, the last remedy I would propound as an antidote to the dangers of working in the heat, is the preparation of the worker for his work. When any of the craft are called to India how careful they are about their kit; they choose only clothes suitable for the climate; but at home who thinks of these things? the consequences are suffering through life, premature exhaustion, a pension from the Gardeners' Benevolent Institution, or a total collapse; and all this often for want of the most ordinary precaution to preserve health. There is one protection that every one may use—flannel next the skin; this is a shield of safety against the dangers of working in the heat.

Years ago I knew a young man whom no persuasion could make to wear flannel. He laughed at all coddling, and cared not how hot or cold his work might be. He thought lightly of stepping from 110° in a pine-stove to 40° on the face of an east wall. During early spring it was his habit to go from house to house syringing—stripped to his trousers. One keen day in March he came forth from a cucumber house at 90°; the biting March wind struck him as with fingers of ice. His underclothing, wet with perspiration, flapped against his

back like a snow wreath, at the same moment he was suddenly transfixed as if a sharp spear had pierced his spine. He could only stand still and scream. But the first thing he asked for was flannel, and he has worn it ever since. But no season passeth without a few shafts sent forth from the old enemy, lumbago. Forewarned, forearmed. Would that the rising race of gardeners would look thus at the matter. Let our sufferings suffice. Why should their lives be also blighted by thoughtless, reckless, unnecessary working in the heat? By the use of flannel and extra clothing before leaving the heat for the cold, by care on the part of the workers themselves, and the exercise of forethought and sympathy on the part of masters, the sufferings borne of working in the heat may be escaped, or reduced to the narrowest limits. D. BURY.

THE ARBORETUM.

DESTRUCTION OF TREES IN KENSINGTON GARDENS.

THREE large trees in Kensington Gardens have just died, as it would appear, from mismanagement. They stood at the side of the road to the south of the bridge over the Serpentine. Their destruction seems to have been caused by the men employed in making or gravelling the path, their collars having been completely buried under the gravel, and even the lower part of the trunks covered to a considerable depth. By such a process the destruction of a tree is, tolerably certain, though the well-known result likely to follow such an operation does not appear to have foreshadowed itself to those who so covered up the trees. The authorities appear ashamed of the affair, as men were employed during the whole of Wednesday night (June 13th) in grubbing them up and removing them by lamplight. These ornaments of the Gardens are gone, and cannot be restored; but I beg to call attention to the fact that there is a whole row of fine trees at the edge of the path which have been "tarred with the same brush," a very rough one, and they will probably share the fate of their neighbours that have perished, unless something be done immediately to save them from that process of burying alive, to which those already gone have succumbed.

We Cockneys, though we may not know so much about foresting and tree-culture as those appointed to rule over our public parks and gardens, are yet very proud of the grand forest trees that supply us with sylvan scenery almost in the heart of London; and their destruction from sheer carelessness gives needless pain to many whose country walk cannot be taken farther afield than the parks or Kensington Gardens. Great regret was felt at the death of the noble old elms that perished in consequence of their long imprisonment in the first Crystal Palace. But they died in a great cause; that of the establishment of those international exhibitions of art, and of scientific skill, which each year brings us into more friendly communion with our Continental neighbours.

The present instance in Kensington Gardens has, however, no such excuse; there are no "extenuating circumstances," and it is to be hoped that such a system of destruction may not be allowed to extend its ravages. W. B. L.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.
THE SCORPION SENNA (CORONILLA EMERUS).

This forms a very elegant loose bush, from four to six feet high, with slender and somewhat declinate shoots, which require clipping occasionally to keep the plant compact. It is a native of the middle and southern parts of Europe, is easily increased, either by seeds or by cuttings, thrives well in any good garden soil when placed in a sunny, sheltered, and rather dry situation, and was first introduced in 1596. The leaves are alternate on the young shoots, but crowded together on the other parts. They are pinnate, quite smooth, and more or less persistent, or sub-evergreen in mild seasons. The leaflets are small, inversely egg-shaped, smooth, and in three or four opposite pairs, with a terminal or odd one at the end. The flowers are pea-shaped, and produced plentifully in twos and threes, on longish, slender, axillary peduncles. They are reddish externally before opening, but bright yellow when fully expanded, and the two forms being mixed together on the plant when in flower in May and June, produce a very fine effect. The plant, however, keeps on flowering more or less until the end of September, if in a vigorous state. The legume, or pod, is rather more cylindrical than flattened, and, when

ripe, separated into one-seeded joints. The Scorpion Senna is well suited for forming small ornamental hedges, as it stands clipping well, and continues producing its flowers in succession for a considerable length of time.

THE DOWNY SPIRÆA (SPIRÆA TOMENTOSA).

This forms a somewhat erect bush, from three to four feet high, which flowers more or less from July to October, but in greatest perfection in July and August. It is a native of Canada (on mountains), and of the north-west coast of America about the Columbia, and was first introduced in 1814. This handsome shrub thrives best in a light rich soil and fully exposed situation, and deserves a place in every collection. The leaves are of various shapes, some being ovate or elliptic, and unequally or coarsely serrated, while others are oblong-lanceolate nearly entire, or with only a few serratures towards the apex, but all are furnished with very short tomentum and light green on the upper surface, while the underside is densely coated and quite white in appearance. The flowers are small, deep red, and densely crowded together in compound terminal, oblong, blunt, erect racemes or panicles, with the stamens twice the length of the corolla. The racemes and young shoots are coated with a short dense tomentum of a reddish-brown colour; the lobes of the calyx are triangular and deflexed, with the carpels spreading in different directions. This kind is the same as *Spiræa Douglasii*.

Seaside Planting.—I have succeeded in growing the Aleppo pine (*Pinus halepensis*) from seeds brought from the Isle of St. Marguerite, opposite Cannes, where this pine grows with its roots down to the salt water, and where it withstands the most terrific sea gales without seeming a bit the worse for them. Those who wish to plant near the sea should plant as follows: *Pinus halepensis*, Corsican pine, *Pinus insignis*, *Pinus austriaca*, *Picea nobilis*, *Cupressus macrocarpa*.—*C. Down, Ireland.*

Double-flowered Peaches.—Peach trees with double blossoms cannot well be too highly recommended for general cultivation. The following varieties of them exist at the Museum, Paris, viz., double white, camellia flowered, pink flowered (*dianthiflora*) rose flowered, scarlet flowered, a new and very pretty striped variety, another called *versicolor*, one of Asiatic origin called *Peach of Ispahan*, and the common European double kind. We may remark that in form the last is different from the preceding ones; in fact, it resembles greatly our indigenous peaches.—*Ed. André.*

STRIKE OF THE LONDON MARKET-GARDEN LABOURERS.

WIDESPREAD dissatisfaction has broken out among the men and women who work in the market gardens round London, particularly in the south and south-western districts. They are on strike at Isleworth and some other places. These men receive on an average 15s. per week, some more some less; and the foremen, so called, get generally 20s. per week; women, of whom a great number are employed, receive from 7s. to 8s. per week in summer, and 6s. in winter. The men demand an advance of from 2s. to 3s. a week, or an average of 18s., payment for overtime, and to quit work at four p.m. on Saturdays. The women's demands are similar to those of the men, except that their wages are only to be 10s. a week. Several meetings have been held in reference to the matter, and some of the employers do not object to the terms asked; but, on the other hand, others stand out firmly against them. The effect of this strike is already beginning to be felt both by seller and consumer—the former cannot get his goods to market, while the latter has to pay more for the diminished amount that finds its way there. Considering the loss to all parties concerned, let us hope that some speedy arrangement may be arrived at which shall be alike satisfactory to masters and men.

Incendiarism in a Market Garden. At about two o'clock on Saturday morning an alarming fire broke out on the premises of Mr. Norris, market gardener, Sion Hill, near Brentford, doing damage to the extent of between £300 and £400. It is supposed to have been the work of an incendiary. It appears that the garden labourers and women have been on strike in the neighbourhood for higher wages, several meetings having been held, and some of the employers who decline to give the money demanded have received anonymous letters by post threatening to destroy their premises by setting fire to them. The Brentford and Isleworth engines were shortly on the spot, but the building, containing garden tools and baskets, was entirely consumed. At a meeting of the Brentford Fire Brigade on Saturday it was resolved to keep two firemen on duty during the pending strike.

THE LOWER GROUNDS, ASTON.

Our public gardens must wake up, or their laurels may be snatched from them. Of all the sluggish institutions the slowest is the botanic garden, where not supported by the Government. There is no reason why botanic gardens should not be self-supporting; no reason why they should not be attractive to all classes. But they are not so. Why? Because the character of the bodies which govern them is such as to stifle all originality and boldness of resource in the superintendent of the garden. Able and energetic humanity is rarely moulded on a plan which makes it possible to do good work and earn the toleration of all the members of a committee at the same time.

The Lower Grounds at Aston are an example of what may be done by an individual, beginning with few or no advantages, in the formation of a garden, which, to all intents and purposes, is a public one. About eight years ago the Aston Lower Ground, was, as far as gardening is concerned, a waste; now it is one of the most remarkable gardens in the country for both spring and summer plants. The owner, Mr. Quilter, who opens it to the public for payment, has gone into gardening with genuine enthusiasm, and his stock of hardy spring flowers and series of houses for the propagation of bedding plants, and his fine collection of sub-tropical plants and palms, would surprise many of those accustomed to our largest places.

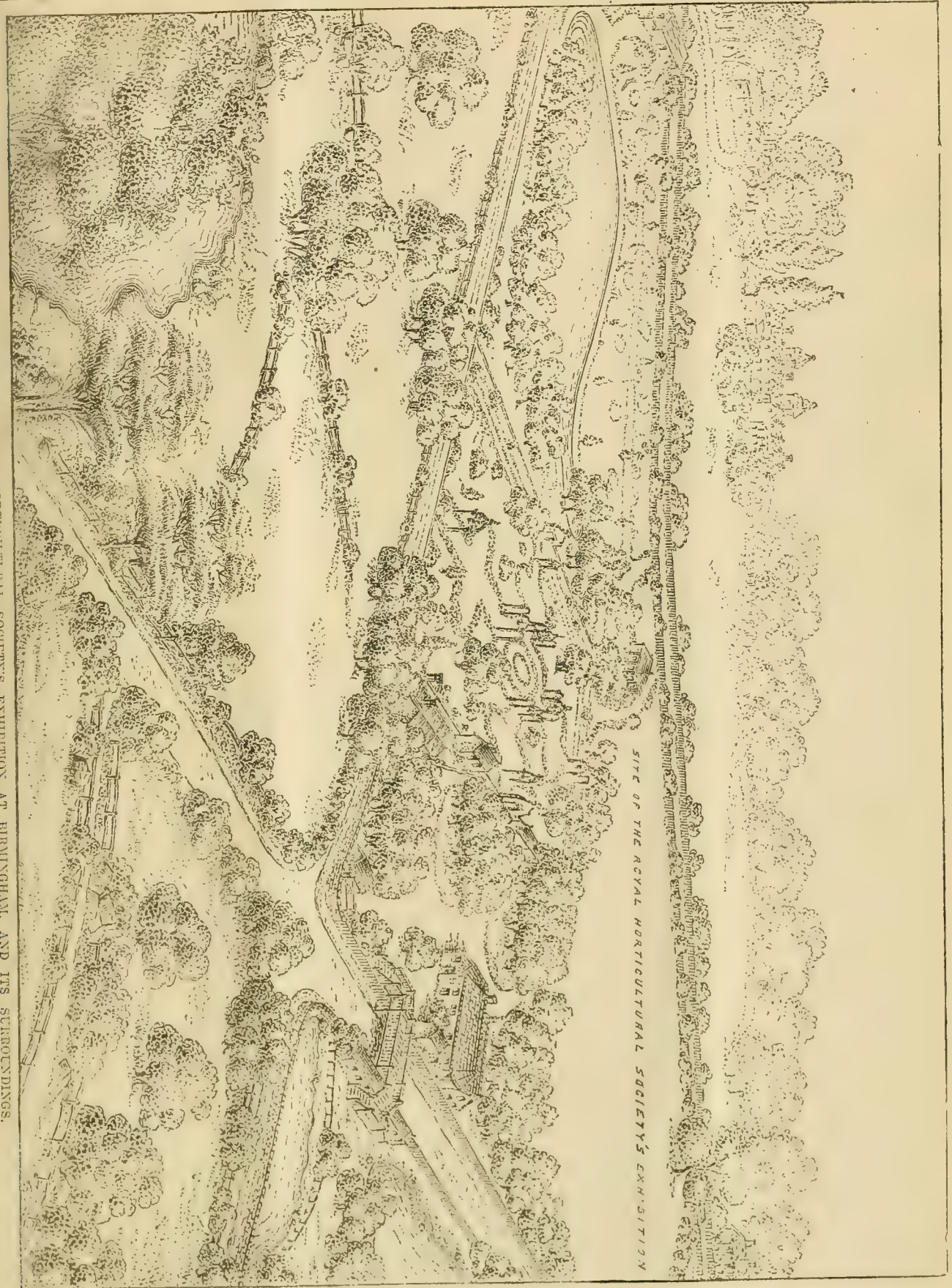
These gardens are so popular with the people of Birmingham and the district that on Whit-Monday nearly 16,000 persons paid to enter them. The main attraction was the display of spring-flowering plants, which were then in all their glory. As an example of formal colour in the flower-garden, the result was most striking, and the number of plants employed enormous. The appearance of the spring flowers here on Whit-Monday bore witness to their supreme importance in our ornamental gardens. The frost of the previous Saturday was such as to blacken and destroy the young spray of hardy forest trees, while, as is well known, the icy showers of the month were most destructive. Yet the pansies, daisies, violets, forget-me-nots, and other dwarf spring-flowering subjects employed, were as rich with brilliant unsoiled colour as the most carefully tended exhibition plants.

It is matter for congratulation that in a garden evidently designed for the entertainment of the masses, such a step in advance should be taken. When it pays Mr. Quilter to rival the slopes of Cliveden and Belvoir with his many thousand spring-flowers, and when the Black Country holiday visitors to his garden see for a few pence the "sub-tropical plants" we have hitherto considered only possible in Battersea—favoured garden of the State—it is probable we are approaching a period when public gardens of a high order will be created for and supported by the large populations of our great cities.

In a field adjoining Mr. Quilter's garden the exhibition of the Royal Horticultural Society takes place. There would be no better evidence of the character Mr. Quilter has endeavoured to impart to his grounds, than that the Society should elect to hold its exhibition in them. Here during the exhibition week, a novel combination of spring and summer flowers will be seen. Mr. Quilter, who plants spring flowers on a vast scale, quite expected to have them removed and replaced by the summer flowers. But the season being so wet and cold, several of the most important classes of spring flowers, as for example, pansies and daisies, looked as well in the early days of June as they had previously done, and Mr. Quilter determined to let them remain. The result is that at present half the garden is brilliantly embellished with hardy spring and early summer flowering plants, while the rest is planted with summer flowers. Here and there among the pansies, &c., tufts of Cannas may be seen, braving successfully the rigours of a harsh and cold season.

The Parks in Paris.—The Bois de Boulogne is recovering its beauty now; even about the gates of the Porte Maillot and Avenue de l'Impératrice, where its appearance was so terribly marred; the brilliantly green shoots are rising rapidly, and make a pretty fringe to the wood, unequal as that green fringe is to the cool, thick shade of chestnut trees one used to plunge directly into on entering the gates. The gates themselves have been put up again, and a little chalet built in the place of the levelled lodges. During the sunny afternoon parties of children went through the green grove of infant trees, just a little taller than they, picking the seed grasses and flowers that spring up in quantities on the cleared ground, and the scene made the prettiest spring picture imaginable.

PLAN OF THE SITE OF THE ROYAL HORTICULTURAL SOCIETY'S EXHIBITION AT BIRMINGHAM, AND ITS SURROUNDINGS.



PLAN OF THE SITE OF THE ROYAL HORTICULTURAL SOCIETY'S EXHIBITION

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

BY OUR SPECIAL REPORTER.

PRIVATE GARDENS.

Indoor Plant Department.—In order to keep our conservatories gay with flowering plants, large hard-wooded plants in pots are moved to some sheltered place out of doors during the summer months. Some of the most effective of them are also turned out into the sub-tropical garden. The prevailing vegetation indoors now consists of Fuchsias, Pelargoniums, Salvias, late Calceolarias, Balsams, Cockscombs, &c. Besides these, baskets ornamented with Lobelias, Tropæolums, Ferns, Tradescantias, variegated grasses, and even Begonias, are liberally employed as objects of indoor decoration. Plants of Achimenes in pans, staked out rather broadly, are placed in shady parts of the conservatory; Gloxinias in pots are likewise now brought into this structure and are placed in positions in which their foliage can be kept dry and their flowers shaded from direct sunlight.

Pits and Frames.—Frames that have been occupied by Calceolarias and similar plants, have a few inches of the mould thrown out, and replaced by a good rich compost, in which Vegetable Marrows are planted. Chrysanthemums are now freely exposed, shifted according to their requirements, stopped, syringed, and occasionally turned, to prevent one-sidedness. A few Verbenas are still kept in pots in gentle heat, to furnish cuttings to replace such plants as become exhausted before the autumn. Hollyhocks from seed are potted singly, and set in cold frames, others are being increased from sideshoots, and placed in similar positions. Calceolarias sown in pans of light soil, have a piece of glass placed over them; they are then set on a gentle hotbed and shaded.

Flower Garden and Shrubbery.—The sudden change that has taken place in the weather has forwarded bedding-out wonderfully. All the commoner kinds of summer decorative plants have been put out, and now sub-tropical gardens occupy attention. In the case of Alternantheras, screens of canvas are put up, so as to prevent too strong sunshine from injuring them. After planting, a good soaking of water is given, and evaporation is prevented by mulching, as it were, with some dry earth. Roots of Hyacinths, Tulips, Anemones, Ranunculuses, &c., are being lifted, dried, and stored, or planted in the reserve ground, and the open space that has been occupied by them is filled with summer-flowering plants. Pinks and Carnations in beds are neatly staked, and the surface of the soil kept clean and loose. Pyrethrums are also supported by single stakes. Where flowers of these are wanted in autumn, they are cut down and allowed to start afresh.

Indoor Fruit Department.—Pines receive little shading, but a free circulation of air is given, and a very humid atmosphere maintained by sprinkling the paths, walls, and beds with water. To the roots of swelling Pines a little weak manure water is given. Shutting up early saves fire heat. Unproductive plants are turned out of their pots, their balls and roots are reduced, and they are repotted into smaller pots and plunged in bottom heat with a close moist temperature. Vines relieved of their fruit are induced by every means to ripen their wood. Such as are ripening fruit are kept a little drier than ordinary, whilst such as are only swelling enjoy a humid atmosphere. Pot vines receive a little manure water. Late vines have a little fire heat when in flower.

Hardy Fruit and Kitchen Garden.—The young shoots of fruit trees on walls are being tied in, so as to get better ripened and in order that they may not obstruct light and air from the fruit. Where too many young shoots are coming up in the middle of fruit bushes they are removed. Frames are being erected amongst Strawberry plantations, which will be covered over with herring nets, to keep off birds. A good deluge of sewage or manure water is given to them, but as soon as the fruit begins to colour stimulants will be discontinued. Strawberries on warm borders exposed to the midday sun have already produced fruit. Supports are being placed amongst Gooseberry and Raspberry bushes intended to be kept for dessert, so that the nets may be placed on them at any time. The main crop of potatoes is being earthed up, and in the alleys between, Scotch Kales or Broccoli are planted, and at the same time well watered. Turnips are again sown, but where obtainable from the fields no more sowings of these are made in the garden. Carrots and Beet are being thinned. Salsafy and Scorzonera are also gone over and thinned. Leeks from March sowings are being transplanted. Another sowing of onions is being made in four-foot wide beds, for drawing when young for salading. The main spring sowings are cleaned, thinned, and where sprinklings of Carrots or Lettuces were also sown with them they are removed as they become fit for use. Tomatoes are planted out against the foot of walls,

leaving little basins around their base to retain water. Early Peas are now podding freely, and later sowings promise a good succession. Mildew has not yet made its appearance, but this malady is guarded against by drawing the earth to the plants in such a manner as to retain moisture, dryness being a fruitful source of that evil. A sowing of the Auvergne Pea is being made for late autumn use, as is also the latest main crop of Beans, and advancing crops earthed up and pinched. Regular successions of French Beans and Scarlet Runners are being made, and the latter staked. A sowing of Orach and Lamb's Lettuce is being made. Successional sowings of Lettuce, Radishes, and other small salads are being put in on cool shady spots. Fresh plantations of New Zealand Spinach are being made in lines, the seedlings are thinned to a proper distance apart, say twelve inches, and the refuse used for transplanting. Asparagus cutting is given over for a season. Work in the kitchen garden consists mostly in the destruction of the weeds and loosening the surface of the soil.

NURSERIES.

Indoor Department.—Bright weather, like that with which we are now favoured, causes an extra quantity of shading to be applied to glass houses; which are much more shaded, as a rule, than those of private gardens, the main object being to produce young growth and increase the size of the plants irrespective of flowers. Plants of Cyanophyllum, Sphærogyne, Medinilla, &c., as they fill their pots with roots get another small shift, and are kept in a damp, warm house; and they are frequently syringed, and their foliage preserved from being broken or deformed. *Sanchezia nobilis* is also shifted as required, and the leaves occasionally sponged, using water in which soft-soap has been dissolved. *Costus elegans* is not supplied very liberally with water unless growing freely. *Alocasia macrorrhiza* and *metallica* are being repotted and kept in a moist, warm house; some people keep them standing on inverted pots over a water-tank. *Caladiums* are repotted as they require it, and kept densely shaded. Young *Dracænas*, from pieces of the root and stem, are potted singly and kept for a time in close frames in the propagating pit.

Outdoor Department.—Outside work consists chiefly in cleaning the ground, and in watering newly-transplanted shrubs, also herbaceous plants in beds. Young fruit trees are being trained and superfluous shoots removed. Attention is also given to the displacing of suckers both from roots and stems. Fruit bushes, unless grown for training purposes on walls or as espaliers, have all central shoots displaced. From young Raspberry bushes, the weakest shoots are removed. Cuttings of Aucuba, Box, Holly, &c., inserted under hand-lights a year ago last autumn, are now being lifted, potted singly into small pots, and placed for a time in well shaded cold frames. The compost used for them is a strong yellow loam mixed with a little well-rotted manure and sand.

MARKET GARDENS.

DURING the cold damp weather which we had in May, the hardier vegetable crops grew well, but those of a more tender character, such as French Beans, Vegetable Marrows, Cucumbers, and Tomatoes, suffered considerably. French Beans have, however, now started in earnest, and are progressing admirably; as are also other crops. Asparagus, owing to the weather, has been more meagre than usual this year, but strong crowns nevertheless continue to yield good cuttings. Seedling Asparagus is coming up nicely, and is encouraged by being kept clean and frequently stirred; last year's sowings that were transplanted this spring are now strong; three-year old plantations have been yielding heads for table this spring. When an old plantation is to be broken up, it is cut from as long as marketable heads will pay for the trouble. Main crops of Brussels Sprouts have now been planted. Savoys are planted in lines between fruit bushes, and are at the same time well watered. Cabbages are planted if necessary; but most of that kind of work having been done during the damp weather, no more is done at present than is absolutely necessary, except perhaps in sheltered places, such as between lines of fruit bushes or under trees. Sprouting Broccoli, of which the principal winter supply consists, is being planted between rows of bushes. A few Lettuces are sown in a cool, shady place. Globe Artichokes are supplying heads abundantly; the ground is hoed, and in some cases a mulching of litter is applied. Ridges in course of formation for Celery are at present being cropped with Endive or Lettuce. Parsnips, Carrots, and Beet, continue to be thinned. To the last transplanted crop of Leeks a good watering is given, and the soil afterwards hoed. Tomatoes are being planted out about three feet apart. Vegetable Marrows are fully exposed throughout the day, especially such as are established. Failures are made good from reserve stock. Frame Cucumbers receive plenty of air throughout the day, and some litter is shaken over the glass to act as a shade.



"This is an art
Which does mend nature : change it rather : but
THE ART ITSELF IS NATURE."—Shakespeare.

NOTICE.

The **FIRST VOLUME** of **THE GARDEN** will be Published early in July, and will contain an Original Portrait of the late Mr. Loudon, a memoir of whose life, by his friend, Noel Humphreys, is commenced in the present number.

RECOLLECTIONS OF JOHN CLAUDIUS LOUDON.

BY NOEL HUMPHREYS.

THE name and works of John Claudius Loudon are destined to mark an epoch in the annals of British horticulture, as one in which a new and more vigorous life was breathed into it. No single mind and hand ever tugged so laboriously and successfully at the chariot of progress in that important section of human art as those of the man whose career forms the subject of this too imperfect memoir. The hearty toil in the cause which he made the main and almost sole business of his life was unceasing. To him, however, neither the mental or bodily wear and tear of such unceasing labour formed any real trial or trouble. He thoroughly enjoyed both; and, as Goethe said of the motions of the stars, "without haste, and without rest" (*"ohne hast, ohne rast"*), he steadfastly pursued the noble task he had set himself, in spite of all opposing difficulties, to the very last. Unlike most of his northern countrymen he did not possess the sinewy frame of the hardy sons of Scotland. His muscular development was comparatively feeble, and one arm was, at an early period of his career, irremediably crippled by an unfortunate accident. But the mind was a vigorous one, and remained so to the last. He died, so to say, in harness, and almost in the act of dictating matter to his amanuensis. His death, in fact, took place standing on his feet, for when a sudden change was seen to take place in his countenance, and he was laid upon a couch, it was seen that life was already extinct, and that he had, in fact, died standing.

I had not the privilege of knowing Mr. Loudon till the later part of his career, but after his marriage (with a family connection of my mother's) I saw him very constantly, and was thus enabled to form a just estimate of one of the most high-minded and generally capable men I ever knew. His keen intellect was entirely unshackled by prejudices of any kind, and his liberalism had consequently the true ring of the bright pure metal of advanced thought. But his truly humane, charitable, and kindly disposition made him ever tolerant of the opinions of others less advanced than himself; for however harshly or inveterately obsolete dogmas were urged in his presence, he never retorted in a similar strain, and was always open to conviction when matter was adduced which he had not before appreciated at its just value.

I have gathered the following facts connected with his early career partly from his own recollections, which he often communicated to me in long after-dinner talks (in which he was always a charming interlocutor), and partly from the short memoir which his late widow drew up and printed for private circulation shortly after his death.

John Claudius Loudon was born on the 8th of April 1783, at Cambuslang, Lanarkshire, at the residence of his mother's only sister, whose son, Dr. Claudius Buchanan, is well known in connection with his earnest endeavours to convert and instruct the Hindoos. John Claudius, the subject of the present memoir, was the eldest of a numerous family. His father, a successful farmer, resided at Kerse Hall, near Gogar, a few miles from Edinburgh. He was a man of superior

natural intelligence and considerable information; and perceiving the unmistakable aptitude of his son John for acquiring knowledge, determined that he should have every possible advantage in his education. One great deficiency, however, existed—John Claudius took no delight in the acquirement of languages. To Latin and Greek he had an insuperable aversion; and even the study of the modern tongues was exceedingly irksome to him. This was a great discouragement to his parents; but his father, being very anxious that he should at all events know French well, had a master over from Edinburgh for the express purpose of teaching him that language; but the result was extremely unsuccessful. The recalcitrant pupil deeply regretted in after life his obstinate opposition to such studies during his early years; and in speaking to me on the subject, remarked, on more than one occasion, that he thought it was his impatient greed for abstract knowledge which made him so averse to spending his time in the study of any dialect in which such knowledge happened to have been originally given to the world. He used to say it was his idea, as a boy, that "all the best works of all time and all countries had been well translated into the English tongue, and that he then felt that while labouring to acquire even an imperfect knowledge of the language of a single country, he could, and did, absorb the cream and substance of the literature of many."

In addition to his deeply-indulged passion for general reading, a natural taste for landscape gardening began to show itself at a very early period, and he occupied most of his leisure in planning miniature walks and beds in a small piece of ground which his father had given to him for a garden. So keen was his early enthusiasm to obtain seeds, out of the usual routine, to sow in it, that he made many childish sacrifices in order to gratify his anxious wishes in that direction. On one occasion, when a jar of tamarinds arrived from an uncle in the West Indies, he gave the other children the whole of his share of the fruit, on condition that he should have *all* the seeds. He was very fond of telling the story of the tamarind seeds in his after life, and sometimes with a sly and humorous object in view. I recollect that on a special occasion, after one of the pleasant dinners in Porchester Terrace, on a particular day, when a small specimen plate of a fine new cherry was the chief attraction of the dessert, that Mr. Loudon introduced the subject of his early enthusiasm for gardening, by telling the tamarind story. Mr. Repton, the son (or nephew) of the well-known landscape gardener, was present, who immediately boasted of quite a kindred enthusiasm in the same cause; upon which Mr. Loudon laughingly *cornered* him, as the Americans have it, by demanding the four delicious cherries on Mr. Repton's plate, promising him faithfully that he should have the stones to plant in his garden. His little sallies of this kind were always highly relished, as my genial old friend did not generally go in for the part of "funny man," and was no friend to practical joking of any kind.

While yet a youth in point of years, he was sent to reside with an uncle in Edinburgh, in order that he might be made to attend regularly the classes at the public school, and possibly be induced by the force of emulation to attend to those studies which had hitherto repelled him, especially the acquirement of languages. The desired effect was to some extent produced. He overcame his prejudice against the utility of Latin, in which he soon made good progress, as well as in arithmetic and drawing. He also regularly attended lectures on botany and chemistry, making copious notes, illustrated by spirited pen-and-ink sketches, which were still in existence at the time I knew him. He was induced to study French at the same period, that is to say, when he was about fourteen, by a little occurrence which I have often heard him describe. His uncle, being an amateur of fine prints, was one day showing a remarkable engraving to a friend, and the title being in French, he called upon his nephew to translate it for them. This he was unable to do; and the boyish mortification which he felt on that occasion, the bitterness of which he never forgot, as he used to tell, made him determine to use every effort to acquire the French language. After that resolution he did so; in a comparatively short time paying his master himself

out of money which he received for a translation from the French made for a periodical. In order to keep up his practice in the newly-acquired tongue, he resolved to keep his journal (which he commenced at thirteen and continued regularly for thirty years) in that language. He also studied Italian with some success at the same period. But although he thus got over his earlier feeling with regard to "the loss of time" incurred in learning languages, the studies he took most delight in, were the acquisition of a fine handwriting and the drawing of landscape. So great was the proficiency he acquired in the first named of these studies, that his master, Mr. Paton, whose daughter became so famous as a singer, prophesied, in a complimentary letter to his father, that Master John would become one of the best calligraphers and, at the same time, most rapid writers of the day. He was, however, not destined to produce the greater portion of his voluminous works by the manual use of his own pen; for, in consequence of the accident to his arm, and the crippling effects of rheumatism at a comparatively early age, he was ever afterwards compelled to employ an amanuensis.

Landscape drawing was, above all others, his favourite pursuit; and when his father, after some opposition, consented to his wish of being brought up as a landscape gardener, he found himself fully competent to take the situation of draughtsman and assistant to Mr. John Mawer, at Easter Dalry, near Edinburgh. While in his employ young Loudon acquired a good deal of useful knowledge of gardening generally, particularly of the management of hothouses, on which subject he afterwards wrote a special work. He subsequently resided for a time with Mr. Dickson, who was a well-known planner (as landscape gardeners were then called in Scotland), and who had an extensive nursery in Leith Walk, where his pupil acquired an excellent and extensive knowledge of plants. During his stay with Mr. Dickson, with whose family he boarded, he pursued his studies with a degree of diligence and determination seldom equalled. He sat up studying and writing two entire nights in each week, keeping himself awake with green tea; a habit he continued for several years. The extent of information which he then stored up for future use was enormous, and fully accounts for his being able in his after career to join with distinction in the discussion of a vast range of scientific subjects, often to the considerable astonishment of his hearers, who did not expect to find in a modest young landscape gardener, such a fund of knowledge and anecdote upon nearly every subject likely to arise in general conversation. Let ambitious young horticulturists who may despise the patient and persevering labour by which he acquired the fund of information which eventually made him famous, be convinced that, however great their talents may be, there is no short cut to such a career of usefulness, and such lasting fame, as was achieved by the laborious industry which distinguished the youth of John Claudius Loudon.

While with Mr. Dickson he continued to attend botanical classes and lectures on chemistry, while he commenced at the same time a serious study of the principles of agriculture under Dr. Carpenter, Professor of Agriculture in the University of Edinburgh, who always considered him his most promising pupil.

In 1803 he first arrived in London, and on the day after his arrival, as recorded in his carefully-kept journal, he called on Mr. Sowerby, of Mead Place, Lambeth, where he was, as expressed in a passage in his journal, "exceedingly delighted with the classification and arrangement of the mineralogical specimens." These appear to have made a strong impression upon him, and to have gratified him the more especially as being in accordance with his own instinctive love of order, the effects of which he had never before seen so well exemplified as in the collection of specimens which he had thus the opportunity of examining. He afterwards devised a similar plan for use in his own books, but much more complete in many respects, and which he first made some use of, several years afterwards, in his celebrated "Encyclopædia of Gardening."

He brought from Scotland a number of useful, and indeed important, letters of introduction, with which the keen-sighted prudence of his Scottish father had furnished him. These were principally to noblemen and gentlemen of landed property, many of them being from Dr. Carpenter; but there was one,

more important than all the rest, which at once opened up to him the *entrée* of the most distinguished literary and scientific circles of London: it was to Sir Joseph Banks, who at once appreciated the acquirements and energy of the young Scotchman, and introduced him to many of the eminent men of the age. The effect produced on the mind of the ambitious young student by the society and conversation of some of those eminent scientific men was at once most sudden and striking, as evidenced by the brief passages in his journal, in which he records his first impressions of the scientific world of London. From Sir Joseph Banks, the great naturalist; from Laurence, the daring young surgeon-anatomist; from the large-minded Jeremy Bentham, the theoretic politician, who was destined to furnish drafts of free constitutions to so many new States, as in rapid succession they shook off the withering coil and cumbrous trammels of old-world despotisms, young Loudon greedily imbibed those enlarged political and social sentiments which all who knew him intimately so much admired; as in his case they were ever tempered by a benevolence and general softness of manner and feeling which endowed his conversation, even when expressing his advocacy of the most sweeping and thorough-going progress, with an indefinable charm that seduced even the opponents of his theories; though many of them, no doubt, deemed them wildly extravagant.

But while plunging into the fascinating vortex of scientific society, he was, at the same time, like a prudent Scotsman, taking care of the "main chance"; and soon became, by his assiduity and conspicuous knowledge, very extensively and lucratively employed in landscape gardening, though he was then only in his one-and-twentieth year. He thoroughly enjoyed this full swing of a profession which he had adopted entirely from his own strong predilection. But yet there were drawbacks to his enjoyment, which, as a young man, full of youthful enthusiasm, he had not foreseen. His plans were always greatly admired, but often deemed either too costly or too impracticable, or involving changes and innovations of a too sweeping character; and it thus frequently became necessary to give in to narrow or ignorant views of this kind, to the utter destruction, perhaps, of some of the best points of a largely-conceived and well-digested plan. But what was much more difficult to bear patiently was, that in very many cases, the great completing features of his designs, which he had not been allowed to carry into effect, were afterwards executed by others; who thus obtained the credit of his design, and utterly ignored their indebtedness to the original contriver. When such encroachments upon the repute which was justly his due, occurred, he was frequently urged to assert his prior claim; but he always answered, in that truly liberal spirit which distinguished him throughout his whole career, that the person who actually made an invention useful, either to a private individual or to the public, had more merit, and deserved more praise, than the original inventor who had never carried it out.

(To be continued.)

THE ROSES OF PUTEAUX.

It is from the vast fields of rose trees at Puteaux that the perfumers of Paris obtain the necessary supply of roses. Little by little these fields have diminished, and at last to such an extent, that those interested in obtaining the flowers deemed it time to inquire the cause. The result of this inquiry is, that the cultivation of roses at Puteaux threatens to be abandoned, for three reasons. In the first place because the land is sold for building villas with gardens; secondly, because the roses are no longer sufficiently remunerative; thirdly, because the severe frosts of last winter destroyed the greater part of the plantations. A representative of the Paris perfumers asked the cultivators to name the price which would remunerate them for the cultivation of the roses; they replied, "If we receive one hundred francs (four pounds sterling) per hundred kilos, we will replant our fields." The conditions were accepted by the perfumers, and these rose fields are to bloom again as of old. At Adrianople, the rose fields extend over some 12,000 or 14,000 acres. The season for picking the roses is from the latter part of April to the beginning of June, and at sunrise the plains look like a vast garden full of life and fragrance, with hundreds of Bulgarian boys and girls gathering the blooms into baskets and sacks. These rose fields generally produce abundant crops, and constitute the most important source of wealth in the district.

THE INDOOR GARDEN.

CULTURE OF CYCLAMENS.

BY H. LITTLE, CAMBRIDGE VILLA, TWICKENHAM.

THE article which you published (see p. 561) describing Mr. Wiggins's method of cultivating Cyclamens is an admirable one, and I cannot, I fear, add much to it; still, as you have done me the honour of having a representation made of one of my plants, I must have a few words to say on the subject. My aim is to produce flowers of rich and distinct colours, with good shape and substance, good foliage, and especially plants with a good habit. I cross only my very choicest varieties on the above principles, and recommend not more than three or four blooms for seed on each plant, and for this reason, each bloom when crossed will produce, putting aside accident, a pod containing from thirty to sixty or more seeds; and as each pod grows, if well attended to, to the size of a large hazel-nut, I am sure that if too many pods are produced by a bulb, it will either die or give scarcely any bloom the following season. I cross each bloom carefully, if I want colour, with two blooms of separate plants of the best colour and shape I can find, and so with each, for I find you can vary the flower very much; and I hope to see Cyclamens produced with striped and edged petals, or with spotted flowers. The seed ripens in July and



Cyclamen persicum, grown by Mr. Little.

August. I sow in September in pots in a light fibrous soil, with a little leaf mould and sharp sand, well drained. When the seedlings are fit to handle, I prick out about ten or twelve in a forty-eight-sized pot, in similar soil. When large enough, I pot singly in small sixty-sized pots, and repot when these are full of roots. For the last potting prior to blooming, I use stiffer soil—some leaf mould, sand, and some well-decayed manure (be careful to see there are no grubs or worms in this, and give plenty of drainage).

While growing during the summer, the foliage must be kept very clean and well-syringed. When in bloom do without fire-heat as much as possible, giving air on all occasions when free from frost or rain. I cannot too strongly insist on the absolute necessity of keeping the plants in all their stages of growth and bloom free from green fly or red spider. Stop them at once, and do not leave off till all traces of them are removed; for if allowed to gain head, the beauty of the plant will be completely spoilt. The bloom will become crippled, and the foliage shrivelled and unhealthy.

I can scarcely praise the value of Cyclamens too much; for whilst growing, and previous to blooming, they are splendid foliage plants; and in this stage, as well as when in bloom, they are admirable for table decoration. They commence blooming in September and October, and continue, if not forced in heat, until April and May. They could be

exhibited in December; but in February and March I think they could be shown in perfection, the colours being then true and fresh, and the foliage firm and good. Later on, the sun affects them, and softens both foliage and flower. I like to see them without sticks, ties, or supports of any kind; nothing can be more graceful when well grown and of good habit.

The bulbs should be carefully watered and well ripened after blooming, as I think next season's display depends on this. They should not be shaken out or repotted, I consider, until they break, when they should be carefully cleared of decayed stalks, and potted into smaller pots than those in which they last bloomed, shifting them into larger ones as they require it.

WINTER FLOWERS.

It may seem somewhat anomalous to write about winter flowers in June, but now is the time to push on vigorously young stock of such soft-wooded plants as Begonias, Justicias, Gesneras, Eranthemums, *Thysacanthus rutilans*, *Centradenias*, *Libonias*, *Poinsettias*, and other plants of that kind. Low close pits are just the places for bringing on rapidly young plants for autumn and winter flowering; the great thing being to get the growth made and ripened before short days come upon us. Cuttings of most of the things I have named struck in March, will make nice flowering plants in one season in six and eight inch pots. After flowering the best plan is to reserve two or three plants of each kind (according to the amount of stock required) to produce cuttings, and to throw the remainder away; except, of course, Gesneras, which are bulbous-rooted. Young plants, if the growth has been well ripened, will flower more profusely than old ones, and, what is perhaps of equal importance, they will last longer in a low temperature. Amongst Begonias for winter flowering, *insignis* and *fuchsioides* are two of the most useful for the conservatory. I admit that neither of them are new; but plants of *insignis* especially do well in a cool house if moderately near the glass. I have grown them by the hundreds from cuttings in early spring; and potted on into six-inch pots they make elegant dinner-table plants; or if a large vase has to be filled, four or five young plants of it well furnished with branches will do it beautifully, and will remain in good condition for a considerable time. *Begonia Weltoniensis* for summer and autumn blooming deserves to be largely grown.

Thysacanthus rutilans is one of the most elegant plants for winter decoration with which I am acquainted. It may be grown, too, so as to have nice blooming plants from cuttings in one season; and its long wreaths of brilliant crimson flowers hanging gracefully down in all directions in winter for months at a time have a very telling effect. It is one of the easiest of plants to grow and propagate; it is subject to no disease, and insects seldom attack it. It may, in fact, be grown with as much ease and certainty of flowering as a Tom Thumb geranium. Turfy loam, with a dash of leaf-mould in it, suits it perfectly. *Justicia speciosa* is another most useful plant, of which good-sized bushes may be grown in one season. It blooms very profusely in winter. *Hebeclinium ianthinum* is also a grand winter and early spring flowering plant for a cool stove or intermediate house, to be moved when in bloom to the conservatory. Under liberal treatment it may be grown quickly into a large specimen, and its large clusters of *Ageratum*-like flowers, which remain in perfection for a long time, are very effective. It does best in peat and loam, enriched, for the last shift, with a little two-year-old manure and a sprinkling of silver sand. *Libonia floribunda* blooms in January, just before Hyacinths and other Dutch bulbs come in full force; but to induce it to flower freely, the growth must be made early, and afterwards well ripened by exposure to the air.

Manettia bicolor is not so common in stoves as it was twenty years ago. It is a very pretty creeping plant, of slender habit, well adapted for basket-work or for covering low screens. It is easily cultivated; in peat and loam, with silver sand, it does admirably. It should be grown rapidly in early summer, and afterwards, if possible, placed near the glass to ripen its growth; if treated thus, it will be completely covered in winter with its very pretty crimson and yellow flowers. Long pieces of it are very pretty for mixing with flowers and foliage in tall glasses for the drawing-room.

This list might be much extended, and where flowers are in large demand in winter, many old-fashioned stove-flowering plants that have been discarded for the more fashionable foliaged plants, might be grown in the way indicated in large numbers, either for the conservatory or for drawing-room stands.

E. HOBBS.

NOTES OF THE WEEK.

— It may interest some to know that a list of localities of plants growing in Hertfordshire has just been published by the Rev. R. H. Webb. It shows a considerable increase in the way of discoveries of localities of new plants.

— VINE MILDEW, it is stated, has ruined a fourth part of this season's grapes in the colony of Victoria. The mischief has been effected by the true *Oidium Tuckeri*, which is thought to have been imported on vine cuttings brought from France or Spain.

— At Mr. Bunney's sale of Orchids the other day £14. 10s. was paid for what is called Bunney's variety of *Saccolabium guttatum giganteum*. The plant is described as having nineteen leaves on it and one "break." The total amount of the sale, which consisted of 590 lots, was between £500 and £600.

— SEVERAL hundreds of market-garden labourers at Fulham, and other south-western districts, are still on strike, although acres of strawberries are said to be rotting on the ground for want of gathering. Fresh hands are, however, being gradually introduced, and placards are freely posted warning workmen in the disaffected districts against intimidation or violence.

— SEVERAL plants, not commonly grown against walls, are now flowering on the boundary wall of the herbaceous department at Kew. Among them may be named *Solanum jasminoides*, a free and very showy blooming plant; the shrubby scarlet-berry bearing *S. pseudo-capsicum*; and *Habrothamnus corymbosus*. The last, which is usually kept under glass, has lived planted out here throughout several winters.

— THE *Pharmaceutical Journal* learns from Ceylon that, in consequence of the higher price realised in the home market for the bark of *Cinchona officinalis* over that of *C. succirubra*, considerably more attention is now being given to the cultivation of the former species. A single firm in the island, whose exportation of *C. officinalis* realised in England as much as 3s. 3d. per pound for unassorted bark, has applied to the Government plantations for as many as 350,000 plants.

— A FLOWER SHOW was held the other evening in the grounds of Mr. E. W. Winterbotham, Bank House, Stroud. The exhibitors were confined to the children attending Bedford Street Sunday schools, and prizes of small amounts were offered for various classes of window plants, wild flowers, &c. There was a considerable and really meritorious collection, capitally arranged in a shady avenue, and it attracted to the spot a large number of friends and other visitors. A band of music added to the gaiety of the scene.

— FRANCE south and west, down to the shores of the Mediterranean, may almost be called one vast vineyard. For several years the vine in these districts has been affected with mildew (*Oidium*). A remedy for this, however, was found, and the evil has been partially removed. Now, however, a new blight of a much more fatal character, the phyloxera, has made its appearance in Bas Languedoc, and is causing very great alarm amongst the cultivators and proprietors of vineyards. In one district, the Comtat, the vine has already almost disappeared.

— A CORRESPONDENT at Ismidt writes to the *Levant Times* as follows:—"Almost all our silk-worms have died, just when they were about to yield the cocoons. For thirteen years in succession this industry has proved a failure, and the inhabitants are now almost ruined." Several localities in Greece have been ravaged by locusts. A correspondent at Amphissa states that they have done great damage to the vines, and have even made a raid on the town. Letters from Samos report that the vines and fruit trees in that island have been considerably damaged by a tempestuous wind which lasted several days.

— THERE is one point, says the *Pall Mall Gazette*, in connection with the present appearance of Leicester Square which hardly receives the attention which it deserves. We speak of the beauty of the parks with their borders full of flowers arranged with mathematical precision, and we exclaim against the hideous disorder of Leicester Square, forgetting that there is beauty in its wildness. Were Leicester Square turned into a garden to-morrow, it would lose much of the charm which it now possesses in the eye of an artist. A few forest trees, rocks, and wild ferns, with a waterfall might improve it; but it would be a great mistake to destroy its character by turning it into what is now by courtesy called a garden. Never, perhaps, in its whole career, did the statue appear to such advantage as now in the hour of its ruin. We have succeeded in "banishing every appearance of art" from the square, we have only now to expunge all "traces of the footsteps of man," and we shall at last have one sight in London which, in the matter of true taste, leaves nothing to be desired.

— VICTORIA, says the *Argus*, has now growing 9,672,341 vines, and South Australia, 6,049,343. For New South Wales there are no returns. South Australia has 5,820 acres of vineyard; Victoria, 5,446, and New South Wales, only 3,906. Again, notwithstanding the falling off in the growth of the vine in South Australia, that colony makes 895,795 gallons of wine in the year, while Victoria only makes 629,219 gallons, and New South Wales, 460,321 gallons. But Victoria sells a large quantity of her grapes for table use, instead of converting them into wine, and New South Wales does the same to some extent.

— THUNDERSTORMS, accompanied by deluges of rain, are reported to have occurred lately in all parts of the country, and in some instances great damage has been done. On the evening of the 25th instant, a large elm tree, growing at the back of the gardens at Bisbrook Hall, Rutlandshire, was struck by lightning, the electric fluid passing from one of the top branches down the trunk, to within a foot of the ground, tearing off a strip of bark three or four inches wide, some of the fragments being scattered twenty yards from the tree. At Birmingham, the Royal Horticultural Society's show ground has been a sheet of water, and hundreds of gardens in various places have been injured. What a hard time the tender bedding plants are enduring this year. The longest day past, and some only just planted out! The recent hail storms have been very severe on old-fashioned greenhouses glazed with thin glass. One that we have seen at Edgbaston had 300 panes broken by hail; and at Harworth, hailstones of a prodigious size fell, breaking down trees, smashing glass, and washing turnips and potatoes in many instances out of the ground.

Effect of Gas on Trees.—A Frankfort journal records the result of some experiments that have been made at Berlin to ascertain the effect which gas has on trees the roots of which are exposed to its influence. Three trees were chosen for this purpose—two limes and a maple tree. The gas was conveyed in subterranean tubes to within three or four feet of each tree, and was dispersed into the soil by holes furnished with brass gratings, in order to obviate the obstruction of the pipes. At the end of two months the roots were uncovered, when all the small fibres were found to be dead. The bark of the strongest roots was rotten, and even the body part changed. After two months and ten days, the gas was cut off, to see if the trees would recover. The maple showed no signs of life, but one of the limes again became covered with leaves, although bearing unmistakable appearances of ill-health. The poisoning manifested itself much more rapidly in that part of the earth which had remained compact, than in that which had been loosened. These experiments, followed up during a year, leave no doubt as to the danger to which trees are subjected when exposed to the infiltrations of gas a short distance from their roots.

Hampstead Heath.—When this became public property, it was wisely resolved that, with the exception of putting down certain nuisances which had been permitted to flourish there when this spot was popularly regarded as No Man's Land, the heath should remain in that wild condition which in the eyes of sensible persons is its chief charm. It appears, however, that a much greater change than might be expected from this declaration of principles has come over the spirit of that beautiful suburban retreat. The old freedom is gone; the passion for rules and regulations has set in; and now the Cockney attracted thither in quest of the picturesque takes his pleasure under the stern eye of a beadle, ever ready to pounce upon him for some trifling breach of the new bye-laws of the local authorities. Thus it happened that a well known authoress was the other day seized and maltreated because she had gathered there a few ferns. The beadle in this case it is true has been fined by a magistrate, but this was clearly explained to be only because he had used a little excess of roughness in the execution of his duty. Such facts are enough to disturb the spirits of Leigh Hunt, John Keats, and all the other poets and essayists who have celebrated the old charms of the Vale of Health. No doubt the beadle is an inevitable result of the new condition of things at Hampstead; and rules and regulations cannot be avoided. It is to be hoped however, that the authorities will revise their laws on the principle of permitting the utmost amount of freedom which is compatible with decency and the comfort of the public. The heath is not exactly a pleasure garden; nor are its plants and wild flowers in the same category with the flower beds of Hyde Park and Kensington Gardens. Gathering ferns in a comparatively wild place is in itself a harmless, and may be an instructive, amusement; and it is hard to believe that any appreciable diminution of the beauty of the heath could result from it. The highly unpoetical functionary who ill-treated the unfortunate authoress, should at least be directed to hold his hand until fern-gatherers have been proved to be a serious nuisance.—*Graphic*.

THE FLOWER GARDEN.

SPATLUM.

(LEWISIA REDIVIVA.)

THIS plant was discovered on Lewis and Clark's expedition, and was named by Pursh in honour of its discoverer. The specific name "rediviva" (lives again) was given on account of its remarkable vitality. The herbarium specimens brought home by Lewis were planted in a garden in Philadelphia, where they grew for a year, and some specimens collected by Douglas were planted in London, and grew, but for a short time only. Our engraving shows the plant of about the natural size, though the root grows much larger than we have represented it. The narrow, succulent leaves grow in clusters, from the centre of which the flower-stalks arise; these each bear a single



Spatium (Lewisia rediviva).

rose-coloured flower, which, like the Portulacas, to which it is closely related, remains open only during sunshine. The leaves die away soon after the flowers open, and the above-ground career of the plant occupies but a few weeks. The root, which is large for the size of the plant, is interesting as affording an important article of food to the Oregon Indians, who call it "Spatlum," or "Spat'lum." It is also known to the French Canadians as "Racine amère," or bitter root. The root is covered with a dark-coloured bark, but the interior is white and consists largely of starch. The roots are boiled and used by the Indians as food, and though bitter, are very nutritious. It is said that three ounces of the dried roots will be sufficient provision for a man undergoing great fatigue. We do not know the exact range of the plant. Our specimen came from

Montana. It has been found in Colorado, and is abundant in Oregon.

[The preceding description, from our excellent American contemporary the *Agriculturist*, refers to one of the handsomest and most interesting rock-plants ever introduced. It is now in a few of our collections, and will, we hope, soon be easily obtained.]

THE BEST PÆONIES.

IN examining a collection of Herbaceous and Tree Pæonies lately, we have decided that (although all are ornamental) there are in reality but a few worthy of cultivation. Of these the following is a list:—

Tree Pæonies: Bijou de Chusan, Carolina, Colonel Malcolm, Comte de Flandres, Donckelaarii, Elizabeth, fragrans, maxima plena, Lambertiana, La Ville de Saint Denis, Louise Monchelet, Madame Stuart Low, Osiris, Ranieri, Jules Pirlot, Rinzi, Rosa Mundi, Triomphe de Vandermalin, Vandermaeli, Van Houttei, and Zenobia. This list of twenty plants is chosen from one hundred and fifty varieties at least.

As for the Herbaceous Pæonies, the best are: Anemonæflora, Aurea ligulata, Anemonæflora rosea, Etoile de Pheton, La Brillante, Noble pourpre, and striata elegans, to which, without spoiling the others, may be added the common officinal Pæony, with reddish-purple flowers.

Among varieties of *Pæonia edulis* or *fragrans*, those which appeared to us the most beautiful are: Abel Carrière, Alba sulphurea, Ambroise Verschaffelt, Boule de Neige, Buyckii candidissima, Doctor Caillot, Duc de Cazes, Duchesse de Nemours, Etendard du Grand Homme, festiva maxima, Jupiter, grandiflora nivea plena, Madam Lemoirier, Madame Jules Caillot, Mathilde, Modeste Guérin, Papaveriflora, Prince Pierre Troubetzsky, sulphurea, Triomphe de l'Exposition de Lille, and Washington.

In this series, where all are beautiful, we have only mentioned "the flower of the basket," and such as all lovers of good plants ought to possess. As to those who are making a collection rather than a selection, they can increase them tenfold without falling into mediocrity.—*M. Currière in "Revue Horticole."*

YELLOW WALLFLOWERS.

WE have, somehow or the other, come to regard the dark Wallflower as the one to be cultivated, to the almost entire exclusion of the yellow self-flowered varieties. Probably the dark varieties have come to be cultivated on account of there being a wealth of spring-flowering plants bearing yellow flowers, such as *Alyssum saxatile*, *Cheiranthus Marshallii*, *Doronicum caucasicum*, &c.; and also because many acres of dark Wallflowers are yearly grown round London for the supply of flowers to the London markets. I should think bunches of a good self-yellow would sell as well as the dark one. Efforts have been made from time to time to improve the yellow Wallflowers as cultivated. About ten years ago a very fine variety was raised by a Mr. Graham, at Cranford, near Hounslow, by means of careful seeding and persistent selection through many generations. The aim Mr. Graham set before himself was to produce a yellow Wallflower in which the colour should be pure, the flowers large, and the form good. This he did eventually attain; but I never heard of its being distributed. The best strain which I saw last spring was that known as the Tom Thumb, a kind which was considerable taller in growth than the strain known as the Belvoir Dwarf Yellow, but of a pure golden hue, and the flowers were of excellent form. Both this and the Belvoir strain can be used with excellent effect for the decoration of the flower garden in spring. One should see the dwarf yellow wallflowers as used at Belvoir Castle, in order to appreciate fully their useful floral service. I have always found a light, open, moderately rich soil to suit the wallflower best. In a stiff soil it often makes a strong tap root, but few side roots, and when excessive wet comes, the tap root will frequently rot. In a light free soil the roots branch in all directions, the plants thus get a good hold of the soil, and do much better in consequence. At Belvoir Castle so great a tendency is there on the part of the wallflowers to throw down this tap root, instead of making side roots, that Mr. Ingram finds it necessary to construct temporary brick pits in which to grow them during the summer. A line of bricks is placed at the bottom of a trench sideways and on their flat side, with lines along each side of them, so forming a kind of drain or trough; these are filled with soil, and the wallflowers transferred to them from the seed beds. The bricks at the bottom prevent them from throwing down a tap root; they therefore form branching rootlets, and stand much better when transferred to the flower beds in the autumn.

R. D.

THE SUNFLOWER.

BY T. S. JERROLD.

Of late years the cultivation of the Sunflower, together with a number of other old favourites, seems to have been much neglected; and yet it is a most valuable plant, and one that would well repay much more extensive cultivation. Of the Sunflower there are several kinds that are generally known—*Helianthus annuus* (annual Sunflower), *H. multiflorus* (perennial Sunflower), *H. tuberosus* (tuberous-rooted Sunflower, or Jerusalem Artichoke). I have directed my attention more particularly to the first-named of these three, viz., *Helianthus annuus*, which I have grown for the last four seasons with such success that I have brought my plants and flowers to a gigantic size. In Mexico the Sunflower attains a height of twenty feet, bearing flowers a foot or more in diameter. My plants have exceeded this in every particular, except in height, twelve feet being the maximum; the flowers I have grown were forty-eight inches in circumference, the leaves two feet long and almost as broad, the stems so thick and strong that they held up without extraneous support the enormous heads of seed. It may not be generally known that in Germany, France, and Italy. Sunflower cultivation is believed to be effectual in removing the sources of fever. We have read of a landowner in Holland who planted, on the low banks of the Scheldt, three or four plots of Sunflowers, a few yards from his houses, with such effect that for ten years there has not been a case of miasmatic fever among the tenants of his property, although the disease continues to prevail in the neighbourhood. Two years ago the village near which I resided was visited with a severe epidemic of scarlet and typhus fever; I had at the time a large garden, and had had in it, the previous summer, a number of Sunflower plants distributed about; and the following season, when the fever had reached its height, I had a much greater number in cultivation all round my house. I did not think of it at the time in connection with the cultivation of the Sunflower, but it is a singular fact, and almost confirmatory of the evidence of the cultivation of this plant being a preventive of fever, that my family enjoyed perfect immunity from disease, although in the houses and cottages around, whole families were stricken down, many cases proving fatal. It is a well known fact that the Sunflower feeds largely by its leaves, and absorbs a vast quantity of impure gases. The fibre of the stem can be employed in the manufacture of paper; from the seed a very fine oil, considered second only to olive oil, is extracted; and its use as a fattener of poultry is too widely known to need comment.

As an adjunct to the shrubbery, the Sunflower is most suitable, although it is now seldom seen. Cobbett says it is fit for nothing but to be seen from a great distance, "when the sight may endure it." We can not only endure the sight in an extensive shrubbery, but I think it appears very handsome in such a situation, its foliage when well grown being quite in keeping with its striking flower. The Sunflower is supposed to have derived its name from the idea that it always turned towards the sun, and Moore has no doubt tended to confirm this belief, when he says,—

"The heart that has truly loved, never forgets,
But as truly loves on to the close,
As the Sunflower turns to his god, when he sets,
The same look which he gave when he rose."

From continual observation of this plant, I cannot quite agree with those who deny that the Sunflower turns towards the sun, nor yet agree altogether with the poet in the constancy of the sun's attraction for the flower; for I have observed that when young the flowers have a tendency to follow the course of the sun, but as they grow larger and heavier this tendency ceases. For my own part I should rather believe the plant takes its name from the form and colour of the flower, more especially as it is also a native of Peru, in which country the sun was worshipped by the natives, and the representations of their deity bear a great resemblance to the flower in question.

Viola lutea.—Much has been said in praise of the improved varieties of this pretty little British flower, and no doubt they are most valuable as bedding plants, but I maintain that the true genuine article is quite able to hold its own against all its improved and hybridised offspring. A year or two ago I brought a wild plant home with me from the mountains of Derbyshire, and deposited it in a sunny corner of my rockwork. For the last six weeks it has been one golden mass, about the size of the top of a bandbox, the leaves being completely hidden by the flowers. It has been the admiration of all my visitors.—H. HARPER CREVE, *The Rectory, Drayton-Beauchamp, Tring.*

Matthiola incana.—If anyone wishes to have a most lovely purple bed towards the end of spring, I should recommend him to grow this plant, one of the gems of our British flora. I brought it from Ventnor, where it grows profusely on the cliffs, some twelve years ago, and generally have a bed of it in the garden. I sow it about the middle of July. It is advisable not to get the plants too forward, as both rain and frost in winter are apt to rot the crowns. It is very tidy in its growth, and most densely bright in its inflorescence. There is a fine white variety not infrequent at Ventnor, which I have lost and should be glad to recover.—H. HARPER CREVE, *The Rectory, Drayton-Beauchamp, Tring.*

THE BROAD-LEAVED SEA LAVENDER.

(STATICE LATIFOLIA.)

An admirable representation of the above is given herewith. It belongs to a very distinct section of the Staticeae, to which, by some authors, the generic title of "*Taxanthema*" is given, presenting as it does, besides structural peculiarities of a well-defined character, a general appearance sufficiently distinctive—but possibly few will dispute the point with me when I say that we have such a number of names to store away in the recesses of the gardener's cranium, it will be quite needless to add to them where it can be avoided—so let it hold its old title of *Statice*.

A native of the wild salt steppes of Siberia, it was introduced into this country some eighty years or more ago, and is not infrequently met with in old-fashioned gardens. If I am not much mistaken it will ere long take its true and valuable position in our modern gardens as well. Description is almost unnecessary, so perfectly has your artist given the effect of one of these tufts. Substitute for the stencilling of the mass of flowers as here presented, a soft lavender-mauve colour, and a lively green to the massive foliage below, and you have the plant before you. I ought to add, the height would be about two feet. So interlaced are the panicles of bloom one with another that, though individually weak, they mutually give

The Broad-leaved Sea Lavender (*Statice latifolia*).

strength and support one to the other. Blooming through the months of August and September, it should find a place in all gardens. But their estimate is not only to be reckoned by their appearance in the flower border, they are also most valuable additions to the bouquet or the epergne. So small are the individual flowers and delicate in their tint of colour, that, by a little careful manipulation and distribution amidst, and slightly above, the larger flowers that form the bouquet, they add a charm in either case that is all the more appreciated, in that the eye can scarcely detect the source whence it springs from. If plucked before being fully matured they will retain their colour for months, and have a pretty effect associated with Feather grass as a pendent round the sides, in a vase or other ornamental stand on the chimney-piece.

This section of the Staticeae rarely matures seeds in this country at least, and must therefore be increased by division of the root-stock in the spring-time, just after growth has commenced, and the operation must be performed with care and judgment, else there is a liability to lose the entire plant. There are many other species in cultivation varying slightly in habit, two of which are so distinct in the intense blue colour of their flowers, that I would just name them in passing as *Statice Tormentilla* and *S. Besseriana*; in each case the enhanced beauty of colour is more than counterbalanced by the straggling habit of the flower stems, owing to their length and weakness.

JAS. C. NIVEN, *Hull Botanical Gardens.*

Bocconia japonica.—Your recent reference to *Bocconia cordata* induces me to call attention to the superior claims of this species, which, though doubtless but a slight variety, botanically speaking, of the older plant, is for garden purposes distinct enough. And yet, when actual definition is attempted, it is difficult to point out any other distinctions than the greater robustness and far more rapid growth of the *B. japonica*. The foliage, besides its larger size, is I think more glaucous, or at least its glaucous tint is more uniform. With me this plant attains a height of upwards of seven feet, the stems at the base being as thick as the wrist. *B. cordata* in the same soil does not reach nearly the same size, and is far less effective, though of the same age. I believe the *B. japonica* has several aliases, two of which are *B. yeddoensis* and *B. cordata superba*.—WM. THOMPSON, Ipswich.

Planting Asters.—The only way of planting these successfully for exhibition is that mentioned by "Amateur" (see p. 653). I saw some the other day planted in a similar way. Each of the beds contained four rows about eight or nine inches apart, and though only planted some ten or twelve days from this date, they were looking so exceedingly well that one looking at them from a distance might easily have mistaken them for rows of lettuces. The advantage which this mode of planting has over all others is, that after the holes have been filled with water it is allowed to settle down into a thick mud. The plants are then inserted in the holes and pressed firmly with the hand; no additional watering is then necessary, while if the plants are put in as the holes are made, after-watering is necessary; and if not carefully done the plants get dashed to the ground, often never to rise again so as to reach perfection. The plan described above is certainly an expensive operation; but what is worth doing at all, is worth doing well. Asters grown here in this way last year carried off several leading prizes at our horticulture exhibitions.—G. D., Cambridgehire.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Enothera bistorta Veitchii.—This is a capital plant for old walls or buildings, if sown in autumn in conjunction with the lovely bright and cheerful little vale plant *Erinus alpinus*. On the north side of a stone wall in the kitchen gardens at Babraham Hall, Cambs., I have seen this latter growing and blooming profusely, spilt as it were all over the wall and border.—J. CHATER, Cambridge.

Tulipa oculis-solis (var. persica).—In Mr. Green's garden at Ravensbourne Park, I lately saw a fine clump of this beautiful Tulip, which struck me as being much superior to many of the double varieties we now cultivate. Its habit is bold and striking, its flowers brilliant scarlet with a dark-blue eye. Planted in the margin of a shrubbery or amongst herbaceous plants, it has a fine effect. In my opinion it should occupy a conspicuous place in every garden.—J. C.

The Many-stemmed Sandwort.—This resembles the pretty little *Arenaria baccata*, which is likely to become so popular in consequence of its habit of creeping over and adorning moist rocks without soil. It has, however, larger flowers elevated more above the foliage, and its leaves are more ovate and ciliate. It well deserves a place in collections of alpine flowers. It has been recently re-introduced by Mr. Maw, of Benthall Hall.—J. C. NIVEN, *Botanic Gardens, Hull*.

Annuals.—The following six annuals are most desirable in every garden:—*Eschscholtzia aurantiaca*, orange; *Silene pseudo-atotica*, pink; *Leptosiphon roseus*, pink; *Viscaria picta*, white, with a dark eye; *Collinsia heterophylla*, purple and white; and *Veronica glauca*, blue. I must add six more which will give a succession of bloom from May to the end of October by sowing early in spring and early autumn; viz:—*Linum grandiflorum rubrum*, *Viscaria cardinalis*, *V. cærulea*, *Leptosiphon androsæus*, *Erysimum Peroffskianum*, and *Eutoca viscidula*.—J. C., Cambridge.

Edgings of English Ivy.—A novel feature of the fine kitchen garden at Combe Abbey is very compact edgings of the common English Ivy. As is well known the fine Ivy edgings about Paris are all of the Irish Ivy, as are most of those in this country. It may be then well to record that the English Ivy is also useful for this purpose, differing from the Irish in its smaller leaves, and not displaying the deep green of the Hibernian variety. These edgings were very simply formed by gathering young plants of the common Ivy in the woods. These edgings are very suitable for flower-garden use also, and require little attention.—W. R.

Clivedon Purple Pansy.—What a gloriously rich flower this is! So hardy and well constituted too, and opening its blossoms so softly through the late wintry weather as other plants only do in the closest of forcing houses. It is indeed a curious fact that even in a season when the common hawthorn could scarcely open its fair blossoms, mutilated as it was by frost and sleety rains, and bitter breezes, this Pansy should seem utterly regardless of the weather. Its condition at the Lower Grounds, Aston, on the days when the oak leaves and spruce points hung dead, was surprisingly beautiful. It is by far the best of the Pansies that bear the name "Clivedon."

Hardy Double Primroses.—What has become of these? There used to be four or more colours pretty common—the white, the blue, the yellow, and part wine, or dark purple. The white and the blue are often seen, but how rarely the latter and the yellow, almost a brimstone colour! And yet these are not only lovely in borders, but in pots. In fact, no plants can hardly be more useful or more welcome for the spring beautification of the conservatory or sitting-room. The perfume is most agreeable. For bouquet-work, the white and the purple—approaching to crimson—are admirable. Both colours are so pure, and they contrast well with each other. The form and size fit in readily with other flowers, and altogether, either for outdoors or indoors, for the house or the garden border, few flowers are more beautiful or useful than double primroses.—D. T. FISKE.

THE FRUIT GARDEN.

FRUIT PICKING IN MARKET GARDENS.

MR. R. VARDEN, the well-known fruit grower of Seaford Grange, has recently made some interesting remarks on fruit-growing to the Central Chamber of Agriculture. Profits, he says, in the ordinary branches of agriculture are, as you know well, very small; and farmers have been blamed by statesmen and political writers for not exerting themselves more to grow secondary crops, which, from their softness or perishable nature, will not bear long carriage, and are therefore less exposed to foreign competition. Fruit is one of the most important of these, and is the branch in which, some twenty years since, on the partial failure of my sight, and consequent relinquishment of my profession, I embarked my capital. Though a minor branch of agriculture it is a large industry, there being, I am told, 1,600 or 1,700 acres of fruit gardens round London; and in Worcester, where I reside, there are from 1,500 to 2,000 round Evesham, 400 or 500 round Pershore, and 100 or so each at Eckington, Upton-on-Severn, Worcester, Ombersley, &c. I am not authorised by the owners of these plantations to speak on their behalf, so will confine myself to my own case, but our interests are very similar. My fruit garden is 120 acres in extent, of which 100 acres are occupied by an undergrowth of gooseberry and currant bushes. The fruit of 20 or 30 acres of the former are picked green, leaving about 70 acres of bush fruit to be picked ripe in five weeks, beginning at the rate of 10 acres per week, and ending with 20 or 25 acres, that being the proportion in which the public require it, and as the week even in favourable weather consists of only four and a half days, the last market being on Saturday, to prepare for which we have to leave off picking at one or two on Friday, the quantity of work to be done in a short time is immense, and if wet weather, which bursts the fruit, or intense heat, which scalds it, come on, picking the whole quantity is impossible. The great demand for labour is in the last two weeks, and usually employs from 200 to 300 women and children; and though we make the work as regular as we can, it is far from continuous or certain. It only lasts a short time, and the pickers must be had quickly and in great numbers. The word "agriculture" in Mr. Read's Bill evidently comprises such industries as these, and though I do not myself employ the children, but pay the mothers by quantity for picking, there is no doubt the provisions will apply to the case; and as the women and children come in crowds—the six or seven surrounding villages being closed for the time—neither I nor my bailiff know the children, and only a few of the mothers, and therefore could not, as in the case of hop-picking, examine their certificates, nor would time permit. I may occasionally have as many as sixty children under twelve years of age at work; but it is difficult to know who works and who does not. The entire family (except men and lads) is there. The babies are placed under the hedges in charge of the younger children, and the rest pick together, each family or little group of neighbours having its row of bushes to itself, and when that is finished going to another row; and at dinner time the younger children, with the babies, join the other members of their party. The wages of fruit picking are looked upon as a kind of clothing fund, and the occupation is most popular as a relief to the women after nine or ten months' indoor work at glove-making; they say they go to it just as rich people go to the seaside, and but for the rest it gives their eyes they think they should go nearly blind. The women earn 1s. 6d. a day, and though this is nearly double what they get at gloving, it would not, as a rule, induce them to come to their work if their children had to be left at home, but together they earn 5s., and that is sufficient to draw them. My hope, therefore of being able to continue currant growing rests upon the suspension clause (8); and I fear it is insufficient, firstly, because occupiers of not less than 500 acres must join in the application to have it put in force, an extent of land greater than will be usually employed as fruit garden in one locality; hence gardeners will frequently be dependent on others to help them in making the application, and fruit-growing is scarcely popular with the farmers, because it makes labour dear; and, secondly, because the whole period of suspension is not to exceed six weeks, and it may happen that other employers of the neighbourhood may, by their industries being more popular with the magistrates, or by their getting the order of suspension earlier, leave very little time for currant picking. Then pen picking, strawberry picking, and the like, might require the early season, and gleanings and hop-picking the later. Of course it will be no use for me to grow bush fruit if the picking is in this way to be made a matter of chance or favour, and it is very hurtful to the feelings of a person like myself to have to apply for these permissions much as a publican does for his licence. I should prefer the operation of the Bill being confined to nine months, leaving July, August, and September positively free

for the different kinds of harvest work. But if that cannot be, I hope something will be done to diminish these difficulties. The quantity of fruit to be picked varies greatly from year to year, sometimes being double what it is in others; and if I once or twice applied for more time than the small crop required I should have the chance of its being lessened when the crop was large, and the extent of the crop is not known till the time of gathering. A single frosty night, even at the end of May, will sweep off a thousand pounds' worth of fruit, and blight destroy it to the last.

DERIVATION OF THE WORD "APPLE."

BOTANISTS generally ignore the use of any other than scientific names for plants, because it leads to a great deal of confusion in their nomenclature, the same name being frequently applied to two or more plants of widely different species, and sometimes of widely different genera. Nevertheless the popular names of plants are not merely empirical, but are founded, as the scientific names are founded, upon some peculiar feature or use of the plant. Of late years these popular names have become the object of very interesting research, as throwing much light upon ethnological history, the antiquity of various nations, and the migrations of the larger tribes of men. We cannot go into a lengthy account of these matters, or give the derivation of all the popular names in use; but we will give a few examples of the researches made as to the names of some common trees and plants. With the exception of the hazel nut, and some other wild berries, the apple appears to be the only fruit known to our European ancestors, as it is the only name not derived from the Latin or French. In the Zend or old Persian language, and in the Sanskrit, the name for water is "ap," and for fruit "p'hela"; hence etymologists think that the name is compounded of these two words, "water fruit," or "juice fruit." This corresponds with the Latin name "pomum," derived from "po," to drink; which is a somewhat curious coincidence. In Welsh it was formerly called "apalis," now "apfel"; in high German, "apfel"; in German, "apfel"; in Anglo Saxon, "æble"; in Swedish, "äple"; and in Lithuanian, "obolys," or "obelis." This close similarity in the name as used by these various nations renders it highly probable that they all come from the same root or stock, and that such root or stock originally inhabited the western spur of the Himalayan Mountains.—*Canadian Naturalist*.

"Alligator Pear."—I have a stone of this so-called pear, brought to me from Brazil. It is now growing in water, in a glass jar, and has a mass of roots, and a stem about eighteen inches long; but I am at a loss how to treat it, as, under the above conditions, it refuses to progress. Can you help me?—A SUBSCRIBER FROM THE FIRST.—[*Persea gratissima*, the Avocado or Alligator Pear, is a common tree in tropical America and in the West-India Islands, where it attains the height of twenty-five or thirty feet. It has elliptical leaves, about six inches long, and bears large pear-shaped fruit, covered with a smooth brownish-green, or deep purple skin. The "pears" contain a large quantity of firm pulp, possessing a buttery or marrow-like taste, not at first relished by strangers, but highly esteemed by people familiar with the fruit. There are several plants of it in the Palm House at Kew, where they are kept in pots, in strong yellow loam, and treated otherwise as ordinary stove plants.]

Pine-Apples in the Bahamas.—The Rev. H. Bleby, gives an interesting account in "Missionary Notices" of distant circuits made in his district. Of Eleuthera he thus writes with reference to the pine-apple, which is largely cultivated in the island, and forms an article of considerable export:—"The people were busy shipping pine-apples, to the culture of which a large portion of Eleuthera is devoted. Many ship on their own account, either to America or England; others sell their produce to shippers at a price ranging from 2s. to 2s. 6d. per dozen. Schooners to America will carry each from six to eight thousand dozen; but English vessels carry a much smaller number, as the fruit has to be cut with the slips upon it, and in this way requires twice as much room as the other. They are cut green, to ripen on the voyage; and consequently the exported fruit never has the fully-developed flavour that it acquires when it ripens in the field. The shippers receive no pine-apples that do not measure in circumference 12½ or 13 inches; but it is not uncommon to find them 18 or 20 inches. A shipper told me that not less than a hundred cargoes have been sent from the colony this year. Sometimes a shipment realises a large profit; at others it is a total loss. Between Spanish Wells and Harbour Island, on the Eleuthera coast, two schooners lay at anchor. Scores of people were bringing the fruit from the interior to the shore in large baskets, each carrying, according to their strength, six, eight, twelve, or fourteen dozen. On the

sandy beach lay immense heaps of pine-apples, and the smooth sea all about was covered with boats employed in carrying off the cargo to the schooners. The vessels are frequently loaded in a single day, that no time may be lost in getting the perishable luxury to the market. As we passed along the shore we found no difficulty in getting a supply of yellow pines that had become too ripe for shipping, to refresh us on our way."

Crippled Peach Trees.—In reply to your Sevenoaks correspondent (p. 683), let me say that there ought not now to be, after our many years of experience in peach culture, any doubt at all that the peach is sometimes fearfully and even fatally injured by severe frosts when its young leaves are unfolding in early spring. The trees will never be safe so long as we persevere in allowing the cold rains to fall directly on them, thus preparing them for the frosts that follow. Scrim or canvas is of little use so long as we have not a deep temporary coping (eighteen inches to twenty-four inches wide), which will ward off both cold rains and frost to a far greater extent than any contrivance placed like canvas, &c., merely before the wall.—F.

Relative Success of Fruit Trees on High and Low Land.—This we have had a good chance to test. Our old orchard is on elevated ground, inclining to the south; and another orchard (both of apple trees) is below the hill on the level. The soils are somewhat similar, that on the hill a little darker; both a deep soil, good for trees, though there is more clay in that of the lower orchard than on the hill. The trees grew well in both; there seemed little or no difference, and both bore well. The orchard on the hillside is still in good bearing, though it has been much neglected. That below has nearly died out. Some of the trees are entirely missing; others have a little life left, and a few show some success. With care the hill orchard might be made good for many years to come. The difference is decidedly in its favour, and this is our observation of other orchards (apple) as well. We prefer an elevated site, exposed to the winds. The fruit is sounder, and we find also it keeps much better. The trees also are smaller, and therefore the fruit is more easily picked. There is too less disease than in low-lying orchards.—*Cultivator*.

The American Strawberry Trade.—The strawberry trade, says the *New York Times* of May 24th, has now become one of the great features of the produce market, and during the season gives employment to a large portion of the community, if we include the growers and carriers as well as the wholesale and retail sellers of this one commodity. But a few years ago strawberries were among the rarities on the tables of the "upper ten," but now they are produced in such quantities as to be within the reach of even the most humble labourer. The States supplying the New York market with strawberries are North Carolina, Virginia, Maryland, Delaware, Pennsylvania, New Jersey, and New York, the names being given in the order in which the crops reach this city in any quantities. Up to within a few days ago but few berries came from any other State than North Carolina, and then in only such small quantities as to make them almost a rarity; but during the present week the Virginian crop has been added to that of North Carolina, and prices have come down in consequence. On Monday last the steamer from the James River brought into the market over 1,200 crates of strawberries, each crate containing from 24 to 60 quarts. On Wednesday 2,500 crates, or 100,000 quarts, were brought to the market. A steamer is expected on Friday next with over 5,000 crates of strawberries on board, making a supply of nearly 250,000 quarts. The majority of these berries will come from Virginia, and a few from North Carolina.

The Mistletoe on Fruit Trees.—Is the mistletoe injurious to fruit trees? It is appearing in various parts of my orchard.—KING PIPPIN.—[There has ever been a difference of opinion respecting the effects of this parasite upon fruit trees. Some growers tell us mistletoe does no harm, as they frequently find that trees on which it is found uniformly produce something like a crop, and that the apple wine-cider—made from it is of the best. In such cases, then, we may probably conclude that the parasite has acted much in the same way as the pruning-knife; but there can be no doubt that it weakens and injures the tree.]

Science and Practice.—I quite agree with you (see p. 579), that it is high time to drop such distinctions as have been set up between science and practice. They have no existence in reality. That man has the most science who puts the most and the best thought into his work, and who brings most good out of it to his fellows. Judged by this standard, practical gardeners rank high as scientific men. Doubtless, the use of foreign tongues for classification and description has done much to originate division between so-called scientific and practical men. But you have at least hit one blot that ought to be instantly removed: neither the Horticultural Society nor any other body concerned in the advancement of horticulture ought to perpetuate distinctions in name which cannot be sustained in reality. Within the wide range of horticulture there are many differing degrees of knowledge—great discrepancies of power and capacity; but our rough-and-ready division into two ranks only—the practical and scientific—is as misleading as it is humiliating, and I trust that we have nearly heard and seen the last of it.—D. T. F.

THE GARDENS OF ENGLAND.

WARWICK CASTLE.

THE FLOWER GARDEN.

WARWICK CASTLE is one of the grandest of the few castellated residences of mediæval times which are still perfect, and still inhabited by collateral descendants of an ancient family. It is, in short, one of the most interesting and remarkable of those fortress-homes, which illustrate so strikingly the form and spirit of English civilisation under our Plantagenet princes. Even since the ever-to-be-regretted devastations of the late fire, enough of the ancient pile remains, in all its original grandeur, to command the strongest interest of the historian and archæologist; and the restorations now in progress are so judiciously devised that little of the venerable associations will be missed. The parts of the interior destroyed by the fire were, in fact, of comparatively modern date, and in their restored form will be more in accordance with the ancient parts of the building than they were before. The place, which was once the home of the last of the great barons—of Warwick, the King-maker—will continue to be visited by tourists from all parts of the world, as a rare historical shrine; and such writers as Emerson and Hawthorne, from the great land of our cousins across the Atlantic, will come to it, and record the thoughts that moved them while visiting the grand old monument that still remains standing in the land of their fathers. They will sit beneath the great shade-casting cedars, or on the green knolls among the noble oaks of the park, and gaze upon the hoar antiquity of the great grey towers, and upon the glistening Avon, that winds its way through the sylvan scene, on its way from Stratford to the ocean. And they will be filled with more poetic and heart-stirring thoughts than any that could be roused within them even by the glorious scenery of their own wondrous Hudson; for at Warwick they will feel themselves in the midst of the scenes trod by Shakespeare, and among which that matchless poetry was dreamed out, which is their inheritance in common with us, and with all English-speaking nations.

It is a somewhat curious fact that in the whole range of Shakespeare's works, little or no allusion is made to the noble pile of Warwick Castle or its twin brother Kenilworth, though he was living at the time of the costly entertainment given to the great queen; and as Kenilworth is but a walk from Stratford, he may actually have been, as a youth, among the mummers of the festival, and have pointed some of the merry jests that doubtless enlivened the revellers with good, rough, laughter-stirring Warwickshire wit. Yet, although scenes in his "Henry VI." are laid at Warwick and its immediate neighbourhood, no word is said about the castle or that of Kenilworth. The explanation may be, that anything bearing upon the doings of the all-powerful Robert Dudley, or the doings at his great castles in Warwickshire, especially the story of Amy Robsart, was dangerous ground for a poor playwright to tread.

The first aspect of the castle, as seen from the bridge over

the Avon, or at points where its grey towers rise picturesquely above the ramparts and over the noble trees by which they are partially concealed, is very impressive, and on passing the entrance gates and advancing up the hollow way cut in the red sandstone rock, which rises on either side to the height of twenty or thirty feet, this effect goes on increasing. The rocky sides of the approach are clothed with ferns and tangled festoonery of brambles and other trailing kinds of brushwood, with here and there a seedling ash or sycamore rooted half way up in the rock, and shooting its main stem upwards towards the light, while straggling branches droop heavily downward. In some, these branches meet from either side, and form a bower of greenery overhead; while through the open spaces the tops of the great trees near the castle are seen—venerable cedars, and oaks, and elms.

The green lawn within the ramparts, once the spacious castle-yard, where the men-at-arms were mustered, is studded with fine trees, and a noble walk leads from thence to a passage through a part of the ancient rampart, by which the conservatories and the flower garden are approached. This walk is well contrived for effect. Looking back upon the dense masses of shrubbery that partially conceal the rampart and its turrets,

and above which rise the ancient towers of the main structure, nothing can be finer than the general effect of the fine natural picture thus presented. Pursuing the course of this walk, the aspect of the park and its grand oaks, with the more distant view of the Avon, disclose themselves by degrees; and at length, when the noble conservatory (called the winter garden) is reached, which contains that fine monument of antique art so well known as "The Warwick Vase," the view becomes grand and fascinating in a very high degree. Immediately in front of the conservatories, the



Warwick Castle.

extensive geometrical flower garden has been laid out; it is in very good taste, and with its architectural dressings, which are bold and appropriate, it forms an excellent foreground to the sylvan prospect beyond. The view is one of the finest specimens of park scenery that can be conceived. The Avon winds its silvery way through wide glades and meadowy slopes of deep rich green, which are bounded on either side by massive woods of ancient trees; the tufted summits of which, when their varying tones of vivid green are seen in bright sunlight from the conservatory terrace, produce, in combination with the gleaming course of the Avon, an effect of rich sylvan luxuriance which can scarcely be surpassed even by the celebrated view from Richmond Hill.

Our engraving of the castle has not (which is much to be regretted) been taken from the best point of view. Instead of selecting that from the bridge, which commands the broadest part of the Avon, with the cascade, and shows the terrace of the castle which overhangs the river, the artist has taken his standpoint on a spot some distance above the bridge; in consequence of which those interesting features are entirely concealed. But neither this bad selection of the point of view, nor even a worse, could prevent the grand old towers and the great flank of the castle, as seen in the present

instance above an ivy-covered arch of the bridge, from forming a most picturesque group of objects.

The park at Warwick Castle is small, but some of the trees are very grand specimens of their respective kinds; especially the oaks, one of which presents a curious Banyan-like aspect, from some of its vast and far-spreading arms, where they rest upon the ground, having struck root and sent up stalwart young stems, such as are seen surrounding the great sacred tree of India, and forming columns to support its far-extending shades.

NOEL HUMPHREYS.

THE LIBRARY.

HOW PLANTS BEHAVE.*

ONE of the best botanists alive, and, as we think, the happiest of all teachers of botany, has added another pleasant little book to those he has already written for young people. Those who have read that most charming botanical work for young people, "How Plants Grow," will be prepared to welcome the same author's account of "How Plants Behave," in which the latest scientific investigations as to the movement of plants, and other interesting matters are presented in a style that is sure to fascinate young people, and at the same time be welcome to older readers.

That plants "behave" at all will be new to many, for most persons are accustomed to regard plants as inanimate objects, with a few exceptional individuals, like the Sensitive Plant, that manifest visible motion.

A large portion of the little book is devoted to explaining the, to us, wonderful relations between insects and plants, to the various distinct ways in which plants climb, and to the various other phenomena which we call curious. Although written for young people it is likely to be equally interesting and instructive to all readers. We trust it may find many readers on this side of the Atlantic.

DOMESTIC BOTANY.†

MR. JOHN SMITH has long been well known to the botanical and horticultural public, not only from his many botanical works, but also from his official connection with the Royal Gardens at Kew. His exertions in promoting the growth and study of Ferns are well known. On the present occasion we find him coming before us as a writer upon another branch of botanical science; and if "Domestic Botany" is, as a whole, less satisfactory than some of his other works, much will be found in it to interest and instruct the reader. It differs somewhat both in scope and purpose from any of Mr. Smith's previous works. We cannot help expressing an opinion that the introductory portion on the "parts, structure, life, organism, and classification of plants" would have been better omitted. It adds nothing to our knowledge, introduces several new and unnecessary terms, and occupies space which might well have been devoted to an extension of the latter part of the work. In this latter portion we find many notes connected with matters of especial interest to our readers, such as the introduction and first cultivation of garden trees and shrubs, notes on certain individual examples, &c. Among the latter we may cite the reference to "Napoleon's Willow." A twig from the willow growing over Napoleon's grave at St. Helena was received at Kew in 1825. Crowds of people came to see it, and it was an object of reverence to French visitors. We believe that many years since, before Kew Gardens became national property, a great many people came down from town to visit this interesting relic, and, on being refused admission, broke open the gate. In 1867 this tree was cut down—why, Mr. Smith does not inform us; it had then attained the height of forty feet.

The age of some of the plants now at Kew is in some cases very great. Thus, three specimens of the Purslane tree (*Portulacaria afra*), are nearly one hundred years old; and a tree of the American Sassafras (*Laurus Sassafras*), forty feet high, is of the same age. Again, a plant of the Canary Isles Campanula (*Canarina Campanula*), has withstood all changes for more than fifty years, producing annually succulent stems about three feet high, bearing pretty bell-shaped flowers of a rusty colour. In old specimens of Magnolias, Kew is

* "How Plants Behave." By Asa Gray. New York and Chicago: Ivison, Blakeman, Taylor, & Co.; London: Trubner.

† "Domestic Botany: an Exposition of the Structures and Classification of Plants, and of their Uses for Food, Clothing, Medicine, and Manufacturing Purposes." By John Smith, A.L.S. London: Robert Hardwicke.

very rich; two Tulip trees, seventy feet high, are more than a hundred years old; a *Magnolia grandiflora*, "for many years growing against a wall, but now for more than twenty years standing fully exposed," with a height of twenty-three feet and a girth of three feet, is of the same age; and of *M. conspicua*, which was introduced in 1789, "one of the original plants is still growing at Kew."

We might cite much more that would interest our readers, did space permit, but the above extracts will show that, even from a gardening point of view, much worthy of note may be found in "Domestic Botany." The work is by no means perfect; indeed, a good handbook of economic botany has yet to be written—but it is likely to be useful to many who like to know something about the plants and plant-products which they are constantly coming across. We regret that Mr. Smith, after demurring to the number of botanical terms in use, should have found it necessary to invent others, which have the disadvantage of being new, with no commensurate advantages; and we should have liked a more comprehensive index, and a less conspicuous sprinkling of typographical errors. But "half a loaf is better than no bread," so we would rather record our obligations to Mr. Smith for what he has done, than find fault with him for what he has omitted to do.

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

BY OUR SPECIAL REPORTER.

PRIVATE GARDENS.

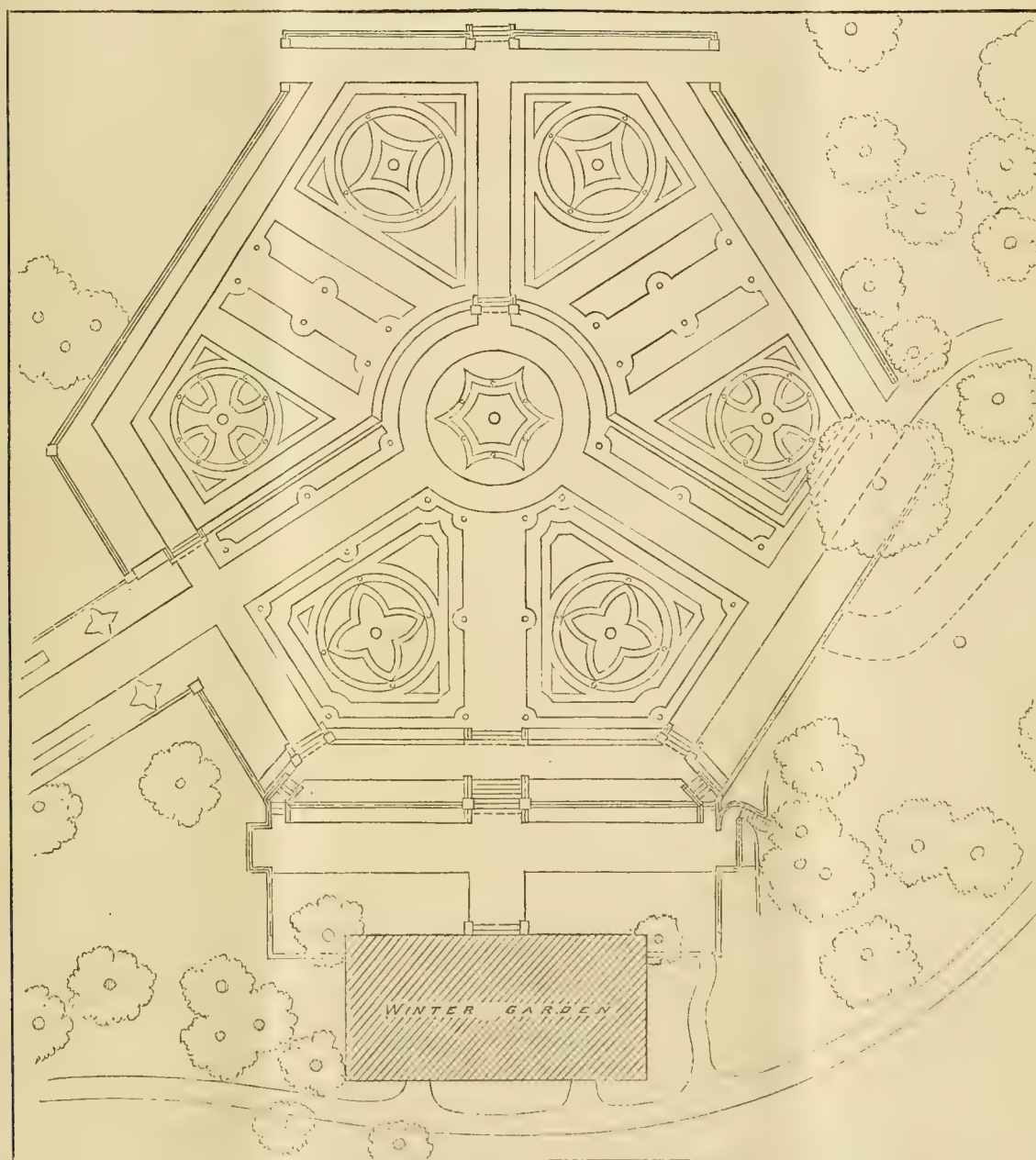
Indoor Plant Department.—Begonias will soon be available for conservatory work; the most forward of them are being shifted for the last time into strong soil, consisting of yellow loam mixed with rotten manure. Show Pinks, Carnations, and Picotees, if required for exhibition purposes have their stems and flowers considerably reduced in number; the flowers that are left have a piece of matting or worsted tied round their middle, to prevent them from bursting. Chorozeas are being shifted into a compost of rich turfy peat, fibrous loam, a little leaf-mould, and sand; they are afterwards kept in the warmest part of the greenhouse for a time. To such as have not been repotted this season, a little clear manure water is given. Kalosanthes are neatly trimmed and occasionally supplied with manure water. Fuchsias are shifted into their flowering pots, and syringed twice a day; they are fastened to one central support, and any shoots having a tendency to get too long or weak are either pinched in or altogether removed. Such Camellias and Azaleas as have flowered early, and have nearly completed their growths, are gradually inured to an extra share of sunlight, preparatory to their being set outside; the later ones are still kept rather close, well shaded and syringed. Gardenias are kept in a warm moist temperature, and on the first appearance of insects they are immersed in tobacco water; *Monstera deliciosa* when grown against a wall in a warm moist shady house is frequently syringed and plentifully supplied with water. Their fruits, if likely to become too heavy, receive some kind of support. Vanilla is trained on walls and on boards, over which a layer of sphagnum is placed for the retention of moisture. Rivas, if not required for present use, are cut back, so as to induce fresh growth and the production of berries.

Orchids.—Such as are in flower are moved to the warmer parts of the conservatory; those advancing are encouraged, whilst some are being retarded, in order to prolong the flowering season. Woodlice are trapped by means of potatoes being placed here and there; examining them daily, and destroying such as are found on them; a little cotton wool around the stems or flower stalks also prevents them from ascending. Top-dressing and renewing of blocks are operations now receiving attention. Abundance of moisture is given to the roots, and the atmosphere is also kept moist throughout, bright sunshine being excluded by means of shading. As regards heat, that is economised by closing early. Ferns are still being placed out of doors, any damaged or weak fronds amongst them being removed. Greenhouse Ferns are shifted as they may require that attention; others are merely top-dressed. They are closely shaded, but are allowed plenty of air. Baskets are now being filled with Ferns, placing an upright-growing kind in the centre, and a few pendent ones round the sides, together with mosses, variegated grasses, *Strobilanthes*, &c. Some Filmy Ferns are being potted, using a spongy material and pieces of open sandstone for that purpose.

Pits and Frames.—Hardwooded plants are being potted as required, and are placed in frames kept rather close for a time. Softwooded plants for late conservatory decoration are being shifted

into their flowering pots, kept rather close for a few days, but afterwards freely exposed, and stopped. Shoots are taken off *Cinerarias* planted out, potted singly, and placed in cool frames. The ripe seeds of *Auriculas* are gathered, and seedlings potted as is necessary. Fine foliaged *Amarantuses* are potted as they require it, using a rich, open compost for the purpose; the pots are then plunged in a spent hotbed and kept near the glass, the sashes being

given. Anything subject to wind-waving is firmly staked, pieces of cloth or other soft material being applied so as to prevent the ligature from damaging the bark or wood. Canterbury Bells and other tall-growing *Campanulas* are staked, or if grown in lines they are supported by being attached to a cord running from end to end, and fastened at intervals to small stakes. As the earliest flowers of *Antirrhinums*, *Delphiniums*, &c., get past their best, the flower spikes



The Flower Garden at Warwick Castle.

tilted up a little at back and front, to induce stocky growth. Hardy Orchids are kept in cold frames, protected from heavy rains and bright sunshine, but abundantly supplied with air.

Flower Garden and Shrubbery.—Now that the flower garden has been planted, operations for some time to come will consist in loosening the surface, and in supplying the weaker-growing plants with water. For this purpose, little basins of earth are formed around the base of each plant in order to prevent the water from escaping. To the stronger deeply-rooting plants no water is yet

are removed in order to encourage the laterals. *Cerastium*, when used as an edging to shrubberies, is sometimes at this season permitted to flower quite freely, and after a time, when whatever may have been planted behind it begins to cover the ground, the *Cerastium* is cut over, but not quite close, and encouraged to push again. When used as an edging to flower beds, we need scarcely say, it is never allowed to flower. Roses are frequently syringed in order to keep down insects; tobacco water being used if the flowers have not expanded. Standards having heavy tops are securely

staked. Imperfections in shrubberies and hedges are being rectified by means of the pruning-knife.

Indoor Fruit Department.—Figs should never be allowed to make shoots beyond the fourth or fifth joint; sometimes there is a tendency to over-luxuriant growth, but this is kept down by using poorer soil, and watering with only pure water; frequent syringings are given and a moist atmosphere maintained. The earliest crops of Peaches and Nectarines have some sort of protection provided for the falling fruit, such as a sheet of canvas in front, placed so as to receive the fruit as they drop off; or, instead, a doubled herring net, in the bottom of which is placed some soft hay or dried lawn grass. The borders are also covered over with hay or grass, so that should the fruit fall, the injury received would be immaterial. Pot plants are also surrounded with soft hay. Strawberries ripening fruit are kept a little dry, but this bright weather is apt to dry them too fast, consequently they require great attention; the next to the last lot for forcing is being introduced; their fruit is already formed. French Beans are kept well syringed, and the last ones in pots are being top-dressed; these will follow those at present beginning to bear, and will be succeeded by those sown in frames, which will be in their turn succeeded by those from the open air that were partly protected. Melons and Cucumbers have their beds top-dressed, and liberally watered; and thinning foliage, shoots, and fruit is attended to. This fine weather will cause Melons to set freely of themselves. Abundance of air is given, and but little fire heat is now required if the houses are shut up early.

MARKET GARDENS.

THE rapidity with which vegetable crops have advanced during the last week or so is truly wonderful. Vegetable Marrows from the earliest planting now cover the whole space allotted to them, and are producing fruit abundantly. The earlier plantings in the open ground without any encouragement from artificial heat, are also in flower and otherwise advancing rapidly. Those planted out in the open fields, fifteen by six feet apart, without protection of any kind, have fairly started and so far are very promising. Where Cucumbers are grown extensively one or two men are kept purposely to attend to them. The plants are gone over every three days, thinned, and such fruits as are inclined to grow crooked are placed in glasses. During the hottest part of the day a little litter is scattered over the surface of the sashes, which are tilted up about three or four inches. Liberal waterings are also frequently given. Such as have been in fruit from the first of the season are being replaced by others from the reserve stock. Gherkins are being sown in lines, about three or four feet apart, and the seeds about four inches asunder in the rows, the ground used for them, if loosened for the previous crop is only cleaned, and worked up with a fork or hack, the lines drawn, and the seeds sown. French Beans are sown for succession in lines three feet apart. Sweet Peas are now producing a good supply of flowers for market. Wallflowers from this spring's sowings are transplanted into lines, twelve to fifteen inches apart, between fruit bushes, for blooms in the spring, and Stocks planted between lines of Roses, are now abundantly producing flowers fit for market. Where tall fruit trees are close together, and the produce likely to be plentiful, the under-cropping is removed, and a layer of loose litter is scattered over the surface, thus not only protecting the roots, but at the same time supplying nourishment to them; a mulching of this kind also preserves the falling fruit from being bruised.

Tomatoes have lately grown rapidly; those planted alongside old Mushroom beds are pegged down on the ridges as they advance. Stakes are applied to those planted in open spaces. A little soil is drawn to their base, so as to form a furrow or basin for the retention of water. The earlier crops are in bloom. Owing to the strike among the labourers, operations that ought have attention now are deferred or wholly neglected.

NURSERIES.

Indoor Plant Department.—Plants of the Sugar cane are being cut down and the joints inserted in pots in the propagating house; some of these produce two or three shoots, which will eventually be separated, preserving the roots, and potted singly. Pandanus are also propagated from the roots and sideshoots, also from seeds, which are inserted in pans of light peaty soil; after germination, the plants are separated, and treated as cuttings. Ardisias are now in flower, kept in a rather dry atmosphere, in order to set their fruit. Gardenias, which are found rather stiff subjects to grow, are liberally encouraged. Epiphyllums are tied, staked, and induced to grow freely. Bertalonnias are kept in a steady temperature under hand-glasses in stoves. Vincas, Passifloras, Bougainvilleas, Dipladenias, and any other plants of which there is a scarcity, are being increased from cuttings in pots plunged in bottom

heat, under lights well shaded. Inarched Camellias are laid on their sides under the hand-lights, *i. e.*, if there is not room enough for them to stand upright. Primulas done flowering are kept fully exposed in cold frames. Calceolarias for seed are placed in cold frames. Newly imported Orchids are laid out on shelves until they start, or they are suspended from wires until they exhibit signs of vitality; any Fern roots found amongst them are potted and kept well shaded. Orchids of all sorts that have not been previously shifted or top-dressed this season are receiving that attention, as time permits; those in flower are moved under greater shade and kept drier than those in the ordinary house. Little or no fire heat is used, but the houses are shut up pretty early in the afternoons, so as to economise heat. Ferns are being raised from spores sown in pots, over which a piece of glass is placed, and moisture is supplied from saucers of water placed under them. These pots are kept well shaded, and as the plants come up, they are pricked off into pans and afterwards potted singly in thumb pots. They are generally kept inside frames within the propagating house.

Outdoor Department.—Beds of seedling conifers are frequently gone over and cleaned. Those sown in frames have the sashes removed throughout the day, but replaced at night. The sashes being covered with mats or other material. Two-year-old plants of Deodar are being turned out of their seedling pits and potted singly, and variegated Ivies are kept in cold frames well aired and watered. Tree Carnations in pots are plunged in cocoa-nut fibre in beds in the open air. Hardy Ferns are also plunged in the same material at the foot of shady walls; some of the finer kinds are kept in frames, and shaded from bright sun. Pyrethrums are turned out of pots and planted in beds, single stakes being attached to each. In order to preserve the blooms of Pansies for exhibition, they are shaded from strong sunshine. Herbaceous plants are staked, shaded, and well watered. Hardy climbers are trained as they advance in growth, confining them to single stakes. Nurserymen are now busy planting out their remaining bedding plants. Beds hitherto occupied by spring bulbs, are being forked up, and planted with sub-tropical and other summer flowering plants.

SMOKE IN OUR GREAT TOWNS.

THE great smoke nuisance flourishes, apparently unheeded, and the sky, already filled with vapour drawn from the sea, is darkened and made foul with the black vapour rising from a thousand factory chimneys. Many a day that seems dark, and dull, and unwholesome in our great towns, is bright and cheerful enough at five or six miles distance from them. The fact is, citizens have their being in soot, and everything that is about them is darkened and discoloured by its presence. It changes the blue of the heavens into a dingy grey, or obliterates it altogether. It covers every leaf in our gardens, hinders the growth of the plants, spoils the colour of the blossoms, and kills the trees.

Of course, we are thoroughly well aware that the commercial prosperity of towns depends upon the activity of their manufacturers. These must not be discouraged. Blight not the soul of your manufacturer, or you shall rue the day. All this we know—and believe. But then lately we have seen a sight, and it was this:—We saw an old town, a manufacturing town, possessing great prosperity, lying in a valley between two ranges of hills. Standing on one of these hills, we could look right across to the other range, distant some ten miles. Every part of them was visible. The woods growing at their feet, the bare hillsides, and the outline of the hill-tops against the sky, were all plainly to be seen. And yet at our feet was the town, and above the houses of the town there rose a very forest of factory chimneys. It was the busiest time of the day, and yet out of all these hundred mouths a puff or two of smoke only came now and then from three amongst the whole number. There were the chimneys, but they were smokeless. Their tops were mostly well blackened with the sins of old times, but the day of evil-doing had passed—let us hope for ever. The secret of this phenomenon is easily told: in that town the law is too strong for the manufacturers. He has his difficulties to contend with. He also burns coal, and has to employ stokers. But he has been taught to educate his stoker to ply his calling properly, and the result is that the factory chimneys do send out no smoke except for about five or ten minutes, once or twice a day. The town in question is clean, its streets are bright, and the foliage surrounding it is unspoiled with soot. Surely, that which is done elsewhere so successfully might be put in practice here. We have the law, but its arm is not strong; we want the force of public opinion to compel our magistrates to seek out the offenders, and to punish them as they deserve.—*Birmingham Morning News.*

THE GARDEN IN THE HOUSE.

MARANTAS.

AMONGST the foliage plants that decorate our stoves, few are more deserving of admiration than Marantas; coming, as most of them do, from wet parts of tropical America, they require to be grown in a moist warm atmosphere, and consequently do not well bear removal to rooms or conservatories, except for a limited time. This is much to be regretted. The well known *Maranta zebrina* was for many years almost the only one amongst the ornamental-leaved section of the genus that was commonly found in stoves; but of late years many very beautiful species have been introduced. Amongst them, *M. Veitchii* is probably the most striking, the leaves being



The *Maranta* as a Vase Plant.

purple underneath, and deep green above, with yellow markings near the midrib. An engraving of an interesting variety accompanies these remarks, and we shall shortly figure some of the broader-leaved species of this fine genus. W. T.

CULTURE OF PLANTS IN ROOMS.

(Continued from p. 689.)

SOILS.

THE humus, which has been spoken of, consists exclusively of decayed vegetable matter, and for many plants is used either pure or mixed with sand, or is employed to improve a poor loam. For plants in pots all kinds of humus are most suitable when they are composed of vegetable matter not wholly decayed. Humus of this description feels soft and elastic to the touch, but that which consists only of wholly decayed matter, forms a fine, powdery mass, hard to the touch, and which by itself is not adapted for plants, and even when mixed with other soil is far less suitable than humus composed of partially undecayed matter. We shall here add a few observations on the various kinds of natural soils which consist chiefly of humus, such as forest soil, heath soil, and moor or peat soil.

The first two kinds are found in dry localities, and are, according to the sub-soil on which they are found, and the vegetable matter of which they are formed, of very different values for plant culture. With regard to the sub-soil the following remarks may be made:—

Stony or sandy soil, as a sub-soil, is that on which forest soil and heath soil are not only most readily formed, but where they receive those elements which are most advantageous for plant culture, inasmuch as none of those matters which are injurious to many plants (as for example lime) can enter into their composition.

Besides, sand is a necessary ingredient in humus soil, and where it does not exist naturally, it must be supplied artificially. Much, or too much, sand will of course be found

where the soil lies very thinly on a sub-soil of pure sand, and the result will be that such soil will be poor and unfit for plant culture.

The deeper the soil lies on the sandy sub-soil, the less sand will it usually contain, and the more suitable will it be (at least the upper layers of it) for plants. This depth is due to local peculiarities, which favour the accumulation of vegetable matter and promote the speedy formation of a soil rich in undecayed and nutritious ingredients.

On stony or rocky ground exposed to the weather, and which contains a large proportion of alkalies, humus soil is very seldom found, as any that is formed here is speedily decomposed by the sub-soil, and is then washed away by the rains.

The names of forest and heath soil will almost explain their constituents. Forest soil consists of humus formed from the leaves of the trees, their wood, and lastly, under certain circumstances, from the plants which grow in the said humus. It is found in the deepest layers where these matters are carried away and deposited by the water of heavy rains. Heath soil, on the other hand, consists of humus which has been formed on open plains, where heath plants cover a wide area.

Forest soils will, according to the nature of the trees from the leaves of which they are formed, show very considerable differences in quality, in proportion to the quantity of alkalies and nitrogen which the leaves contain. Accordingly it is a matter of experience that oak woods supply one of the best and strongest forest soil, that beech woods afford one something inferior, woods of mixed trees a still inferior kind, and finally, that the soil in pine woods is only good when found in deep layers and mixed with the decayed roots and leaves of *Vacciniums* and other plants.

Heath soil consists either only of the remains of heath plants lying in thin layers, and is poor and innutritious, or of dry moor and peat soil which has become covered with heath plants, such as *Vacciniums*, *Andromedas*, &c., and then approaches very nearly to peat soil in its character.

Moor and peat soil are very often confounded with heath soil. They are formed by the deposition of decayed vegetable remains on a wet sub-soil or in water itself.

During their decomposition they give out a great part of the salts which they contain into the water, and where they are cut off by water from the access of the air, they acquire an injurious sourness, and are consequently unsuited for plant culture.

But where, on peaty moors, the surface is continually raised by the deposition of vegetable matters in dry places, the upper layers are under the full influence of the atmosphere. The decomposition of the fallen leaves and dead roots of the plants which grow here, the moss, &c., form, with the assistance of the atmosphere, an excellent kind of soil. Such moor and peat soils are so much the better for plant culture the higher the layers are formed above the moist sub-soil, and in consequence are looser in texture. When peat soil is taken from a wet place, it should be placed in a heap and allowed to lie for a year exposed to the atmosphere, in order to remove the sourness which it contains.

Any plants growing in this turf are allowed to remain, and it is not used until these, along with their roots, are in a great measure decayed. Soil of this kind, which is often improperly named heath soil, is mostly used mixed with clean sand.

The black or brown, fine, powdery, completely decayed moor and peat soil, such as is found in large masses in dry places, being too poor in nutritious matters, cannot be employed in culture by itself, or even when mixed with sand. When mixed with loam it is somewhat better, but it is much inferior to the looser moor and peat soil composed of vegetable matter in a less decomposed state.

Lastly, we shall mention a kind of humus soil which is found in a state of fine powder mixed with pieces of not yet decayed wood inside of hollow trees. This is called wood soil or tree soil. It is still less nutritious than the powdery peat soil, and is only used in the culture of *Orchids*, *Rhododendrons*, &c. The best is found in oak trees, containing many pieces of decayed wood.

In the north of Italy wood soil obtained from the edible chestnut tree is used in the cultivation of camellias.

The most suitable kind of humus soil for plant culture is

that which contains a large quantity of undecayed roots and other matters. This even when it has lain for a long time in a heap, will contain many lumps or large pieces. These should be broken or chopped up with a hatchet and passed through an iron sieve with meshes about an inch wide. The coarser pieces which will not pass through should be grated against the sieve with the hand. The particles which will pass through a fine sieve should be rejected, and none but the coarser part, which contains the best properties of the soil, should be retained for use. Soil procured from woods should be treated in the same manner. Ordinary loamy soil, not containing roots, should on the other hand, be passed through finer sieves. This should be especially done with pure loam, which is to be used for mixing with humus soil.—*Dr. Regel.*

(To be continued.)

WINDOW GARDENING.

If there is one aspect of London gardening that may be appropriately termed badly done, as a general rule, it is that of outside window boxes. Hundreds of attempts are made at window gardening annually within the metropolitan districts, and yet but few of them can be said to be successes. This arises from, first, unsuitability of the plants employed; and, second, neglect. It is not unusual to see early in March, when cold northerly or easterly blasts prevail, window-boxes filled with tender plants from a warm house, such as cinerarias, primulas, and similar things, that in a day or two become shrivelled and browned. This is often attributed to want of water, and a copious supply being given soon completes the work of destruction. On the other hand, many a box of plants fully exposed to scorching sunshine and the drying effects of east wind, soon presents a starved appearance for want of water. There are, however, many exceptions, where a genuine love for plants causes them to be tenderly watched; and their wants supplied. Under such circumstances, they are a constant source of gratification.

My sitting-room window has an aspect due south, and on the outside of it there is a wooden box painted green, about forty-five inches in length by seven in width. In November last this box was planted as follows. At the bottom was laid some strips of green turf, and on this was laid soil, of which rotten manure formed a large proportion, about three inches in depth. On this I planted a dozen single Hyacinths, and some of the best cheap varieties of different shades of colour, and about half-a-dozen bulbs of *Narcissus tazetta* (*Polyanthus Narciss*). Then, having covered these with a layer of soil, I added another of bulbs, consisting of Snowdrops, *Crocus susianus* (Cloth of Gold), *C. biflorus* (Scotch), and some striped and blue varieties of *C. vernus*—only a few of each; with these I mingled a few roots of mixed Turban Ranunculus, covered the whole with soil, and then by way of a finish I planted along the front of the box some tufts of the pretty new *Leptosiphon roseus*. From the early days of February, when the Snowdrops and Early Crocuses come into bloom, and on down to the present time, when the gay flowers of the ranunculuses are fading away, and the tufts of the *Leptosiphon* are in full splendour, there has been one uninterrupted sequence of floral beauty. The Crocuses and Snowdrops died away gradually; but after the Hyacinths and Narcissus were out of bloom, I cut them down nearly to the surface, in order that the fast developing Ranunculuses might have ample space. While the bright, hot, dry weather lasted, I water copiously every day, though the soil in the box is so honey-combed by the number of roots it contains, that it passes through it very quickly.

In a few days the contents of the box will be turned out, and all the bulbs, with some soil adhering to their roots, will be carefully put away in paper-bags, for use in the same way next autumn. They will answer well two years in succession. Then the box being filled with fresh soil, will be again planted, with a few foliaged and flowering plants. Over the front of it will fall the variegated form of *Sedum Sieboldi*, variegated ivy-leaved Pelargoniums, and the pretty pale lavender-blue *Convolvulus mauritanicus*. A plant or two of a free-blooming *Tropæolum Lobbianum*, Mrs. Pollock variegated Pelargonium, and similar things, will complete the arrangement till the end of October; and when they come to an end, another season for planting will have come round again.

Thus managed, the window garden is always gay and always attractive; and these simple and inexpensive modes of embellishment are capable of much variation. There is always procurable many subjects, hardy and durable, that can be employed to serve such a purpose as this during the winter and spring months. I have used *Iberis coriæfolia* in this box, for instance, with surprising effect; early-blooming pansies, double daisies, *Phloxes verna*,

frondosa, and *Nelsoni*; and many others, of which these are fitting types, may also be employed. A few dwarf evergreens can be used during winter and early spring, to be succeeded by flowering and foliaged plants for summer and autumn. Only let there be the desire to do something, and means will be found close at hand to effect the object in view. In the grandeur of our conceptions of horticultural enterprise, and in the lofty ideas of gardening prevalent nowadays, we are apt to lose sight of the value of simple things, which though unpretentious, are often highly praiseworthy and effective. Quo.

THE ARBORETUM.

NORFOLK ISLAND PINE IN THE SYDNEY BOTANIC GARDENS.

WE all know this graceful Pine in our conservatories both in public and private gardens, but few have an idea of its great stature and beauty in its native isle. Our friend, Mr. C. Moore, director of the Sydney Botanic Garden, has, however, shown what it is capable of becoming in New South Wales, and we have much pleasure in giving a representation of the trees therein. The tree differs in habit from most of the Pines known to us. It will probably prove a noble ornamental tree over vast regions in temperate countries, as, for example, in California, Southern Europe, Egypt, and other countries with warm, temperate, and sunny climates. Although its native home is amid the sea breezes of the Southern ocean, there are few plants that thrive better in living-rooms in England. We have noticed small trees of it thriving year after year in London sitting-rooms.

THE REGENERATION OF ALPINE FOREST LAND.

MUCH has been written and said of late years, says the *Pall Mall Gazette*, respecting the deterioration of soil and climate in regions where the neglect of an ignorant and selfish population has allowed vegetation to perish without duly replacing it. A good deal of the discussion has been premature: the whole question of the effects of forests in promoting rainfall is as yet entirely uncertain, notwithstanding the peremptory and exaggerated tone in which it has been and is continually asserted. It is an unsolved problem treated by superficial observers as an axiom. In France, where the subject has been more closely treated than among ourselves, opinion is gradually undergoing a change respecting it. Fact and theory are alike disputed. No proof has certainly been given that, in temperate climates at all events, a hundred acres of forest attract more rain than a hundred acres of turnips. And no philosophical reason has been advanced why they should. But, uncertain as it is whether forests attract rain, it is beyond all doubt that they store and preserve it; they check the evaporation of the surface water; they also regulate and retard its descent down the slopes of the hills; they serve, therefore, as a safeguard both against drought and floods. But, in order to reproduce fertility on mountain sides which have been denuded and devastated, the replanting of forests, although the best, is not a necessary expedient. "Gazonnement," as the French term it—the covering large surfaces with fresh turf, carefully fenced and tended until it consolidates—seems to be attended with at least an approach to the same beneficial effects. There is an interesting paper by M. H. Blerzy in the *Revue des Deux Mondes*, in which the effect of this experiment in the French department of the High Alps is detailed. This district has been for some centuries gradually rendered desolate by the wasteful neglect of which we have spoken. It has an extreme climate—Mediterranean heat alternating with Alpine frosts, persistent drought with violent storms; all the rain and snow of the year sometimes falling in less than three weeks. Bit by bit its forests have been improvidently destroyed, until only a few patches (comparatively speaking) are left. And their natural recovery is rendered impossible by the pasturing of sheep, and still more of goats, the only industry left to the peasant. Under these circumstances the slopes have become bleak and bare, the valley bottoms mere accumulations of sand and pebbles. Year after year mountain villages are abandoned and the population driven to emigrate. In twenty years only—from 1846 to 1866—the population diminished by 11,000 inhabitants, or about one in fifteen.

Such was the state of things when what M. Blerzy terms—we hope not too confidently—the "regeneration" of these mountains began under the Forest Law of 1860: applicable to the mountain districts of the whole of France, but of special utility only on certain portions

of their surface. This law rendered "reboisement," replantation, compulsory only in cases where the denuded condition of the soil rendered it a cause of damage or danger to the neighbourhood; it required a careful multiplication of preliminary inquiries and consents; it allowed of the plantation of not more than one-twentieth of the surface of a commune in a single year; it respected, in short, ever timidly not only the individual vested rights but what may be termed the collective prejudices of the peasantry. Modest, however, as it was, the measure could not fail to excite their selfish feelings and their fears, and nowhere more than among the old-fashioned and tenacious boors of the Alps. "With the exaggeration so natural in the peasant who fancies his property threatened, they compared the agents of the forest law to ogres ready to devour their flocks and their pastures." The Administration, instead of persisting with official obstinacy, adapted its proceedings in part to the popular feeling. In 1864 the law was amended by allowing the substitution of "gazonnement" for "reboisement" in cases where the agents did

to be regarded on all hands as the safeguard of the country, except by a few inveterate malcontents. "To regulate the pasturages, to plant the naked ravines, has become the pre-occupation of the country. . . . Slowly, but surely, the hideous gorges which scored the mountain sides disappear under verdure; in the low grounds, the cones of desertion" (mounds of loose stuff which invariably form at the point where an uncontrolled torrent reaches the plant) "become covered with crops and with groves; the beds of the stream are fixed; the bridges are no longer periodically carried away; the brooks which descend to the rivers become limpid instead of being loaded with gravel and sediment." But there is much more to be achieved. "These austere regions of the Alps, where man lives close to the limits of the habitable world and struggles against the terrors of nature, frost, drought, rain, torrent, are like a dilapidated house, which must be taken completely in hand if it is not to be suffered completely to perish. Population abandons them, national wealth diminishes in them day by day. . . . It is still a land to be reconquered, not from the enemy, which would be glorious, but from nature, which is more glorious still."

Perhaps the most satisfactory part of this little narrative is not the victory over nature which it celebrates, but the victory over prejudice. We are apt to despair too readily of winning over backward classes of people, such as the peasants of the higher Alps, to those benevolent efforts on their behalf which they do not fully understand or appreciate at once. Generally there is some foundation, though probably an inadequate one, for their opposition to novelties. In the present instance, it is plain that the country people had reason for fearing the immediate consequences of encroachment on their meadow-land by plantations, though to their and the country's ultimate benefit. But when the promoters of the experiment had the good sense to meet them half way—to modify the innovation by substituting in part artificial meadow for plantation—they were soon brought to see the whole proceeding in a different light, and to lend their aid to the general improvement, even though part of it would not result in their immediate gain.

Silver Variegated Wild Olive.—While a large amount of admiration is bestowed by lovers of trees on the beautiful and varied tints and bright hues assumed by the foliage of many of them before they fall late in the autumn, I do not think that sufficient attention is paid to the extremely beautiful changes that take place in the foliage of some trees and shrubs at other seasons of the year. I have been led to this conclusion by observing this season for the first time a most beautiful change which took place in the leaves of a rather uncommon but extremely ornamental shrub—the silver variegated form of the Wild Olive (*Eleagnus reflexus argenteo variegatus*), which I consider to be a much more desirable plant than the better known golden variegated form, from its much greater compactness of habit, as well as from the greater constancy and evenness of its variegation. Being an evergreen, the old leaves are displaced about the middle of May, or towards the end of that month, in each year by the young growth; but before falling off a large number of the old leaves undergo a most beautiful and remarkable change of colour, the pale glaucous green portions becoming almost pure white, and the silver variegated streaks and blotches changing to bright gold, giving the leaves an exceptionally beautiful appearance. Let me hope that this fact may induce all who are fond of beautiful hardy shrubs, and who do not yet possess the plant in question, to at once add it to their collection.—W. E. G., Junior Carlton Club.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Contending Leaders.—Trees are often found either by accident or otherwise having more than one leading shoot, about which many ideas have been adduced, such as bending the contending ones down, cutting off their tops and the like. This is all very well if done when they first appear, but after they attain a foot or two in length, I find that the only sure remedy is to take the saw and cut them clean out. It may disfigure the trees for a time, but they will soon recover. When the pressure of high winds are brought to bear on trees having more than one leader, a fracture is almost certain. J. TAYLOR, *Mansington, Whitland, South Wales.*

Large Yew Trees.—There is a fine yew tree in Knockholt churchyard, the dimensions of which are as follows:—Height, 46 feet 7 inches; circumference of branches, 292 feet; spread of branches from north to south, 69 feet, and from east to west, 66 feet; girth of solid and stem, 22 feet; length of such stem, 10 feet 6 inches. Thus, in height and girth, this yew does not equal the one in Wiltshire, on the estate of the Marquis of Bath, but in every other particular it exceeds it. *Rev. J. Hall, Knockholt Rectory, Kent.*

—I send you the dimensions of a yew tree growing in the grounds of the old castle at Crom, the residence of the Earl of Erne, in the county of Fermanagh, Ireland. Height, 25 feet; greatest girth of stem, 12 feet; length of stem, 6 feet; circumference of branches, 25 feet; sprout of branches from north to south, 77 feet; sprout of branches from east to west, 79 feet. Although surpassed in height and in girth of stem by the one mentioned by your correspondent from Wiltshire, I doubt whether another with so large a spread of branches can be found. It is shaped like a huge mushroom, and is in a most healthy and flourishing condition. Its lower branches are interlaced with and grow into one another in a most remarkable manner.—C.



Norfolk Island Pine in the Sydney Botanic Gardens.

not consider plantation absolutely necessary. In such instances, says M. Blerzy, trees and even shrubs can be dispensed with; turf only is required to reconsolidate the soil, on condition that the sheep are restrained from eating the grass down to the roots. "On the slopes which the flow of water has not as yet wholly denuded, the smallest patch of vegetation, a simple tuft of grass, suffices to retard the waste of rain water and to distribute it, preserves the freshness of the soil to the advantage of vegetation itself, and detains the pebbles from rolling down the slope. The result is obtained without restricting the peasant's area of pasturage from which he derives his living."

And it is remarkable and very satisfactory, if our author can be relied on, that not only has the recovery of the soil been aided by this judicious experiment, though as yet only in its infancy, but that it has had a great effect in softening down the prejudices of the people, and thus smoothing the way for greater improvements. The "mise en réserve" of successive portions of the meadow land, at first protested against and even resisted with violence, has begun

THE KITCHEN GARDEN.

PLANTATIONS OF ASPARAGUS.

RELATIVE SUCCESS WITH PLANTS OF ONE, TWO, AND THREE YEARS OLD.

THERE are still many who think that by planting roots two or three years old they will gather Asparagus sooner than if they plant those which are but one year old. To disabuse them of this idea, I shall bring before them the result of several experiments which I have made. I planted (No. 1) twelve roots of a year old (No. 2), twelve of two years old, and (No. 3) twelve of three years old. The results were as follows:—

First Year.—Of No. 1 all had made growth before May 4th, and the vegetation was fine; No. 2, ten plants started before May 4th, one on the 10th, and the other failed. The shoots were a little stronger than those of No. 1. No. 3, eight plants started before May 4th, one on May 12th, and the other three failed; and, although at first the shoots looked well, they afterwards declined, and on September 15th they were feebler than those of No. 2.

Second Year.—No. 1, fine vegetation; shoots strong and regular on the 15th of September. No. 2, good growth; shoots irregular, and a little feebler than those of No. 1. No. 3, growth mediocre; shoots very irregular, some roots having eight or ten, but all feeble; another plant died after having produced two stems.

Third year.—No. 1, growth magnificent: stems measuring on the 10th of May from 2 inches to 3½ inches in circumference. No. 2, growth passable, but irregular; some tufts small and weak; the finest had shoots on the 10th of May not more than 2½ inches in circumference. No. 3, growth very middling and irregular; some tufts gave off shoots no bigger than quills, and the best reached little beyond 1½ inch in circumference.

Fourth year.—No. 1, growth remarkable; the shoots appeared from the third to the 10th of April, some as many as 4 inches in circumference; they afforded fifty shoots, which formed a bunch weighing more than 6½ lb. No. 2, growth passable, but a little later than that of No. 1, and with plenty of small shoots; fifty made a half bunch, weighing little more than the half of that cut from No. 1. No. 3, vegetation poor, one plant not starting till the 22nd of April; fifty shoots formed only half a bunch, and did not weigh more than 2½ lb.

To resume, it will have been seen that the plantation formed with plants a year old has given at its fourth starting, or at the end of three years of plantation, a bunch of Asparagus twice as large as that of either of the others. In other terms, the plantation made with plants a year old, produced double that of the one where two-year-old plants were used, and nearly treble that made with plants of three years old.

V. F. L.

Keeping Celery.—The following mode, which we have tried thoroughly, may be worth remembrance at the proper season:—Our plants were grown last year in the usual way, but not blanched. About the middle of November, a trench a foot and a half deep, or just deep enough to take in the plants when set upright, was dug in a hollow which had perfect under-drainage, and the plants then carefully lifted out of the soil in which they grew, the earth shaken from the roots, and they were placed upright in the trench as closely as they could be conveniently packed. The earth was then drawn against the sides along the trench, and the top covered with a stratum of dry leaves a foot thick. A few inches only of leaves were first applied, but as the cold weather of December came on, more leaves were added. Being in a hollow, the wind did not blow the leaves off, while the snow drifting on, added to the protection. Towards spring the stems were perfectly blanched, and there was not the slightest difficulty in procuring a supply at any time by merely lifting off the leaves—vastly easier than to remove frozen earth. Finer celery is not often seen. Those who have no similar depression in the ground may dig a foot deeper than otherwise, lay a tile in the bottom for perfect drainage, put in the plants, and then there will be a foot left to fill with leaves. Lay on a few evergreen boughs to keep any of the leaves from blowing away.—*Albany Cultivator*.

Green Maize or Indian Corn.—This is almost an unknown delicacy in England, that is, when the cobs, as they are called in America, are still green, and have the grain full of milk. The ear should then be stripped off the stalk and boiled for about twenty minutes. The cobs should be brought to table whole, and eaten with butter and salt. The only variety that I am sure will ripen in England is that called "Galatz," and nothing can be cultivated with greater ease. The grain should be sown in May, about a couple of inches deep along little drills about two feet apart, and the plants

should stand one foot apart in the drills. As the plants advance to about the height of a foot a little earth should be drawn up about the stems. When the plants have grown about two feet high digging, between the rows should take place, and the stems of the plants should again be earthed up three or four inches. After this there is nothing to do but to keep the ground clear from weeds. About the latter end of July the corn will be in bloom, and the cobs of corn will begin to show themselves, and about the latter end of August there will be some corn ready for the table; and as some of the cobs will always be in a less advanced state than others, there will always be some ready to pull until about the end of September. The cobs that are left until October, will, if the season is favourable, become ripe and the grain hard. Two or three of the best should then be saved for seed. The common plea urged against the cultivation of maize in this country is, that it will not ripen in wet seasons, but when I assert that I have for the last four years grown and ripened the above-mentioned variety, and that I have now in my ground, which is situated thirty miles west of London, seed saved from last year's crop, and which is *all* germinating, I think I have sufficiently proved that one variety of maize at least will come to perfection in the south of England, however unfavourable the season.—K. F.

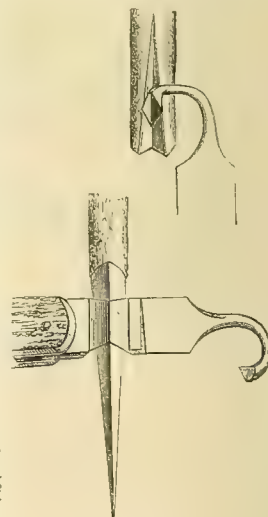
THE PROPAGATOR.

THE ART OF GRAFTING.

(Continued from p. 676.)

GRAFTING BY INLAYING.

GENERAL DIRECTIONS.—Formerly known under the name of grafting *à la Pontoise*, this method was employed specially for the propagation of the orange tree and certain shrubs; at the present day it is applied to a greater number of plants. The establishment of Simon-Louis, at Metz has extended its use to almost all kinds of trees and shrubs. The principle of the operation is to inlay the scion, which is cut with a triangular face, in the stock so as to thoroughly exclude the air. The proper seasons are in spring, when the sap begins to flow (although one may also graft in summer, using semi-herbaceous scions), and in August and September with woody scions. The time to be preferred is about the end of March and in April. The stock is prepared beforehand, or at the time of grafting, so that the scion may be placed on a fresh cut. For spring-grafting the scion-branches are cut in winter and kept in soil or sand in a shady place. It will also answer to cut them from the parent-tree a few days before grafting. In summer-grafting they should not be cut until immediately before they are wanted. The scion, which should have two or three eyes, is cut at the lower part with a wedge-like or triangular face, and is inlaid upon the stock in an angular groove, corresponding to the triangular face of the scion. It is then bandaged, and the cuts are covered with grafting-wax. The preliminary operations are performed with a fine-edged pruning-knife and the ordinary grafting-knife; but greater rapidity and precision are secured by the use of the combined grafting-knife. Both ends of the tool are sharpened and set at the same angle, which gives a mathematical accuracy to the operation. It is immaterial whether the angle be rectilinear or curvilinear; the essential point is that it be identical in both parts of the implement. With common tools a groove with a blunt or a square outline is often made; or it may have the contour of a trapezium, or any other figure; the only really important thing being that the scion be cut to fit it accurately. Grafting by inlaying is performed on the crown



Inlaying with the combined grafting-knife.

of an amputated stock, and sometimes on the side of a stock not amputated.

CROWN-GRAFTING BY INLAYING.—Suppose first that we have not got a combined grafting-knife. The scion (L) is cut with a triangular face (n), of which a section is given at n'. The notch (p) will serve as a shoulder to rest the scion on the head of the stock. The scion is then placed with the back of the triangular face against the stock (M), and the outline of it marked with the blade of a knife. The bark and wood are then cut away so as to form a wedge-shaped groove (r). The scion (L) is then inlaid in the groove made in the stock (M) as shown at o. The operation is completed by applying the bandage and grafting-wax. It may be easily understood that the use of the combined grafting-knife will save all delay and



Crown-grafting by inlaying.

uncertainty; and when a little dexterity is acquired in handling it, the operation of inlaying can be performed with great rapidity.

SIDE-GRAFTING BY INLAYING.—This method is not so much employed as the preceding, because veneering, which resembles it very much, is far easier. Branches with knees or curves may be inlaid on a straight stem in the same way as a straight scion is grafted on a bent stem. Thus inlaid, the scion will possess greater firmness than if attached by veneering, especially if the stem of the stock be so rugged as to render the adjustment of the parts difficult.

TREATMENT AFTER INLAYING.—Should the scion be insufficiently secured on the stock, it should be bandaged firmly, using a broad rather than a narrow bandage, as less likely to become too tight. The immediate and continuous employment of a prop or stake, to which the graft is fastened, should not be neglected. Unless they are specially required, the pinching of the young shoots of the graft will accelerate the cohesion of the parts, as thereby a smaller surface is exposed to the action of high winds. In other respects, the treatment will be similar to that which we have directed in the case of ordinary side-grafting. — *C. Ballet.*

(To be continued.)

Durability of Framed Timbers.—The durability of the framed timbers of buildings is very considerable. The trusses of the old part of the roof of the Basilica of St. Paul, at Rome, were framed in 816, and were sound and good in 1844, a space of nearly a thousand years. These trusses are of fir. The timber-work of the external domes of the Church of St. Mark, at Venice, is more than 840 years old, and is still in a good state. And Alberti observes the gates of cypress to the Church of St. Peter, at Rome, to be whole and sound after being up nearly 600 years. The inner roof of the Chapel of St. Nicholas, King's Lynn, Norfolk, is of oak, and was constructed about 500 years ago. Daviller states, as an instance of the durability of fir, that the large dormitory of the Jacobins' Convent, at Paris, had been executed in fir, and lasted 400 years.

HARDY PLANTS IN FLOWER ROUND LONDON.*

(FROM JUNE 20TH TO JUNE 26TH, INCLUSIVE.)

BY OUR OWN REPORTERS.

Achillea aegyptiaca Aconitum Nepellus albus Adenophora dentulata Adlumia cirrhosa Alstrœmeria aurca chilensis Amnobiium alatum Amsonia salicifolia Andromeda decalbata Anemone rivarlaris Antholyza coccinea Aquilegia californica Arenaria Ledebouriana Arum Dracunculus Arundo conspicua Astragalus dasyglossis Baptisia perfoliata Buphthalmum cordifolium Calandrinia umbellata Calliprora lutea Calystegia Sepium vars. Catananula alliarifolia bononiensis carpatia and vars. caucasica celtidifolia cenisia Cymbalaria latifolia patula plena Portenschlag- giana rapunculoides tenella Cecilia turbinata Chamaepsece Cassabone Cistus capitatus lusitanus monspeliensis Colutea arborescens Convolvulus lineatus mauritanicus Coronilla varia Cousum Hystrix	Delphinium amœnum cheilanthum Consolida vars. dyctiocarpum glabellum intermedium palmarifolium revolutum Dracocephalum altateense Epilobium Dodonæi Epipactis palustris Erigeron glauco Eryngium amethystinum Erythrochata palmarifolium Ferula communis tinctoria Gaillardia aristata speciosa Genista anxantica monosperma tinctoria plena Helenium Bolanderi Helianthemum algarvense Heracleum candicans Hypericum Androsænum dubium hirsutum Iberis collina Inula hirta Iris Kœmpferi vars. Lathyrus myrtifolius pratensis pyrenæicus rotundifolius sylvestris Lavandula Spica Ligustrum japonicum ovalifolium vulgare Lilium pendulum pyrenaicum Linaria genistifolia lusitanica tristis Linum canadissimum tauricum Lonicera bauchypoda grata Tomentilla	Lychnis Haageana Sieboldi Lyonia mariana Lysimachia ciliata Nummularia Lythrum flexuosum Salicaria " roseum " superbum Macrorhynchus grandiflorus Malva crispa Mimulus roseus Tilindii Mitchella repens Nierembergia rivarlaris Oenothera macrocarpa riparia venusta Omphalodes linifolia Osmunda regalis Oxalis corniculata atro-purpurea Papaver alpinum spicatum Pentstemon barbatus diffusus Philadelphus Gordonianus grandiflorus Phlox Drummondii vars. Physalis Alkekengi Phyteuma Charnellii Hallenii Phytolacca decandra Poa teretis Primula involuta Munroana Pyrethrum corymbosum perfoliatum autum Parthenium " pl. Pyrola rotundifolia Rhois alendron Luratum Rubus laciniatus Rudbeckia digitata	Santolina Chamaecypa- rissus incana Scabiosa alpina atro-purpurea and vars. caucasica Scutellaria galericulata Sedum acere " pallidiflorum asperum deficiens grandiflorum ochroleucum reflexum sexidum stellatum Sempervivum Deltanum hispidum tectorum Sida incarnata Sidalcea oregana Silaus tenuifolius Silene aculis alba indata petraea Sisyrinchium abyssinicum Spiraea ariaefolia Bellardi kamtschatica Nobleana Ulmara vars. Statice Deltati incana vars. Telephium Imperati Thlasiantha daba Thymus corsicus Tilia europæa Tournefortia heliotropoides Trifolium rubens Tritelea laxa Murrayana Umbellus chrysanthus Veronica caudica corymbosa elegans bozzola vars. Wulfenia Austriaci Zenobia speciosa
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* Plants in this list are almost without exception such as have come into bloom during the past week.

OUR COUNTRY CHURCHYARDS.

Why rural churchyards should invariably have such an uninviting look about them is one of those things which I am unable to understand. If there are any special spots in our parishes where we might expect due regard paid to decency and order, surely they should be our graveyards. I hold, contrary to custom though it be, the practice of making a mound on the top of every grave a mistake, and one of the prime causes of that disorder which is so prevalent in country churchyards. Surely, we would sleep as soundly under the turf of a smooth level lawn as under an uneven surface; and the proper keeping of a flat graveyard would be easy compared with that of an uneven one. Perhaps, however, the entire absence of any system in the laying out of graveyards has not a little to do with their uncouth appearance. Niggardliness in the space set apart for the burial of the dead is one great characteristic of our rural parishes; and thus, space being proscribed, the possibility of making a few nice walks and the planting of a few fitting trees and shrubs becomes a matter of grave doubt, if not of comparative indifference. Of course these are defects that cannot well be

remedied in connection with churchyards already in existence; but where new ones are being established it becomes a question worthy of consideration as to whether a sufficiency of space should not at once be obtained, so as to admit of some effect being produced by laying the ground out in such a manner that the gardenesque, so to speak, is not entirely swallowed up for convenience sake or for the sordid anxiety of making the very utmost of the space allotted for burials. Paths should be first formed, then planting of suitable trees should follow, and these should mainly consist of weeping trees, because the habit of growth they display seems to consort best with the character of the place, without giving that heavy, monotonous, lugubrious appearance that arises where trees of the *Pinus* tribe are wholly used. Flowering trees especially should be planted, such as the coloured thorns, snowy *Mespilus*, double-blossomed cherry, and the almond. Soft colours, or whites, should be selected, but not yellows, such as the laburnum, as that would be out of place. For foliage trees, few are so fitting for planting in a burial-ground, and perhaps so seldom used, as the purple beech, added to which, by way of pleasing contrast, should be the variegated *Acer Negundo*; these being toned down with the weeping ash, birch, elm, and other trees of graceful outline. These, with a few others carefully selected, would afford a pleasing variety. Any shrubs employed should be evergreen, or such as could lend additional charm by early blooming. Variegated hollies, *Aucubas*, *Euonymuses*, &c., interspersed with some rich greens of bays, Portugal laurels, and bushy-growing *Pinuses*, would at all times furnish the bare sward without adding dulness or density.

No one can do justice to such a question as this without taking into consideration that love for flowers about the abodes of the dead that so strongly characterises many of our poorer neighbours. In Roman Catholic countries the laying of floral crosses and immortelles upon the graves of deceased relatives is a practice honoured in the observance. With us, it is slowly, but gradually, acquiring force; there is, however, something almost ludicrous in the appearance of these designs in flowers, lying amidst the long grass, looking, after a warm day, so utterly wretched and woe-begone. Nevertheless, one may perceive, even in this humble attempt at decoration, something of purity in the desire, although the conception is so replete with poverty. If we dispense with mounds, and have merely a level even surface in our churchyards, and if, moreover, they were placed under due superintendence, small flower plots could be made which might be effectively planted, so as to render churchyards pleasant and cheerful, rather than places to be avoided, as being only suggestive of gloom and death. Could anything in the way of decoration of graves be prettier than having their shapes marked out in the green sward by a margin of snow-drops, inside of which might be a small cross of white crocuses? or if a bed be desired, what would be neater for winter and spring than a slightly raised edging of *Sedum glaucum*, a carpet of *S. acre aureum*, and a cross of *Sempervivum metallicum*? In the spring also pretty designs might be worked out by means of various coloured double daisies, white and blue *Violas* and pansies, lilacs, *Aubrietias*, variegated *Arabis*, and many other dwarf hardy plants that are familiar in our spring gardens. In summer, neat dwarf-growing plants that create no violent contrasts should be used; and for centre purposes few plants of modern introduction convey a more fitting conception of melancholy than does the drooping *Amarantus salicifolius*.

Such arrangements as these could not fail to improve the appearance of our rural graveyards. Ofttimes when I walk by my own parish church, and look upon the rough tumble-down fence that encloses its graveyard, when I look upon the long coarse grass, the rugged, uneven surface, the forlorn-looking over-grown trees, and other appearances that denote rather the sluggard's garden than the habitation of departed friends, I feel that our mourning and sorrow, as a rule, begin and end with the closing of the grave. I do not want to see the use of flowers made general in our graveyards because superstition thereto lends its approval; what I desire is to have not less sweet and beautiful our places of eternal rest than our gardens of pleasure. I for one, therefore, earnestly hope that the present disgraceful appearance of too many of our churchyards may soon become a thing of the past.

A. D.

LAW NOTES.

—THOMAS PENFOLD, aged ten, was charged the other day with stealing a bunch of flowers from a garden in the occupation of Mr. Dunkerton, on the Round Hill estate, Leeds. The flowers—pinks—were pulled up by the roots; and prosecutor, who said he had no wish to punish the child, said he suffered great loss from boys committing frequent depredations in his garden. The father of prisoner gave the boy a good character, stating that he was kept at school, but the boys had got a fortnight's holiday

As prosecutor did not press the case, the Bench sentenced prisoner to a day's imprisonment, remarking that stealing growing things from a garden was punishable by six months' hard labour.

—At Marlborough Street, four boys were charged with damaging the geranium plants in Hyde Park. One of the park-gardeners said the flower-beds were much robbed, four dozen plants having been taken in one night. The boys said they only took one flower each, but the constable said at least seven plants had been damaged. The magistrate said the parks were kept up at great expense for the benefit of the public, and such conduct as that of the prisoners was too bad, for if it was allowed there would soon be nothing left. The boys would have to pay twenty shillings or fourteen days each.

—WILLIAM SMITH, an office boy, was lately charged at the Wandsworth police court, with stealing roses from Battersea Park, the property of her Majesty's Commissioner of Works. Mr. Ingram fined him 5s., in addition to the value of the roses.

—AN old man, formerly Lord Byron's gardener at Newstead, and now officiating in that capacity in Golden Square, was brought before the magistrates the other day for killing cats. The case was taken up by the Society for the Prevention of Cruelty to Animals, and the man was sentenced, at Marlborough Street, to a month's imprisonment. He appealed, however, against the conviction, and it was quashed. Some of the papers commented on the matter, and the result was that actions were commenced against two. That against the proprietor of *Fun* was heard in the Court of Queen's Bench last week, and resulted in a verdict for the defendant. The order against the printer of the *Daily Telegraph* was withdrawn. In the course of the evidence it was deposed that the plaintiff began beating at twelve o'clock, and "something moved in the sack in which the cats were put at a quarter to one." The defence set up by the gardener was that he had been a gamekeeper, and adopted this as the quickest method of destroying animals.

OBITUARY.

MARSHAL VAILLANT died on the 4th instant at his residence, Rue de Varennes, Paris, aged eighty-one years. He was born at Dijon, of very poor parents, and it was by his diligence and perseverance that he attained the high position he held. Although he belonged to the official world, and for some time was a prominent member of the Government, he was never what could be called a politician; he was fond of natural history, with which he chiefly occupied himself, but, above all, horticulture. He was for some time president of the Central Society of Horticulture of France, and as such acquitted himself well, nearly always attending its meetings, and often taking part in the discussions. He took much pleasure in the cultivation of plants, of which he has made known many interesting details, revealed to him by experience on his property in the Bois de Vincennes. Notwithstanding his severe mien, he was kind-hearted, simple and ever happy to oblige.

MR. GEORGE LIGHTBODY, of Falkirk, died on the 9th instant. As a raiser and cultivator of auriculas and tulips, Mr. Lightbody obtained a high and well-deserved reputation. The auricula was, however, his speciality—not for a short time, but for nearly fifty years. Richard Headly, named after his old and sincere friend, Mr. Headly, of Cambridge, is probably the best auricula grown. Fairy Queen, Star of Bethlehem, Alma, Robert Traill, Sir Charles Napier, Sir R. Peel, Countess of Dunmore, Fair Flora, Fair Maid, Lord Clyde, and Meteor Flag, all of fine quality, and still grown in our best collections, are also the productions of Mr. Lightbody.

WE also regret to have to announce the decease, on the 14th instant, of Mr. Joseph Saltmarsh, senior partner in the firm of Saltmarsh & Son of the Moulsham Nurseries, Chelmsford.

ANGELS' EYES.

(GERMANDER SPEEDWELL.)

RAMBLING along a bowery lane,
A little child I chanced to meet,
Whose pinafore and hands were full
Of wild flowers—bright and sweet.

Around her hat a wreath was twined
Of blossoms, blue as southern skies;
I asked their name, and she replied,
"We call them Angel's Eyes."

A pretty thought, and one that must
Have been inspired by love—
That angel's eyes look from the earth
As well as from above.

I watched the flower-decked maiden pass,
And, wandering on, I sought
Those starlike flowers among the grass,
Whose name had stirred my thought.

Those blossoms upward seem to glance—
And with that glance pure thoughts arise
From earth toward heaven; led above
By those blue "Angel's Eyes."

—MRS. T. S. JEFFEROLD.

SOCIETIES, EXHIBITIONS, &c.

ROYAL HORTICULTURAL SOCIETY'S GREAT EXHIBITION AT BIRMINGHAM.

(JUNE 25TH TO 29TH.)

It was pleasant to see a great centre of industry like Birmingham proclaiming a general holiday, and putting itself in *costume de fête* to inaugurate a public display of flowers, as it did on this occasion. There was a time, and not a distant one, when it required a sanguinary battle, and the wholesale slaughter of some thousands of our Continental neighbours, to excite such an enthusiastic display of banners. Over the lofty granite pediment of the Town Hall, the Royal Standard flaunted the golden lions of England, the red lion of Scotland, and the harp of Ireland, to the gay buffeting of the summer breeze; and who shall say that one of the town councillors of Radical Birmingham did not rush off by "express" to London, to secure a larger and more splendid banner than ever waved above the great Birmingham hall before? Whether that was so or not, the great flag, thirty feet long by sixteen feet broad, bore itself right royally on the stout flagstaff, and formed a grand festal object from many points of view. Our English colours, whether in the form of the great war banner (our island's "Oriflamme") or in that of the Union Jack, floated from every steeple, either singly or in groups—but more generally half a dozen at a time: they don't do things by halves in Birmingham. The private houses, too, along all the principal streets were clothed in a riotous suit of waving flags, making veritable avenues of rustling bunting, almost as dense as that of the Strand on the memorable Thanksgiving Day. Among the banners none struck us as more characteristic than that hung out by a shoemaker on Snow Hill. "Nothing like leather," said the cobbler—and in that feeling the shoemaker composed his banner of three skins of prime morocco, embodying the colours of the Union Jack—red, white, and blue.

The great provincial shows of the Royal Horticultural Society have proved the most successful step taken by that body for many years; and the great exhibition now over is justly considered the most successful show that has yet been held in the provinces. Flower shows have almost become as common as market days; so plentiful, indeed, that for many of their once enthusiastic admirers they have now lost their charms. But this great yearly show seems to possess an interest and a freshness which is quite lacking in the other shows of the year. The shifting of the ground each year to some great centre of industry, and consequently of gardening, is the main element of success. So far as anything in the shape of public gardens, parks, or squares are concerned, there is probably no city in any highly-civilized part of the world so poor as Birmingham; and considering its wealth there is scarcely one in which there is so little that is remarkable in gardening, so far as private establishments are concerned. Smoke, very dense and disagreeable, may be answerable for some of this; but not all. We hope, therefore, that this noble show of the products of the garden may prove a stimulus to gardening progress in that neighbourhood, as well as a most instructive and agreeable sight to the many thousands of strangers who poured into Birmingham from all parts.

The show, it is scarcely necessary to remark, took place in part of the grounds belonging to Mr. Quilter, whose gardens are the most famous in the district, both for spring and summer bedding plants. Its most remarkable features were the very extensive exhibitions of implements, boilers, &c., the fine series of glasshouses, the numerous exhibitions of dinner-table decorations, the large and varied collections of plants, many of them being admirable examples of high culture; the fruit and vegetables, the numerous graceful young conifers, and other evergreens shown in various parts of the ground, both planted out and in baskets or tubs; and Mr. Quilter's spring flowers and gardens generally; and, last, but not least, the seas of mud which the heavy rains of the past week have left both on tent and lawn.

The exhibition, which was opened by H.R.H. Prince Arthur, last Tuesday at noon, had great advantage in being held on grounds adjoining a very pleasant garden; in fact, we doubt if anything in the show proper struck people so much as the last aspects of beauty presented by Mr. Quilter's spring flowers in a walled inclosure, which, like all the rest of his grounds, was open to those who visited the great show.

TABLE DECORATIONS.

THESE were, according to arrangement, exhibited by gaslight, and the effect on the whole was excellent. It was, however, evident that the simpler the arrangements were the more successful was the result, and that where moss and ferns, notwithstanding the intermingled flowers, covered up too much of the snowy table-cloth, the decorations, which ought only to be supplemental embellishments to a

dinner-table, seemed struggling to occupy the first place instead of the second. This principle, when found, "take note of," as the renowned Captain Cuttle remarked, for it is an important one; and it cannot be too strongly impressed that in decorating a dinner-table we have too much of grasses and ferns and mosses, however elegant they may be. We must not impart to an elegant repast, with its shining silver, snowy linen, costly china, and other indoor appurtenances, a too rustic aspect, and transform it in appearance into a pic-nic on the grass, among real growing mosses and ferns. One of the great principles of decorative art is suiting the form to the purpose; and the second is, the relative proportions of repose and decoration, both of which are sometimes sadly outraged in arrangements of the kind under discussion. But we must begin, *seriatim*, the description of the ten decorated dinner-tables, which had been prepared for competition.

Table No. 1 was decorated by the tasteful hand of Mr. Müller, of Vienna. The central object was a three-tier glass epergne; the saucer from which the main glass stem rose was filled with two graceful kinds of ferns, from among which nestled five or six of the resplendent scarlet flowers of *Cereus speciosissimus*, which have a very rich effect among the green. The tier above was filled with white Fuchsias, which drooped very prettily over the glass rim, and the upper tier was crowned with a circlet of single flowers of a white, mauve-marked *Gloxinia*, from which arose a graceful slender tuft of the ever elegant ribbon grass and a spray or two of the maidenhair fern. The two secondary vases had a vine spray twined round the slender glass stem, and in the tazzas were some fine *Petunias*, heightened in effect by ferns. The dishes of fruit were neatly relieved with a few touches of greenery, and round the table were small vases with button-hole bouquets. This decoration was awarded the fourth prize.

Table No. 2, furnished by Mr. Perkins, of Leamington, struck us as being very pleasing. The tall glass stem of the central vase was left entirely bare, and with good effect. The upper tazza was furnished with drooping *Dicentra*, and branches of red Fuchsia with double white corolla, peeping out of a light crest of ferns, from among which straggled gracefully upwards, a branch of one of the many-flowered yellow *Oncidiums*. At the base, two small plants of the elegant *Areca rubra* sprang from a bed of moss, and then came, alternately, lying luxuriantly among delicate ferns, large water-lily flowers and starry flower-like plants of *Echeveria*, which looked like water lilies of leaves instead of petals. The happy contrast was well conceived, and if the *Echeveria* had not been procurable, an analogous effect might have been produced by a star of the common houseleek. Two dark Damask roses imparted power and richness to this little composition. The two secondary vases were treated in a similar manner in the upper tazza; but in the saucer, instead of the *Echeveria*, fine Bourbon roses lay snugly among the moss and ferns. The other features of the table were not remarkable, but very pretty; especially the small button-hole bouquets. We felt disappointed that this table did not obtain a prize.

Table No. 3 was shown by Mr. H. Vertegans, of Chad Valley, near Birmingham. The centre epergne was of three tiers. The two lower ones, saucer-formed, were filled with various fruits, which were, however, not as artistically arranged as they might have been. Fruits, grouped with taste and judgment, and well contrasted in form and character, are as capable of being formed into pleasing and graceful groups as flowers, as we know full well from the beautiful compositions of the great fruit and flower painters, from Van Haysum to the present hour. The upper tazza had for its principal feature a handsome Tea Rose, which, with brackets of *Spiraea japonica* and light fern fronds, made a handsome crown enough. The minor features of the table were kept entirely green; sprays of graceful plants sprang out of little mossy beds, just scantily starred with a few small flowers. This effect of nearly all green, was cool, fresh, and pretty. But it was overdone; there was too much of moss, and fern, and grass.

Table No. 4.—The floral embellishments of this pretty contribution were devised and manipulated by Mr. Chard, gardener to Sir F. Bathurst. Lightness and elegance had evidently been the chief object in this sample of table decoration. From the upper tazza of the glass epergne rose the feathery ramifications of grass flowers, of the lightest and most fairy-like kind, mixed with a spray or two of meadow sweet, and from the centre rose a couple of spikes of the common crimson cornflag; quaking grass trembled in the vases of the side branches, mixed with a few flowers of the delicate *Deutzia gracilis*. The small button-hole bouquets in small vases at the place of each supposed guest, consisted simply of various kinds of half-expanded roses, accompanied by a scrap of fern or some other pretty leaf.

Table No. 5.—Miss A. Hassard.—The central object was not, in this composition, a tall glass vase with flowers and ferns, but a single complete plant—very pretty and palm-like, with drooping leaves, probably *Areca Verschaffeltii*. It sprang from a large glass saucer, in which were ferns and water lilies. The two secondary objects were glass tazzas, raised on slender twisted stems. The tazzas contained grasses and a few well selected flowers. Between them and the central object were two pretty blade-leaved plants, which appeared to have grown through the table-cloth. They were fixed to it in some artificial manner—they did not, however, seem to be wanted there—their *raison d'être* was not sufficiently apparent.

Table No. 6.—Decorated by Miss E. Blair, of Upper Bedford Place, Russell Square, London.—The central epergne in this was formed of five curved and slightly divergent trumpet-shaped vases. These contained

only delicate flowers, grasses, and ferns. In the saucer forming the base, were some well-disposed fronds of the finer variegated ferns, between which were water lilies. The most distinctive feature of this decoration consisted of two pretty statuettes in Carara marble. They were reclining figures, the one a miniature of Bailey's well-known "Eve at the Fountain;" the other, a group of two figures in a corresponding position. Had these been standing inside of reclining figures, they would have been less effective, their slight elevation forming a far better contrast to the tall vases. The figures were brought gently into the floral composition by making them repose upon couches of delicate fern, starred with a few small white blossoms and by a few graceful sprays, which, as they swayed over them, added to their beauty by contrasting with the pale cream-coloured material of which they were composed, yet so sparingly as not to break or conceal a single important outline. This pretty sample of table-dressing received the second prize.

Table 7.—Dressed by Mr. H. Cole, of Birchfield, near Birmingham.—In this there was a tall central glass vase, filled with choice blooms of Pelargoniums, mingling very prettily with a plume of feathery grasses; depending from the upper tazza was a long spray of dark and richly variegated leaves, which ought to have had a graceful effect, but somehow it was rather a blemish than a beauty in the composition. Water lilies and Cactus flowers enriched the moss and ferns of the saucer; the side pieces had maidenhair fern mixed with delicate sprays of variegated leaves, but no flowers. The effect was chaste and pretty. This table received the third prize.

Table No. 8, furnished by Mr. D. Cole, of Birmingham, was distinct in character from all the others, in consequence of the different style of the central epergne, and the supports of all the other vases, large and small. These vases, of elegant Grecian design, very severe and chaste in character, were the design and manufacture of Messrs. Moursels Brothers & Wood, of Birmingham. There was no foliated embossings about these elegant vase supports, which would have clashed more or less with the real foliage. All was angular, slight (not over slight), and exceedingly tasteful. The whole set was designed, *en suite*, very cleverly, the style being perfectly preserved in every feature of the supports of the little button-hole vases. The basis of the design in all the pieces was principally founded, in its details, on the Greek "key pattern;" and the connecting lines were graceful and appropriate. The floral part of the decoration was sufficiently good to show off to advantage this pretty decorative service of plated ware, but does not call for further comment.

Table No. 9 was furnished by Mr. J. Cypher, of Queen's Road, Cheltenham. It was quite *sui generis*. Instead of aiming at graceful effects in the way of careless grouping, and seeking symmetry rather through well-balanced irregularities than by means of positive repetitions of parts both in form and colour, Mr. Cypher had rushed into the bedding system, and given us charming floral pincushions, instead of deliciously careless natural combinations. He had, however, done his work so well, that, at the first glance, one was compelled to admit that the effect was chaste, neat, and pleasing in a high degree, though founded upon the most unartistic kind of formalism. The base of the epergne was a mirror in which the bordering of maidenhair fern and a few flowers were reflected as in water. In the first tazza above the base we had—first, a regular circle of neat scarlet flowers; then a regular uninterrupted circle of beautiful white flowers, within which was again another circle, consisting of deep crimson ones; this triple and somewhat formal circle being lightened and relieved by sprays of *Spiraea japonica* and feather grass, which certainly modified the formalism very pleasingly. The second tier tazza contained an external circle of a light pink Erica, then one of deep damask roses, and then one of white roses. This was very pincushiony, and yet very neat and pretty. The upper tazza was filled with the delicate white-stemmed flowers of the ever-attractive *Spiraea japonica*, relieved with a single band of scarlet Pelargoniums. The two side vases were furnished in an entirely analogous manner—equally formal and unartistic, but equally neat and attractive; and the selection of colours was sweetly harmonious and reposeful. The smaller floral features of the table were, perforce, much more free in character. To this table was awarded the first prize, and perhaps justly so.

The 10th set of table decorations was arranged and exhibited by Mr. C. H. Harrison. The centre ornament consisted of a tall glass vase, somewhat too lumpy in character, mounted on a silver stand; in it were arranged Pelargoniums and Fuchsias, lightened by well-disposed grasses. At the sides were growing plants in pots; the pots concealed in pretty chip encasements. The only original feature consisted in low trough trays, in neat shapes, prettily filled round the edges with flowers of compact form and growth.

On the whole, the ten table displays were very pretty, and showed a growing love of flowers as graceful accompaniments to the more material and necessary features of our repasts. This taste has doubtless a refining influence, and ought to be carefully and sedulously cultivated for that, if for no other reason; but while glancing at the *morale* of the case, we should be careful, in the interests of our artistic perceptions, which are among the more delicate of our mental gifts, not to overdo floral decoration, and so create a vulgar taste for profusion instead of that more refined artistic instinct, which naturally seeks for and appreciates the delicate proportions and symmetry of art rather than lavish profusion, even if the lavishness be stamped by the genius of a Rubens.

In the luncheon tent, the tables were very gracefully decorated with cut flowers, and small, elegant plants, including palms and Dracænas. Miss Blair won the first prize with a few very simple

materials charmingly arranged. She used no plants whatever, and her cut flowers consisted of water lilies, Eucharis, a branchlet of *Passiflora princeps*, a small semi-double white pæony, and a few flowers of scarlet pelargoniums. These few flowers, gracefully seated in a few well-placed ordinary ferns and common hedgerow grasses, produced a most charming effect. Some might think that the result was marked by poverty; but few could deny the great taste shown in several of the vases on the Prince's table, of which the plate, &c., was by Elkington & Co., of Birmingham and London.

DRAWING-ROOM DECORATIONS AND BOUQUETS.

The arrangement of flowers in drawing-room vases was not abundantly illustrated on this occasion, but there were, nevertheless, several very charming examples exhibited.

Mr. R. S. Yates, of Sale, Cheshire, furnished a glass tazza of very choice flowers, which no arrangement or mis-arrangement could spoil. In fact, the glass tazza and the silver epergne which supported it, combined with the rare beauty of the flowers, among which were several of the grandest orchids, was, perhaps, one of the finest things in the exhibition, as a group of noble flowers; but the arrangement presented no feature of novelty, and scarcely the average amount of taste; and, therefore, in the light of drawing-room decoration, it could not of course be deemed worthy of high praise; though the fronds of a grand *Adiantum* drooped so grandly round the bouquet of noble flowers that they made beauty by the sheer force of their irresistible grace.

Mr. S. Evans, gardener to C. N. Newdegate, Esq., had a graceful three-tier composition of flowers for the drawing-room. The lower part of the central glass column was gracefully enough enriched with a spray of orchid flowers; and the summit, at the upper tier, was formed of a delicate plume of grass-bloom—a little *Aira* quivering at the slightest breath; but, on the whole, the composition was not entirely successful.

The most exquisite thing of the show in this department was, however, the charming composition of Miss A. Hassard. The three-horned glass epergne which that lady employed was very graceful in itself, but it was the floral dressing, the fascinating millinery of flowers, that clothed it with its truest graces. In the saucer at the base there were only three simple water lilies; but they were placed with a *finesse* of taste that showed the hand of the true artist, their green surroundings being equally graceful. In the trumpet mouths of the three glass horns there were simply half-a-dozen blue corn flowers (*Centaurea Cyanus*), the dazzling azure of which was subdued and rendered more charming by two or three white sweet peas, just as the too dazzling summer sky is sometimes delicately obscured by great white fleecy clouds. These simple flowers, the same in each of the horns of glass, were modestly harboured among a few delicate fronds of maidenhair fern; while a delicate plume of quivering grass-bloom, mingled with white *Rhodantha*, was the elegant crown of this composition; beautiful in form, colour, disposition, and "simplicity;" it deservedly carried off the first prize.

Mrs. Hassard had a beautiful piece of drawing-room flower-grouping, which was barely superior to that of Miss Blair, but a few final touches of excellent import secured the favour of the judges, who placed it just in front of Miss Blair's pretty group, assigning to it the second prize. In the saucer, gracefully fern-framed, crimson Cacti alternated with white water lilies, and the plume of feathering grasses in the vase above, figured very effectively; and blending very felicitously with the delicate grasses were a few sprays of white *Rhodantha*.

Miss E. Blair exhibited a graceful trumpet-shaped vase and bouquets springing from a saucer, in which the only flowers were white lilies, jauntily disposed among ferns and mosses; the flowers in the mouth of the vase being as sparingly introduced as in the saucer below. The merit consisted not in the rarity or variety of the flowers, but in their consummately graceful disposition. This tasteful floral structure was rewarded well with the third prize in this section of the show.

Mr. T. Wotton, gardener, Wirkworth Hall, had a fine low drawing-room bouquet of very choice flowers, but it was somewhat too compactly arranged; and the same may be said of a good epergne of flowers contributed by Mr. Fowkes, gardener to Mr. Humphries, of Kidderminster; and Mr. Chard had a graceful bouquet vase, which was a very bevy of exquisite roses exceedingly well arranged.

One of the finest examples of hand-bouquets was contributed by Messrs. Pope, of King's Norton; and there were fine bouquets of this kind shown by the Messrs. Fellows, of Birmingham. Some rather smaller ones were sent by Mr. Yates, of Sale, one of which, with a grand purple-marked *Lælia* as a central object, was very beautiful. There were others sent by Mr. Turner, of Liverpool, which were worthy of admiration; one of them had a charming half open rosebud for its centre, and the rest of the mass was lightened by sprays of white *Spiraea*, and sweetly straggling bits of *Oncidium*; the edge being strikingly relieved by half-showing points of dark, richly variegated leaves. Miss E. Turner sent an equally charming bouquet.

BUTTON-HOLE BOUQUETS.

Of these, there was a very extensive little show; the general defect in these miniatures is, that in the effort to make them so very attractive, they are often made too big. Nothing is so successful as a single flower, when the single flower is good enough; for instance, a choice orchid with a tiny spray of maidenhair fern. They should be gems, mounted in fairy flagræ, a diamond, a sapphire, a ruby,

an opal, any of them may be fair or even surpassed among our flowers. But, although strongly advocating a single flower as a buttonhole bouquet, there were yet some very charming combinations, scores of them indeed sent in from many quarters. We will, however, only mention one—it was formed of three small double white pinks, with forget-me-nots between—a real jewel formed of floral pearls and torques, nestling within a miniature spray of a lovely fern.

STOVE AND GREENHOUSE PLANTS.

PASSING to Stove and Greenhouse Plants, as a matter of course, we might say that Mr. Baines held the place of honour, and though some of his plants have been mentioned before, there were some which may be named again with advantage. First among these were the noble *Sarracenias*, all grand plants, which impart a new character to collections. *Dipladenias* were also good, and we were glad to see once more a finely bloomed plant of *D. splendens*. *Phenocomas* were well grown and finely coloured; and the same may be said of the *Ixoras*. *Statice profusa* and *Allamanda nobilis* made a fine contrast. *Hedera tulipifera* was finely bloomed, and the same may be said of *Dracophyllum gracile*, a sheet of white bloom. Opposite these was a smaller group from Mrs. Cole & Son, of Manchester, among which *Ixora Colei* was especially conspicuous, and fully maintained the character it had already earned; backing this was a fine fresh plant of *Azalea Extranii*, a complete mass of bloom.

In the group of smaller plants, Mrs. Cole & Son had some nice fresh specimens well grown. In Messrs. Jackson's group we noted *Dracophyllum gracile*, some very nice *Heaths*, and one or two old friends, such as *Clerodendron Kämpferi*, and *Rondeletia speciosa* major. Messrs. Jackson had also a fine *Pimelea spectabilis*, a glorious *Erica Douglasii*, and some other very fine *Heaths*. Messrs. Bell & Thorpe had nice, well-grown *Statice* and *Allamandas*; *Eucharis amazonica* was well shown in one or two groups, notably a specimen from Mr. Coysh; *Clerodendron Balfourianum* was well shown, a dense mass of bloom, by Mr. Chapman; and the same exhibitor had *Ixora amboynensis*, finely coloured. The dwarf variety of *Sobralia macrantha*, shown in fine condition by Mr. J. Webb, of Stoke, near Coventry, every shoot having a spike of bloom, was a good example of high-class cultivation. The same exhibitor had a fine, clean, fresh plant of *Stephanotis floribunda*. Another plant, which took strangers captive, was *Mussaenda frondosa*, with its sheets of white bracts, studded with small yellow stars; though an old plant, this is the finest specimen we have seen, and was shown by Mr. Shuttleworth. Of *Heaths*, Messrs. Jackson, of Kingston, had fine plants as usual. Mr. Baines had fine plants of *Heaths* also, and won the first prize in the amateurs' class; among them we noted a promising young specimen of the true *Erica obtata*, and fine specimens of other good kinds.

Mr. B. S. Williams showed a number of noble palms, with which he deservedly took a first prize.

Miscellaneous collections contained objects of great interest; foremost amongst which may be mentioned a group from Messrs. Veitch & Son, of Chelsea. This comprised *Dioscorea retusa*, trained on an umbrella-shaped trellis; three plants of *Dioffenbachia Bausei*; various examples of the newer kinds of *Dracenas*, such as *D. magnifica*, a deep copper-coloured kind; *D. Chelsonii*, possessing a rich dark metallic lustre, bordered with red; *D. Weismanni*, a graceful kind, with narrower foliage than the former; and *D. amabilis*, something after the form of *D. Guilfoylia*, but much finer. There were also *D. Youngii*, a greenish copper-coloured plant; and *D. MacLeayi*, pendent in habit, and very dark in colour. Of *Crotons* there were also several very fine kinds. In this group, too, there were a few excellent seedling *Gloxinias*, whose richly coloured large flowers were much admired. There were also several *Nepenthes*, bearing pitchers of great size and beauty; some handsome palms and ferns; amongst the latter may be mentioned *Lomaria zamiaefolia*, a rare kind from Monte Video, with large foliage densely covered with brown hair. Particularly noteworthy, too, was the pretty little *Paullinia thaliectrifolia*, with its beautiful *Adiantum*-like foliage. Many pretty fine-foliaged plants, such as *Bertolonias*, *Sonorilas*, *Dichorizandras*, and *Fittonias* also found a place in this valuable group. Mr. B. S. Williams, of the Paradise Nurseries, Upper Holloway, contributed some pretty little ferns, such as *Gymnogramma grandiceps*, a nicely crested golden kind; *G. Wotenhalliana*, a dwarf silver kind; *Pteris tricolor*, a fern of which we see too little; and many others, besides a few good filmy ferns; this collection also contained palms, *Zamias*, *Anthuriums*, and succulents. A fine collection of *Ixias* and other ornamental Cape bulbs was shown by Messrs. Barr & Sugden from their experimental grounds at Tooting, where they inform us they have beds of these, as well as of *Tritonias*, *Babianias*, and *Sparaxises*, which they annually plant early in spring in light

soil at a depth of four or five inches or so, and which thus treated thrive and bloom admirably. If planted in September, October, or November they will not do so well, unless they are rather carefully protected. Messrs. James Carter & Co. had a very extensive stand devoted to seeds, plants, &c., in which were beautiful fern stands and drawing-room ornaments.

ORCHIDS.

ALTHOUGH, as a whole, orchids were fairly shown, they were not so numerous as might have been expected. Most of them consisted of well-known species, yet amongst them were some rare and particularly interesting subjects. Of these we may mention the lovely *Masdevallias*, of which two species, viz., *M. Veitchii* and *Harryana*, were exhibited by Messrs. Veitch in finer condition than we remember to have seen them. Another very interesting orchid was a hardy *Cypripedium*, named *C. Irapeanum*, from Messrs. Backhouse & Son, of York. This beautiful plant is about fourteen inches high, the leaves being woolly, and of a light green colour; the flowers are yellow, slightly tinged with reddish purple in the centre, and very large and handsome. Single specimen orchids were scarcely what might have been expected, for amongst some of the collections were superior plants to those exhibited in this class. There was a particularly well-bloomed plant of *Phalænopsis grandiflora*, and fine examples of *Saccolabium guttatum* and *Dendrochilum filiforme*. In the nurserymen's class for six exotic orchids, were a few magnificent plants, such as *Saccolabium præmorsum*, with five fine flower spikes, and good specimens of different *Aërides*, and *Cypripediums*. Here, again, we noticed that grand specimen of *Saccolabium guttatum* *Holdfordianum* that we have so often seen at the London shows. Besides this fine specimen, Mr. Williams contributed several others, amongst which was a very purely coloured variety of *Lælia purpurata*, and a nice healthy plant of *Aërides Larpentæ*, which, though not at its best as regards expanded flowers, promised, in a week or two, to be wonderfully fine. The collection of nine exotic orchids (furnished by Mr. J. Hodges, Gravelly Hill) contained a very fine specimen of *Epidendrum vitellinum majus*, whose lovely orange-red flower spikes, of which there were five on one plant, contrasted admirably with others in this collection, in which was likewise a good plant of the wax-like flowered *Cypripedium villosum*, one of the most showy and about as free flowering a kind as any in its class. In the collection of Messrs. Rollisson & Sons, of Tooting, was a fine plant of *Dendrobium clavatum*, and one of *D. Dalhousianum*. Amongst a splendid collection of miscellaneous plants exhibited by Messrs. Veitch & Son were several fine examples of orchids, such as *Trichopilia lepidota*, a rather new and beautiful kind, with a deep rose throat; *Epidendrum Pseud-epidendrum*, a curious species with green sepals, but with a rose-coloured lip; *Cynoches graciosum*, with curious, minutely spotted blooms of a brownish lilac, or mauve colour; and a grand example of *Dendrobium Bensoniæ*, with lovely white blooms. Besides these was a plant of *Epidendrum piliferum*, more curious than beautiful, and one of the pretty lilac coloured *Thunia Bensoniæ*. Amongst a grand collection from Mr. B. S. Williams were several fine orchids, such as *Aërides crispum*, *Cattleya Warnerii*, and *C. lobata*, with very large flowers. Mr. Williams also exhibited as new orchids *Aërides Ellisii*, a kind producing fine spikes thickly set with large deeply coloured flowers; and *Lissochilus Krebsii*, a nice yellow-flowering kind, producing very tall flower spikes. Cut flowers of orchids were plentifully used both in trusses of cut-blooms of stove and greenhouse plants, and in the formation of bouquets and table ornaments.

NEW PLANTS.

As a whole this class did not contain as much novelty or merit as we should have expected, though Messrs. Veitch had a fine collection of their best new plants; among the most remarkable novelties was a fine plant of *Tacsonia exoniensis*, from Mr. Veitch, of Exeter. It is a very beautiful cool greenhouse climber; a most distinct cross, effected by Mr. Robert Veitch, between the splendid *Tacsonia Van Volxemi* and *T. mollissima*. The tube is at least two and a half to three inches long, and the flower a beautiful light magenta, with a purple ring in the centre. *Nertera depressa*, a beautiful minute New Zealand plant, about one inch in height, hardy, or very nearly so, was shown by Mr. E. Holmes, of Lichfield. It was covered with orange-coloured berries, densely produced among the small leaves, like miniature oranges. It will prove a beautiful cool greenhouse or cold frame plant, and may prove hardy in mild districts near the sea. The finest new plant of the show, however, was a noble Mexican yellow Lady's Slipper (*Cypripedium Irapeanum*). This, however, did not seem to have been noticed by the judges on the first day. A beautiful new plant, too, is *Anætochilus Ortgiesianus*, from New Granada. Mr. Maw's fine introduction, *Iris tingitana*,

was also shown in flower. Messrs. Backhouse showed *Iberis Pruiti*, a good rock plant. Some beautiful *Athyriums* are also well worthy of notice among new hardy ferns, and there were many new varieties in this popular class. The finest hardy alpine plant, however, was Mr. George Maw's fine *Saxifraga florulenta*, spoken of elsewhere. The new bronze tricolor *Pelargoniums*, shown by Messrs. Downie, Laird, & Laing, were remarkably beautiful and good. The best were Prince Arthur, Climax, and Mrs. E. A. Pollard. A collection of the same plants also received a first prize, and included a remarkably fine variety called W. E. Gumbleton, and various others distinct and beautiful. Mr. C. Perry's new *Verbenas* were well worthy of admiration. Prince Arthur, a first-rate zonal *Pelargonium*, was shown by Mr. Turner, of Slough, and Mr. Laing seemed to us to be one of the finest, if not the finest, of silver tricolors. Among new hardy variegated trees, was the variegated Weeping *Sophora*, a gracefully-growing pretty variety. Lilies, after a long period of neglect, are at last coming into favour in a way that their most enthusiastic admirers would not have dreamt of ten years ago. Not only are people beginning to seek out and grow the best old kinds, but new species and varieties are being introduced every day. The representatives of the family here were well deserving of special notice. G. F. Wilson, Esq., of Weybridge, Surrey, exhibited the finest specimens of *Lilium Brownii* we ever saw. Mr. Wilson also showed a species of lily from America allied to *L. superbum*: it has, however, the petals more rolled back than those of that species; the upper half of the petals is of a rich crimson; the lower half rich yellow freely spotted with dark brown. The plant is of a free majestic habit, and grows vigorously in Mr. Wilson's garden. This species was found by Mr. Robinson near Moore's Flat, in the Sierra Nevada, California, in one of the beautifully wooded ravines that occur so frequently there. It grew on the banks of a small rivulet which trickled along the bottom, associated with herbaceous *Aralias* in a position rather densely shaded by large trees of *Arbutus*, fine large-leaved evergreen oaks, and giant *Thujas*. Another beautiful one shown by Mr. Wilson is *L. umbellatum citrinum*, of a rich orange apricot colour, and perfectly free from spots. The name is probably not correct: it is no doubt a variety of *L. Thunbergianum*; Messrs. Barr & Sugden, of London, showed *L. Thunbergianum aureum nigrum maculatum*, a rich soft orange apricot, the lower half of the petals freely covered with black spots. This variety varies much in colour. Various other interesting lilies came from the same house, as, for example, *L. umbellatum punctatum*, a rich orange, shading off towards the point of the petals to crimson and freely marked with black spots. Mr. Ware, of Tottenham, showed in excellent condition that fine old-fashioned lily, *L. croceum umbellatum maculatum*, in colour crimson, shading off to yellow, and free from spots, and various other striking varieties.

PELARGONIUMS.

THESE were numerously furnished, both in the form of specimens and small plants. Both show and fancy kinds seemed to have been grown more naturally than hitherto; but in point of size and profusion of bloom, they scarcely equalled the specimens seen about London. Amongst the smaller plants in this class, however, were some possessing great merit, the blooms being well formed and superbly coloured. Amongst those from Mr. Turner, of Slough, we noticed grand plants of *Sultana*, *Achievement*, *Pompey*, *Brigand*, and others. New tricolor, bronze, and zonal varieties were numerously shown, but owing to the great resemblance which they bear to kinds already in existence, it is difficult to distinguish in what their novelty consists. A brilliantly coloured tricolor, named *Gem of Tricolors*, was shown by Mr. Kimberley, of Stoke. The following new bronze kinds of considerable merit were also shown, viz.: *Climax*, *Prince Arthur*, *F. D. Quilter*, *W. E. Gumbleton*, and others. Specimens of zonal *Pelargoniums*, both single and double, were tolerably good; but with regard to the double ones especially, we expected to have seen better flowered plants. From silver and other variegated foliaged sorts, all flowers had been removed.

ROSES.

ROSES, contrary to expectation, were shown in good condition, although not in the best phase of their beauty. The most successful exhibitors were, among the nurserymen, Mr. Cant, of Colchester; Mr. George Paul, of Cheshunt; and Mr. Charles Turner, of Slough. Mr. Cranston, of Hereford, was too late in making his entry, but brought a fine collection of flowers, which were shown with the intimation that they were "not for competition;" and, among amateurs, Mr. Evans, gardener to C. N. Newdegate, Esq., took precedence—doing honour to his county with excellent collections of roses; closely followed by Messrs. Laxton, Perry, and others. Mr. George Paul exhibited a charming collection of roses in pots, just such as amateurs may grow and ought to grow, with some half-dozen healthful beautiful roses on each. The

best of these were the Baroness Rothschild, *La France*, *Beauty of Waltham*, *Monsieur Noman*, *Xavier Olibo*, *Caroline de Sansall*, *Centifolia Rosea*, *Louis Van Houtte*, *Edouard Morren*, *John Hopper*, *Mdlle. Thérèse Levet*. It is too early for new roses, but we admired "Annie Laxton," raised by Mr. Laxton, of Stamford, a compact, well formed and pleasing kind.

CONIFERS.

ONE of the most graceful features of the show was a great number of handsome young conifers and other evergreens. Some of these were shown for prizes by such famous growers as Mr. W. Barron, Mr. J. Standish, and a local grower, Mr. Vertegans, of Edgbaston, (who had many excellent specimens); among others (not shown for competition) was a beautiful collection shown under canvas by Mr. Smith, of Worcester. This was worthy of the famous nurseries whence it came. Specimens of *Hedera Rægnieriana* in the form of compact but not too low or formal bushes, were among the most distinguished (as a Frenchman would say) evergreens we have ever seen. There was also a good specimen of the capital evergreen oak (*Quercus austriaca sempervirens*). Among variegated privets in Mr. Smith's collection, was the new and excellent variegated form of *Ligustrum ovalifolium*. Here also among many other objects of interest which want of space prevents us from enumerating, was a very interesting collection of rare and curious oaks in a small state. Messrs. F. & A. Dickson, of Chester, also contributed a good collection of evergreens, but not for competition; as did also Mr. Vertegans. In addition to those in the tents, various parts of the grounds were liberally embellished with handsome young conifers from the Royal Nurseries at Ascot.

Amongst the newer and more striking coniferous plants, we observed the following as being specially worthy of notice: in Mr. Standish's (of Ascot) collection, the *Abies obovata*, from the Altai Mountains, stood out prominently; it is quite hardy, and certainly one of the finest of the newer *Abies*. The *Retinospora obtusa alba* and *R. pisifera plumosa variegata* seem useful and interesting varieties, as is also the *R. obtusa viridis*, which is a charming green variety. Messrs. Barron & Sons, of Borrowash Nurseries, Derby, exhibited some really important new kinds, amongst which the *Abies Engelmannii candidissima*, a beautiful compact-growing glaucous species from the Rocky Mountains, at once arrested attention; as did *Abies Tsuga nana*, from Japan, both seedlings raised by Messrs. Barron & Sons. The *Taxus baccata Barronii* was also a great acquisition amongst hardy variegated plants; this variety appeared to grow more vigorously than the old Golden Yew, which Messrs. Barron & Sons use extensively as a permanent bedding edging or line. The *Arthrotaxus taxifolia*, *A. selaginoides*, and *A. cupressoides*, all natives of Tasmania, were worthy of notice. Mr. Fowler, gardener to the Earl of Stair, at Castle Kennedy, exhibited young plants of a remarkably fine white seedling *Abies Douglasii*, which he has named *Abies Douglasii Stairii*. The foliage of this, as winter approaches, gradually changes to green. All the young growths burst forth nearly white the following spring, and about midsummer gradually change to a rich delicate cream colour. This tree is said to have a good constitution, growing nearly as fast as the common species. If so, it is destined to supply a much felt want amongst coniferous trees, and lighten up many a landscape. In Mr. Barron's collection was a fine specimen of the elegant *Abies Alcockiana*. It is likely to prove a freer grower than the hemlock spruce. A fine golden variegated *Pinus insignis* was also exhibited by the same firm; the variegation is not very strongly marked, but extends regularly through the plant.

SUCCULENTS.

UNTIL very recently it was rare to find at flower shows anything like a collection of these interesting plants. Now, however, through the influence of Mr. Peacock, of Hammersmith and others, such plants are often seen. The fine collection of them furnished by Mr. Peacock on this occasion was one of the most noticeable features of the exhibition, for in them thousands of Birmingham people witnessed a strange sight. Many would not even believe that they were in reality living plants, but considered them to be of artificial manufacture; and this supposition seemed to be strengthened by the very odd appearance which some of the grafted plants presented. The mystery connected with these plants was also heightened by the cuts severing the head, as it were, in some cases from the stock, making it appear to be next to impossible for one plant to live upon another when so circumstanced. In this famous collection, *Mammillaria nivea*, *lanifera*, *bicolor*, *cristata*, and *Parkinsonii* were particularly fine, as were also some nice plants of the "Old Man Cactus," *Pilocereus*. Of *Agaves* there are now several very beautiful small species, as might have been seen in this collection, or amongst the miscellaneous collection of plants shown by Messrs. Veitch and Williams. The fine

collection of succulents supplied by Mr. Ware, of Tottenham, and Messrs. Bell & Thorpe clearly illustrate what they are doing for us in the form of flower-garden decoration.

HERBACEOUS AND ALPINE PLANTS.

HERE for the first time herbaceous and alpine plants were shown in a manner worthy of their beauty and interest. Mr. Maw's collection alone would have made an exhibition of itself, so rare and valuable were many of the plants which it contained. We would particularly instance his superb *Saxifraga florulenta*, the greatest novelty among alpine and herbaceous plants at the exhibition. Most of the exhibitors in these classes deserve credit for the great improvement shown in their collections. The plants, however, were exhibited in the open air, and in consequence were very much disfigured by the heavy rains of Monday and Tuesday. Cut blooms of herbaceous plants were exhibited in beautiful order by Mr. Ware, of Tottenham; Mr. F. Perkins, of Leamington; and Messrs. E. J. Perkins, of Leamington; by Mr. John Jennings, Shipston-on-Stour; by Mr. George Maw, Benthall Hall, Broseley; and by Mr. Lakin, Chipping Norton. Messrs. Rollisson, of Tooting, showed the best grown collection of herbaceous plants. Mr. Ware's hardy variegated plants were also very fine, and those sent by the new exhibitors, Messrs. Bell & Thorpe, of Stratford-on-Avon, were excellent. One is glad to welcome any new exhibitors in these classes, and Messrs. E. J. Perkins, of Leamington, showed a remarkably well-grown group of alpine flowers, quite fresh and full of brilliance. We were greatly surprised at the many fine collections of alpine flowers attracted here by the trifling prizes offered for such things, and have no doubt that ere long some of the most brilliant ornaments of our shows will be of this class. Mr. Peter Grieve had also his famous bronze ivy-leaved *Pelargonium* on the ground.

FRUIT.

THE fruit show was not first-rate. Pines and peaches were fine; grapes, with a few noble exceptions, were hardly up to the usual standard of excellence, either in size or colour. Only two collections of twelve dishes each were shown, the fruits in each collection being alike—two pines, twelve grapes, two peaches, two nectarines, two strawberries, and two melons. The Hamburgs in both collections were rather red, and neither the Foster's Seedling nor Muscats were ripe. In Mr. Mills' (gardener to Lord Carrington) collection, the melons (Royal Ascot and another), and the peaches, *Violette Hative* and Barrington, the Murray and Elruge nectarines, and the pines, were noteworthy.

There was an excellent display in the class for three pines—eight or nine exhibitors contesting for the honour; Black Prince, and the Queen, being the most worthy of the same. The competition in single pines was not so keen, the same varieties again contending for the award. Mr. Smith and Mr. Cox had some of the best fruit in these classes, and Mr. Ward and others staged good fruit. For the best single dish of Black Grapes there was a spirited competition among twelve or more growers. Black Prince was the most perfect grape shown, in bunch, berry, and finish. There were some good Hamburgs, but those that were largest were rather deficient in colour, and the black ones were not distinguished by their size. In the best basket of twelve pounds there were several competitors, and two or three very fine lots exhibited, the most distinguished being a basket of Muscats shown by Mr. Smith (gardener to Mr. Blinkhorn, St. Helen's, Lancashire), who also showed a magnificent single dish of the same variety. There were over a dozen dishes of white grapes shown, but none of the Muscats were ripe, except the one dish noted, and perhaps next to these a dish of Muscadines, well ripened. Three bunches of Golden Champion were shown by Mr. Bannerman (gardener to Lord Bagot)—the berries were fine, but the fruits were hardly ripe, yet the spot which often ruins this promising grape was developing itself. A very fine basket of black grapes was shown by Mr. Broadbridge, of Warwick, and another, extremely well coloured, by Mr. Rawbone (gardener to the Earl of Shrewsbury, at Alton Towers). There was a fine display of peaches, by over two dozen competitors, and more than half the number seemed to deserve prizes. Nectarines were not shown in such numbers, neither were they quite equal in quality, though a few dishes were fine. Cherries were scantily represented, and did not seem to have any special merit. The pouring rains we have had also seems to have left their stains on the strawberries, which were not distinguished by either colour or size. Melons were a large and uneven lot, and we never remember noticing such disparity in size, condition, and doubtless quality, among them; a great many of them very old. The best-looking fruit among them being the Ruddington Seedling, shown by Mr. Mitchell, a sort wonderfully like a medium-sized well-formed Queen Emma. It has been a rather trying season thus far for melons, and doubtless this fruit will

appear in finer flavour at the autumn shows. For pot vines Messrs. Lane, of Berkhamstead, seemed the only exhibitors, showing a Hamburg and a Foster's Seedling, laden with crops extraordinary for pot vines.

VEGETABLES.

THE show of vegetables was one of the most interesting features of the exhibition, and was on the whole very good. There were six competitors in the class for thirty pods of Mr. Laxton's new pea, Superlative. It is certainly a large pea, of a fine green colour—that is the pod—we cannot speak to its quality. The pods swell out very fast, so much so that the peas rattle within, failing to swell fast. It however, proved an interesting exhibition, and will, doubtless, develop into a valuable pea. For the collection of vegetables confined to gentlemen's gardeners of Warwickshire, Worcestershire, and Staffordshire—three prizes, amounting to £10, offered by the proprietors of the *Midland Counties Herald*—there was not much competition. The most interesting feature of the show, was the class of fifteen dishes of vegetables; this called forth a spirited competition, and a noble exhibition; eight entered the lists, and three or four lots ran a neck-and-neck race for first place. The competition in the class for the best six peas, inclusive of McLean's Best of All, was interesting and good, Mr. Cox holding a pre-eminent position in this class. Mr. Sutton's prizes for the best three cucumbers, to include the Marquis of Lorne, brought forth a fine display, no less than eleven or twelve showing three brace each, some of these remarkably fine. Blue Gown, Hamilton's Invincible, and the Marquis of Lorne being among the finest specimens. In the single brace class the Marquis also came well to the front, and some remarkably clean specimens labelled "as grown in France," appeared as if the climate agreed with them. The Messrs. Carter's challenge cup of the value of £52. 10s. seemed to have frightened gardeners, for only two competitors put in an appearance for it, viz., Mr. Gross, gardener to G. B. Lonsdale, Esq., Peak House, Devon; and Mr. Lumsden, Bloxham Hall, Lincoln. The peas in the latter exhibitor's collection were especially fine. Potatoes we were glad to see looking clean and free from disease, though they were somewhat smaller than usual, especially the round ones. Some very fine tomatoes were exhibited, and this quite added a brightness to this department of the show.

HOTHOUSES.

OF these there was a most interesting exhibition, though not so varied nor extensive as one could have wished. Many of the largest builders were not represented at all, but those who were there seem to have done their best. Three facts strike one at a glance: the first is the desire to rid of putty—there seems quite a rage for dry glazing; the second is the growing popularity of iron, either alone or combined with wood, for hothouse construction; and the third, the rage for small houses and portable glass contrivances of all kinds. Imperishability and portability seem to be the order of the day in our horticultural buildings. The permanent houses will stand for a life-time, and longer, with as little outlay for repairs as possible; and our tiny glass contrivances are whipped over crops as they grow, and off them again, with as much or more dispatch. Mr. Ayres showed capital examples of his houses. The walls and stages are formed by enduring cements, and the roof of iron and glass; the iron being nearly wholly covered with the glass, thus reducing the painting surface to a minimum. The glass also overlaps sideways, so that drip is thus disposed of, dirt under the laps is impossible. The glazier and the bricklayer are dispensed with; the ventilation is most perfect; and when the houses are perfected, they seem to merit the name of imperishable applied to them. Several examples were given, and they were also shown as frames, but for the latter they are too heavy; unless the frames are deep enough, or a sunk path is formed (as in Mr. Smee's "poor man's house") to allow the workmen to walk under the glass, rather than lift it for watering, &c. Messrs. Howitt & Co., of London and Ilford, showed a good example of their light and elegant houses, heated and ventilated with Taylor's combined ventilating and vapourising pipe. The roof ribs of these houses are formed of hollow tubes, that fit into each other with a sort of socket, so that all screws, &c., are dispensed with; they are light and elegant in the extreme. The vapourising and ventilating are managed very simply; the nine first lengths of piping are furnished with a vapouring trough a little wider than the ordinary sort, these are then covered over with zinc, all but a small space of a few inches at one end; at the opposite end of each vapour trough a pipe is fixed, and led down through the walls into the open air. The cold air rushes in, and is carried the whole length of the vapour trough before it is liberated, and thus discharged through a ventilator in the apex, or through one or more zinc chimneys placed at one or both ends of the house for the purpose.

Messrs. Boulton & Co., of Norwich, exhibited a large assortment of

houses, garden chairs, tables, and watering-pots with new distributing contrivances of numerous kinds. These manufacturers also exhibited good substantial wooden houses of various kinds. Their lantern conservatory is lofty, and conveys the idea of a waste of space above the roof proper; but the other houses are plain and business-like, and the system of roof ventilation by the raising of the ridge is excellent. The universal plant preserver is held together with iron ribs, the roof ends of which form an eye for the lights to be hooked on to other preservers; they are worked by lifting them to any required height from the front, or turning one side right over on the other—a handy and most convenient arrangement. The Messrs. Dennis & Co., of Chelmsford, showed two nice houses, a highly-ornamental conservatory, and their five-pound greenhouse; the light and elegant style of these buildings is well known, but the cheap house is made of the best yellow deal, painted once, and is 10 feet long, 5 feet wide, 7½ feet high at the back, and 5 feet in front, and is a neat, serviceable, roomy house for the money. Mr. Thomas Bickly, of Birmingham, had a nice exhibition of his light and pretty houses. The glass is held in by strips of zinc running across the houses; these are deeply serrated on each side like the teeth of a coarse saw; the glazing consists in turning up one half of the teeth on each side, to retain and hold the glass in position; the serrated bar above is patented and fitted to either an iron or wooden ribbed house of any description. These houses are marvellously improved since first shown.

HOTHOUSE BOILERS.

THE boiler trials have proved a test as well of boiler capacity as of the enthusiasm of exhibitors and judges, for a succession of thunderstorms and drenching rains rendered stopping and testing matters of no easy accomplishment, there being no less than thirteen boilers, each heating one thousand feet of piping.

Mr. Cannell showed three of his hot-water circulators, one of a capacity of eighteen gallons, one of thirty, and a third of forty-six. The chief merit of these boilers is that they are expansive; if too small, another crown, which also forms another flue, is simply laid, and that to any extent, thus exhausting the calorific before it is allowed to escape; the connections are also all outside beyond reach of the fire, and the outside of the whole is encased with non-conducting material. Mr. Cannell also showed a number of boilers not on trial.

Mr. Edwin Lumley showed one of his Excelsior boilers for trial; it seemed very powerful with a great volume of vertical flame playing round a very little water, conditions likely to be favourable to economical heating.

Messrs. Hartley & Sugden, of Halifax, showed two powerful-looking improved saddle boilers on the trial field, and a large assortment, on the opposite side of the grounds, of their tanks, independent saddle boilers, domed top boilers with sand rims, independent conical and improved saddle boilers, altogether a very extensive and most interesting collection.

The Messrs. Dennis & Co., of Chelmsford, tried two of their tubular boilers, which are merely a series of pipes placed horizontally and joined at the four corners by others running up vertically. These form a boiler of any height or size required, and are well spoken of on the trial field. The same may be said of Green's patent hot-water boiler, a most powerful-looking arrangement for giving the water in a series of narrow shelves an uneasy time of it. A great variety of these boilers, with mowing-machines, &c., will also be found in the implement shed. The Whitley Court boiler looked powerful, and likely to do any amount of work with certainty. Mr. Deards, of Harlow, in Essex, challenged all comers, and tested his boiler on the trial field.

A patent centrifugal heating apparatus is the only true circulating boiler in existence, reducing the consumption of fuel to a minimum; its chief feature seems to consist in the thrusting of a coil of pipe into the fire, which plays round it, to the forcing forth of the water in the basin to go about its proper business. There is one great subject of regret, that several of our largest makers have stood aloof from this trial, and some may think any trial of boilers comparatively worthless that does not include such boilers as those of Weeks, Ormson, the Trentham, Gray, Jones, and others. Several of these were well-represented at the show sheds, and Mr. Weeks had an imposing display in another part of the grounds.

Mr. Ormson showed a good example of the old convoluted boiler, and one with the addition of a water-way under the fire bars, as well as a new Premier Flued Cornish Boiler. Some good examples of Stevens' Trentham Boilers were exhibited by Mr. Fenton. The Messrs. Green also exhibited new saddle boilers cased with wood to retain the heat.

Mr. Mee, of Liverpool, exhibited a new patent heating apparatus, which aims to save fifty per cent. of fuel, and is well spoken of by

those who have used it. There is a plate at front, which seems well adapted to arrest and economise heat.

Mr. Thomas Nock, of Andover Street, Birmingham, showed several varieties of gas-stoves, admirably adapted for heating frames, small houses, and conservatories. The air to feed the fire is taken from the outside, and of course no gas is permitted to enter the house.

DISTRIBUTION OF MEDALS.

ON Wednesday his Royal Highness Prince Arthur again visited the show for the purpose of distributing the medals. He walked to the large tent, and made a minute inspection of its principal contents, particularly of Mr. George Paul's roses; and from his observations, which were of a very discriminating character, it is evident he takes a deep interest in and possesses considerable knowledge of floriculture. After walking through several of the other tents, his Royal Highness proceeded to the covered dais, around which was a large assemblage of spectators, and distributed such of the medals as had been awarded. The names of the successful competitors were called out by General Scott, Mr. E. W. Badger handing the medals to the Prince, who delivered them to the recipients, accompanied with a few words of congratulation to each.

PRIZES FOR HOUSES, IMPLEMENTS, &c.

GOLD MEDALS:—Messrs. W. Howitt & Co., Great George Street, Westminster, for the best horticultural building. Mr. Frederick Reynolds, Broad Street, Birmingham, for the best collection of garden furniture. Messrs. Mapplebeck & Lowe, Birmingham, for the best collection of garden machinery, tools, &c. Messrs. George Baker & Co., Aston Road, Birmingham, for the best collection of garden wirework.

SILVER MEDALS:—Messrs. Cranston & Luck, Highgate Street, Birmingham, for collection of horticultural buildings. Messrs. Dennis & Co., Chelmsford, for conservatory, 1,099. Messrs. Hill & Smith, Dudley, for wirework.

BRONZE MEDAL:—Messrs. W. S. Boulton & Co., Norwich, for portable plant preservers.

In addition to the awards enumerated above, we may mention the following:—

Messrs. W. S. Boulton & Co., Rose Lane Works, Norwich, a silver medal for their collection of garden engines and machinery.

Messrs. Follows & Bate, Manchester, a silver medal for the patent Anglo-American lawn-mower.

Messrs. Thomas Haynes & Sons, Edgware Road, London, a silver medal for their patent garden hose.

Messrs. Ewart & Son, Euston Road, London, a silver medal for their collection of flower boxes and plant cases.

Mr. W. F. Chapman, a silver medal for his collection of cases for cut flowers, fruit, &c.

Messrs. Mapplebeck & Lowe, a bronze medal for garden ornaments and furniture.

Messrs. Henry Bamford & Sons, Uttoxeter, a bronze medal for an improved water-barrow.

We may add that Messrs. Howitt's house, which obtained the gold medal, is thirty feet by seventeen feet, constructed and exhibited by the patentees. This is a simple, serviceable, light, elegant, well-ventilated, and cheap building. It appears to comprise all the requirements of such an edifice, and was considered by the judges to be worthy of a gold medal. The shape of the house in section is arched, the main supports or ribs being of 1½ inch wrought-iron straight tubes, in short lengths, joined together by wrought-iron sockets at such an angle as will give the necessary curve to the roof. There is no outward thrust, and hence there are no tie rods to offend the eye or interfere with the space. The ribs carry light horizontal bearers, which are stiffened by light wrought-iron stays, and support wood or iron sash bars; the glazing is effected without laps, each opening having one square, which is puttied in, any condensed moisture being discharged outside. The ventilation can be effected in all weathers, the lower squares of glass being fixed in frames, which are opened by a lever with horizontal rods and jointed arms; the bearings are of gun-metal. The frames can be connected or disconnected at pleasure, so as to give whole or partial ventilation. The upper squares, also in frames, are hinged to ridge, and opened and closed by rods and arms worked by the very slow process of cog wheels and worm. This is the only unsatisfactory feature about the house, and one which should be remedied to render it perfect.

We cannot close our account of this great gardening exhibition without testifying to the courtesy and ability with which the honorary secretary, Mr. Badger, carried out and brought to a successful issue all the details of this great show. We, in common with all the horticultural community, are greatly indebted to him. Mr. Hallam, who so well carried out all the details of the garden structure and boiler department, also deserves our hearty thanks. Owing to the weather, and owing also, we think, to allowing the public to enter the grounds to the inconvenience of the judges, other matters will have to be postponed till next week.

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